THE 1976 PRAIRIE GARDEN

Western Canada's Only Gardening Annual

SPECIAL COLOR FEATURE:

Fruits and Vegetables $2.00

ISSN 0315-6850

The Prairie Garden

WESTERN CANADA'S ONLY GARDENING ANNUAL

WRITTEN BY AND FOR WESTERN GARDENERS AND HOMEOWNERS

A non-profit publication dedicated to the advancement of horticulture in the prairie provinces.

Published by
WINNIPEG HORTICULTURAL SOCIETY

Winnipeg, Manitoba 33rd Annual Edition, February, 1976

1976 THEME — FRUITS AND VEGETABLES

Price $2.00 per copy

Special quantity prices to Horticultural Societies, Garden Clubs, Commerical Outlets, etc.

Address inquiries, advertising and orders to:

THE PRAIRIE GARDEN, P.O. BOX 517, WINNIPEG, MAN. R3C 2J3

Reference Library

References on Fruits and Vegetables in Previous Editions of The Prairie Garden

FRUITS

Year	Page	Title	Author
1967	20	Growing Fruit in Central Alberta	J. R. Blades
1967	106	The Saskatoon: A Valuable Native Fruit	R. E. Harris
1968	60	Growing Raspberries in Regina	N. E. Huston
1968	72	To Paint or Not to Paint Fruit Trees	P. J. Peters
1071	54	Saskatchewan Test Orchards	D. R. Robinson
1971	54	New Fruit Varieties for the Prairies	S. Mahadeva
1972	6	A Dream Come True	P. J. Peters
1972	88	Fruit in the Garden	Mrs. J. Charlton
1972	92	Wintering Raspberries	S. Mahadeva
1974	94	Grafting and Budding	J. Walker
1975	49	Fruit Growing in the North	P. J. Peters
1975	108	Fireblight	G. Platford

VEGETABLES

1967	37	Staking Tomatoes	D. H. Dabbs
1967	47	Better Living with Vegetables	J. D. Campbell
1967	89	Greening of Potatoes	D. H. Dabbs
1968	46	Storage Performance of Winter Cabbage	D. H. Dabbs
1968	52	Sweet Spanish Onions	J. R. Almey
1968	56	Extending the Season of Garden Picked Corn and Tomatoes	C. Walkof
1968	58	Perennial Vegetables on the Prairies	T. A. Sandercock
1970	110	Quality Vegetables from the Home Garden	B. B. Chubey
1971	42	Cucumbers, Old and New	E. D. Whelan
1972	84	Home Storage of Vegetables	T. R. Krahn
1972	94	Tomatoes Under Plastic	J. D. Campbell
1972	96	Use Your Own Herbs	Mrs. P. Thomson
1973	110	Different Salad Vegetables	C. Walkof
1975	84	New Vegetables for the Home Garden	G. Luther
1975	86	Vegetable Gardening is "in" Again	W. Andrew

Send for your PRAIRIE GARDEN INDEX, 1965-1974

Available FREE from:

Publication Section
Manitoba Department of Agriculture
200 Vaughan Street, Winnipeg, Manitoba
R3C 1T5

John Walker F.A.I.C.

It is a privilege to have John Walker, educator, administrator, conservationist, plant breeder, writer and editor with his long and distinguished career in the field of Horticulture, on the Prairie Garden Board.

Born on a farm in Aberdeenshire, Scotland, John emigrated to Canada at the age of 20. At that time he was well started on a career in horticulture having had almost four years' experience as an apprentice gardener. His first few years in Canada were spent as a gardener at the C.D.A. Stations in Lethbridge and Lacombe, taking time out during the winter to obtain a Diploma from the School of Agriculture at Claresholm.

It was a time when most of the civilized world was involved in what has been inappropriately called the Great War, and John answered the call. Wounded in 1917 John became so attached to a piece of shrapnel that he carried it in his leg for over 45 years! When the war was over, John returned to his position at Lacombe which he held until 1921. That year he enrolled at the University of Alberta earning a B.Sc. (Agriculture) in 1924. The momentum generated in Edmonton carried him through to an M.Sc. from the University of Minnesota by 1926.

The wide range of experience John Walker has had during his career be-

comes very apparent when listing the major positions he had held.

Asst. Supt. 1/C Horticultural Research with C.D.A. — Indian Head — 4 years.

Ext. Horticulturist — Manitoba Department of Agriculture — 8 years.

Professor of Horticulture — University of Manitoba — 5 years.

Supt. Forest Nursery Station Indian Head — 16 years.

On retiring from the F.N.S. in 1958 Professor Walker joined the Horticultural staff at the University of Manitoba. The ten years (1958-68) he spent as a Research Associate at the University were highly productive. Freed from the burdens of administration John was able to spend full time on teaching and research in horticulture. The benefits to students, to his colleagues and to horticultural knowledge through this association will continue to accrue for many years.

At least part of Professor Walker's research is recorded in the many publications under his name. While many of these publications relate to his field shelterbelt work at Indian Head, the range of topics is as wide as his experience. As a plant breeder John is noted particularly for his fine ornamental plant introductions.

During his busy career he has been a member of, and a hard worker, in the professional societies related to his field. He is Past President and Honorary Life Member of many of them. In 1972 he was elected a Fellow of the Agriculture Institute of Canada.

In 1956 John was a consultant to the Government of Iceland in setting up a Forest Service tree planting program.

Apart from his professional life, John has been active in both national and community affairs. He was C.O.T.C. Company Commander at the University of Manitoba from 1940-42, and Major of the Artillery Militia Unit at Indian Head 1942-44. He is a past Master of the Masonic Lodge and active in his church.

John Walker's wise advice and kindly help goes a long way towards ensuring the publication of The Prairie Garden each year. He has been associated with the publication since its inception.

He was secretary of the Winnipeg Horticulture Society when the "Winnipeg Flower Garden", forerunner of The Prairie Garden, was published in 1937.

Many thanks to John Walker.

Phyllis Thomson
Editor

Now comes the summertime. The blood and sweat is over and all you've got left is tears — when you see the size of the water bill!

Table of Contents

We Are Looking For Authors

The Prairie Garden Committee is looking for authors who are interested in writing articles for the Prairie Garden. We like articles from amateur gardeners telling us about their gardening experiences. They may cover any phase of horticulture such as house plants, ornamentals, flowers, fruits or vegetables. Articles on nature, wild flowers, birds and insects will also be considered. Where possible, black and white pictures will help to make the article better and improve the image of the Prairie Garden.

The Prairie Garden is a labor of love. Authors will receive a complimentary copy of the Prairie Garden issue in which their article appears. They will also know that they are contributing to the value of this publication.

So, if you like to write, or know of someone who does, let's hear from you. Send your contribution to The Editor, c/o The Prairie Garden, P.O. Box 517, Winnipeg, Manitoba, R3C 2J3.

Home Horticulture with Artificial Light

LORRY GANS

The average modern home in the past several decades was built in an environment of limited space, both indoors and out. A greenhouse for growing plants became rather unsightly or unpractical. However, several new types of lamps have been manufactured that can produce light rays equal to that of the sun; thus enabling us to grow seedlings, cuttings, or plants in almost any part of our home. By this practice we are able to utilize extra shelving, or any space throughout the home. Both by plantings and lighting one may attractively accent the decor of an entrance, foyer, hallway or office.

Since the entire spectrum of the sun's rays are not required or used by plants one may, by using one type or a combination of lamps, produce only the rays required to stimulate plant growth quite economically.

"Photosynthesis", technically known as Plant Growth, is the combining, by means of light, two simple substances: carbon dioxide — CO_2 and water — H_2O, to form organic plant substances better known as carbohydrates. The leaf of the plant capturing the light energy and using it to absorb carbon dioxide from the air, combined with water absorbed by the roots, thus converts to form complete compounds which maintain the growth rate of plants.

CHEMICAL FORMULA:

$$6\ H_2O + 6\ CO_2 + \text{Radiant Energy} = C_6H_{12}O_6 + 6\ O_2$$

Water + Carbon Dioxide + Light = Carbohydrates + Oxygen (Air)

The vegetative growth of plants, therefore, is largely controlled by their exposure to light. The length of light exposure per 24 hours is known as "photoperiod", and plants in relation to above may be set in four groups.

1) Long Day — 16 to 18 hours — relates to a much longer period of light than darkness; e.g. most annuals, geraniums, cuttings, calcelaria, etc.
2) Day Neutrals — Indeterminates (14 to 16 hours). These usually grow all season under a variety of light; e.g. ferns, palms, cactus, ivy, fitrous, begonias, miniature fruit.
3) Short Day — 8 to 13 hours — much longer dark than light periods; e.g. chrysanthemum, poinsetta, orchid, Christmas begonias.
4) Intermediate Day — 12 to 14 hours — referring to plants that flower under conditions of equal duration of light and darkness; e.g. coleus, gloxinia, African violet, begonias, impatiens.

Effects of Light by Color Rays

Plants, therefore, respond to light of various time lengths (fluorescent with reflector is recommended for maximum efficiency) as well as color rays — known as "spectrum".

General Reference

BLUE LIGHT — (Fluorescent) if used alone will produce a low stocky, rather squatty plant.

YELLOW-GREEN — Has minimal effect on plants although it is essential for human vision.

RED LIGHT — (Incandescent) causes plants to become tall or spindly.

Caution: Heat from this source may burn leaves at close range. Also, use of appliance lamps that will not shatter easily if accidentally touched by water is recommended.

VIOLET BLUE — (Sun) does two things, (a) it stimulates the plant mechanism which compels it to grow in the direction of light, e.g. sunflower, (b) it promotes the production of sugar and starch in the plant's green matter.

Therefore, a proper balance of blue and red-producing lamps is most desirable and effective.

The following is a percentage comparison of red and blue light in three types of fluorescent lamps.

LAMP	BLUE LIGHT	RED LIGHT
Cool white	Good 20-78%	Good 8-4%
Warm white	Fair 12-91%	Good 11-53%
Daylight	Excellent	Deficient
Incandescent (Household lamp)	—	Good

Experiments have shown that a mixture of fluorescent and incandescent lamps give better results than fluorescent alone. A combination ratio of about three fluorescent lamp watts to one of incandescent is good.

The above is a simple formula for successful development and growth of plants.

The choice of lamps should be made with care as ultraviolet and infrared can be disasterous to plants. There are, on the market today, special-purpose fluorescent lamps, engineered solely for stimulating plant growth. These have excellent violet-blue and orange-red output combined all in one lamp, thus eliminating the need of different or mixed light sources — Westinghouse Company, Agro-Lite, Sylvania Company and Gro-Lux.

How Much Light Is Needed?

By suspending your fixture on a chain or pulley, simple adjustments can be made to obtain a varied average of footcandles at different levels above the growing bench.

TYPICAL LEVELS NEEDED FOR SOME COMMON PLANTS

PLANT	FOOTCANDLES
African Violet	600
Gloxinia	800
Orchid	1,000
Episcia (foliage)	600
Philodendron (vining)	
Pothos (vining)	200-300
Ficus (rubber plant)	
Philodendron (large)	50-100

Although artificial light offers unparalleled opportunity for plant growth, good cultural practices must also be observed.

SOIL COMPOSITION — Proper mixture for each.

SPECIES — Follow package directions.

TEMPERATURE — Most plants do well at 70 to 75°F day and 60 to 65°F night.

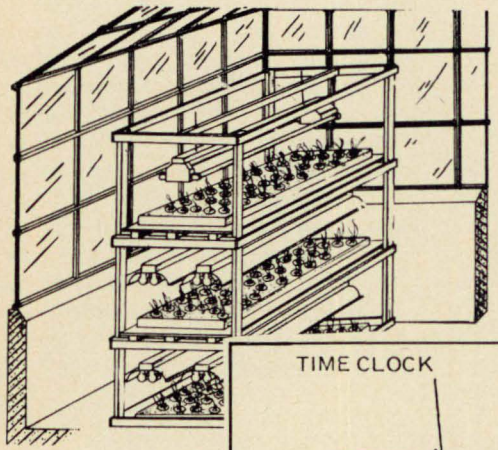
HUMIDITY — Should range 50 to 60 percent with adequate ventilation and fresh air. A small fan and/or open fish tank is good.

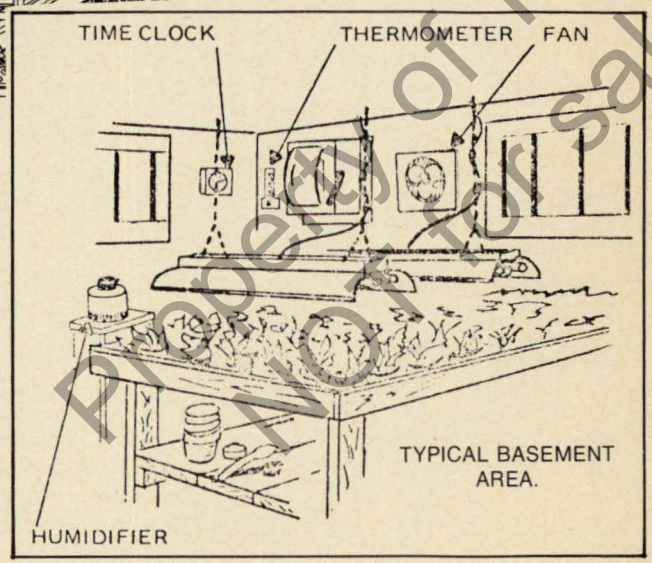
WATER — Do not over water; use enough lukewarm water to dampen soil at root level. Good drainage is essential.

SPACING — Allow enough space so plant leaves do not touch each other. A slatted bench will encourage air movement. Stronger root systems and leaves will result.

LIGHT — Amount of light, time of exposure and height of lamps from plants will depend on plants to be grown. Try to group similar varieties on growth stages in same location.

Artificial Light + Good Cultural Practices = Green Thumb





Pete de Wet honoured on 92nd birthday

(Courtesy METRO 1)

Members of the executive of the St. James Horticultural Society paid tribute to long-time member Pete de Wet on the occasion of his recent 92nd birthday, honouring him with a gift and a life membership in the society.

Some 35 persons gathered at the home of society president Mrs. Freda Pallett, 118 Keating Street, with special guests including Councillor Pearl McGonigal, Marv McGonigal, provincial horticulturist Fred Weir and Mrs. Weir, Manitoba Horticultural Association secretary-treasurer Pete Peters and Mrs. Peters, MHA director and past president Bill Gray and Mrs. Gray, and Mr. de Wet's daughter Betty.

Among those paying special tribute to him were Coun. McGonigal; W. E. (Dusty) Rhodes who presented the life membership and gave a brief resume of the guest of honor's career; Mr. Peters, who read a poem specially composed for the occasion; Mrs. Pallett, who presented a terrarium planted by members of the flower arranging group; and society director Al Brock.

Born February 3, 1883 in Cape Town, South Africa, descendant of pioneer Dutch colonists who arrived there in 1693, Pete de Wet landed in Canada in May, 1909 and after working on Manitoba farms for two years came to Winnipeg where he has made his home ever since.

Following service overseas with the Canadian Army during the first world war Mr. de Wet worked as a newspaperman then as secretary of the Manitoba Chamber of Mines, retiring in 1951.

His long association with the St. James Horticultural Society began in 1955, and he served for many years as a director of the society. The flower arranging committee of the society, originally organized by Mr. de Wet, his daughter, and Evelyn Scarth, still meets regularly at his home on Whytewold Road.

A life-long garden hobbyist, Mr. de Wet is a former director and president of the Winnipeg Horticultural Society and holds life memberships in it and in the Manitoba Horticultural Society.

Growing Roses in Calgary

G. NODEN

Having grown both hardy and tender roses in the Chinook belt for a number of years, I would like to share my experiences with others. Ours is a good example of a continental climate with its extremes of temperature. To further complicate matters we suffer from strong, drying winds at all seasons and particularly during the winter and spring months. Chinook winds are invariably welcomed by the citizenry at large but not necessarily by the Calgary rose grower! As if this were not enough, our winter temperatures vary widely. For this reason the December snows rarely last through the winter and February and March is often a time of bare, unprotected ground. In spite of the climate, however, rose growing in Calgary can be a most rewarding endeavor.

There are, practically speaking, two classes of roses that can be grown here with a fair assurance of success. Oddly enough this includes such tender roses as hybrid teas, floribundas, grandifloras, and hybrid perpetuals. The so-called hardy or shrub roses such as the rugosa rose, certain species roses, and the like, are also candidates for trial.

Many other rose types are distinctly unsuited for our difficult climate. Typically, this includes the climbers, since bloom is usually produced on the previous year's wood and this wood is almost impossible to overwinter in our severe climate, even when extensive protective measures are taken.

The key to successful roses in Calgary is protection — and lots of it. Only those roses which can be completely protected because of their relatively small size, or those hardy enough to withstand the rigorous climate on their own can be depended upon. Because of the practical difficulties encountered in providing adequate protection, the rose is probably the most difficult of the flowering plants grown locally.

Tender Roses

The hardiest of the tender roses is the hybrid perpetual. It was very popular before the turn of the century. A few varieties are still available and worth growing, notably Frau Karl Druschki (Snow Queen), a lovely white rose which yields a burst of bloom in late June and early July and

Tropicana, Miss Canada, Pink Peace

Fragrant Cloud, Pink Peace

then blooms spasmodically until frost. Unfortunately, it has no scent.

Probably the finest rose available today is the hybrid tea. It originated from a cross between the hybrid perpetual and the very tender subtropical tea rose. The hybrid tea yields blooms often of great distinction and substance, sometimes with an entrancing scent. Its major weakness is its relative lack of hardiness inherited from the tea rose parent. Within the class some varieties are less tender than others. Recommended for this reason, and because it is a magnificent rose in its own right, is the Peace and, for that matter, any rose with Peace 'blood in its veins'. Varieties particularly favored by the author include Peace (creamy yellow flushed with pink, little scent), Tropicana (orange-red, scented, a wonderful cut flower), Fragrant Cloud (coral-red, beautifully scented, a good cutting flower), Miss Canada (pink and silver bicolor, no scent), and the Peace derivatives Flaming Peace (smoky red), Pink Peace, and Chicago Peace (an apricot-tinted sport of Peace).

A cross between the hybrid tea and the now old-fashioned polyanthus rose produced the floribunda. The chief virtue of this type is the abundance of bloom and the compactness of the plant. Floribundas which have succeeded in Calgary are Fashion (pink, good substance), Pinocchio (pink), Red Pinocchio, and Frensham (crimson, semidouble). Most floribundas lack scent.

Chronologically, the last of the tender roses to be considered is the grandiflora type. It represents a cross between the hybrid tea and the floribunda. The best of the grandifloras are close to the hybrid tea in quality and the floribunda in quantity of bloom. Representative is the famous Queen Elizabeth (pink, exceptionally attractive form).

Hardy Roses

There are available several hardy roses which are extremely tolerant of low temperatures. Some of these can withstand below zero temperatures for long periods and will live on for years with little attention. Compared to the tender roses they have two

obvious disadvantages: the quality of bloom produced is seldom comparable; and two, the blooming period is often quite short. There are, however, certain advantages other than hardiness. One often overlooked aspect is the decorative nature of the foliage and the fruit in season. Some well known shrub roses are Hansa (pink to magenta, flat, double flower with strong scent, good foliage), Harrison's Yellow (yellow, double, likely to top-kill if placed in exposed position), Austrian Briar (yellow, double, species rose), Therese Bugnet (pink, flat, double flowers, good foliage, bred in northern Alberta), Prairie Dawn (pink, double, scent reminiscent of the wild prairie rose), and Altai (white, single, very hardy).

Choosing Stock

There is really only one essential rule relative to the acquisition of high quality stock: **patronize your local nurseryman.** This means that you will pay more than at some department or grocery store but it also means that your roses will likely grow and prosper. If you are interested in hardy roses it is possible that at least some of the stock is locally grown and, therefore, acclimatized to local conditions. Hardy roses may be obtained either bare-root or potted. The latter has the advantage that there may be less root disturbance when setting out and thus planting may be done anytime during the spring or even summer. If purchased bare-root, the roses should be set out quite early on in the growing season.

Hybrid teas and other tender roses, preferably, should be obtained in the potted condition, with some growth evident. This will enable you to judge the worth of the plant before buying. The ideal tender rose should have two or three strong canes with a minimum of dead or dying material. In no case should hybrid teas and other roses be bought in the packaged form favored by department stores and other part-time purveyors of roses. There are several reasons for this statement. First, the root system has been brutally pruned to fit the package. Second, the plant is often badly weakened by the hot, dry atmosphere associated with large stores. Finally, it has been my experience that these plants are often not labeled correctly. The chances for normal growth and survival of stock handled in this careless manner are indeed minimal.

Location and Planting

Preparation of the rose bed is the same whether it is intended to grow tender roses only, shrub roses only, or some combination of these. Ideally, the location chosen must have excellent drainage, have a sunny aspect for at least eight hours a day during the height of the growing season, be protected from strong north and west winds, and in reasonable proximity to water for irrigation purposes.

If possible the bed should be prepared in the fall of the preceding year so that planting can go ahead as soon as the weather is settled in the spring. (Fall planting is not recommended in this locality.) The bed should be spaded over to a depth of at least eight or ten inches. It is always advantageous to add such fibrous material as peat moss, leaf mold, or well-rotted manure if these are available. If the soil is heavy, sand may be added to help lighten the soil and improve the drainage.

Planting procedure for shrub and tender roses is quite similar. It should

be noted, however, that shrub roses normally have their own roots whereas tender roses are invariably grafted onto hardy root-stock. This will influence the planting procedure to some extent.

Planting Shrub Roses. Assuming bare root-stock, planting risk will be somewhat reduced if the stock is soaked overnight in tepid water. Both roots and crown should be covered with water. The rose is placed in a hole somewhat larger in diameter than the spread out root and to a depth which just allows the crown to be covered with soil. Minimum separation of plants ranges from three to four feet depending on the particular rose being planted. It is common practice to "mud" the plants in and, if this is done, no further watering should be necessary for the next two or three weeks. After the roses are set out the tops should be pruned to a maximum height of, say, eighteen inches to reduce dehydration of the plant before the root system "takes". In Calgary bare-root shrub roses may usually be planted towards the end of April or the first of May. New growth will not appear for at least three weeks so there should be little chance of frost damage. If frost is anticipated a light covering of burlap or plastic should suffice to protect the plant.

Planting of potted roses follows the same pattern except that the soaking step is, of course, eliminated. If the potted roses are set out in the early spring they may have to be protected against frost. Late spring and even summer planting of potted shrub roses is entirely feasible.

Planting Tender Roses. Tender roses should be left in the nursery until at least mid-May unless you are prepared to offer protection to the plants from undue sun, winds, and spring frosts. In any case a two week hardening off process is recommended prior to setting the roses out into the bed. The potted plants are mudded in in the same way as shrub roses except that care must be taken to see that the graft is set from two to three inches below the surface of the bed. Minimum distance between plants should be at least eighteen inches. From planting time (around the end of May) until mid-June the plants should be protected from drying winds or late frost. Both of these hazards are sure death to the new buds unless some kind of cover is at hand during the severest weather.

Summer Care of Roses

Routine care of roses during the first season amounts to nothing more than occasional spraying for insect pests and fungus diseases, watering on demand and, perhaps, mulching with peat moss or compost to help preserve moisture during the warm months. It should not be necessary to fertilize the first summer.

In subsequent summers I apply a good dose of compost to the rose bed around the first of June, followed by an application of a general purpose fertilizer (5-10-5, or similar) not later than the first of July. Special rose fertilizers are also available. They are good, but expensive.

Winter Care of Roses

Late fall and early spring are the critical times in the lives of your roses. Most tender roses are killed in the fall during the first hard frost, and in the spring if the plants are uncovered too early. Shrub roses, unlike tender roses, have the ability to go truly dormant, hence are much less subject to damage from fall and

spring frosts. Rather, if unprotected, shrubs can be devastated by Chinook winds in February, March, and April. During these months the ground is frozen and the plants cannot replace moisture lost to the atmosphere. Thus, the enemy is not cold, but dehydration. The root structure is rarely damaged but top kill can be so extensive that little or no bloom is realized during the growing season. Damage from cold and drying winds can be minimized by applying adequate protection at the appropriate time.

Tender Roses. The winter enemy is primarily frost and, secondly, dehydration. Apparently, even mature rose canes cannot withstand severe frosts for any length of time, say 20 or 25°F, overnight. No more definitive statement can be made because of the many factors involved: maturity of cane material, duration of killing temperature, plant location, relative humidity, to name a few.

Fall and winter kill can be minimized. Prior to the first hard frost (mid-October in most years) each tender rose is carefully defoliated, and the canes are bunched and tied with twine. Any canes exceeding twelve inches are cut since they cannot be saved in any case. Each plant is carefully wrapped with burlap. This helps prevent mechanical damage to the canes when soil is placed around and over each rose. It also protects against light frosts. After the wrapping is complete a little earth (obtained outside the bed) is mounded over the crown and up into the canes. This will protect against heavy frost until you find time to apply the final cover.

Around the end of October the final winter protection can be added. A rough wooden crib at least twelve inches high should be built surrounding the rose bed. The crib is filled with fine, slightly moist earth to a depth of twelve and preferably eighteen inches. Topping it off, you should add garden trash or straw to the depth of twelve inches. This last covering will act as a snow trap.

These measures may seem extreme. They **are** necessary to ensure the chance of a high survival rate. The principle behind the earth covering is simple: this kind of insulation keeps the roses at a constant temperature (just below freezing) throughout the cold months no matter how the air temperature fluctuates. Just below freezing represents a survival temperature, even for tender roses.

You might wish to try some other insulating material. Chances are you will be disappointed. No other material seems suitable. Substitutes such as straw, sawdust, or leaves although easy to apply cannot prevent extreme cold penetration, thus the likelihood of total kill is strong.

When to Uncover

You will no doubt be tempted to remove all or at least some of the protective covering during the first warm spell in April. **Don't.** It is better to hold tender roses in the "freezer" as long as possible. This is where the trash covering is important. It keeps the soil from thawing and thus prevents premature growth.

Mid-May is plenty soon enough to remove the trash cover. In a short time, if the weather is seasonable, the earth will be thawed and can then be moved gingerly aside for a first inspection of the plants. If all is well, some growth may be evident. You must always be prepared to protect this growth from excessive wind, sun, and, of course, frost. Covering with burlap or plastic will help. Don't overlook the possibility of covering with boxes or inverted flower pots. Keep some loose soil available.

If you have been careful (and lucky!) the reward for all this trouble will be possibly some six inches of viable cane per plant. Dead canes are easy to spot: the heartwood is brown instead of whitish, and the bark lacks the lively green appearance of the live cane. Prune out the dead stuff when it can be identified. Don't overprune; you need as much live cane as possible to get the plant off to a good start.

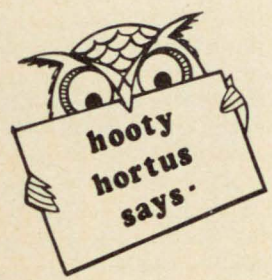
If this sounds like a lot of work — it is! The moral is: better five or six properly protected roses than fifty or sixty dead and dying ones. Grow what you have time to protect, even if this be one or two roses. However, if you'd rather not go to even this trouble, but still love roses, why not consider shrub roses instead?

Hardy Roses. The fact that shrub roses are cold hardy is no guarantee that they will not top kill because of excessive dehydration caused by sun and wind. To reduce this effect shrub roses may be wrapped in burlap, or better, R7 fibre glass insulation. The problem in protecting shrub roses arises because of their size. It is obviously impossible to cover a four-foot shrub rose with soil. Wrapping is practically a necessity in Calgary but should not be essential in areas where the snow comes early and lies deep all winter.

The question is sometimes asked "Is top kill on the occasional year a matter of great concern?" The answer is "It depends to some extent on the variety of rose." Some roses, such as Hansa, will recover very quickly and will yield good bloom the following summer except that the blooming period will be delayed a month or so. Other hardy kinds like Harrison's Yellow or the Austrian Briar will not bloom the year after extensive winter kill. If this occurs year after year, there is little point in keeping the rose unless it is appreciated for its foliage alone.

Conclusion

Rose growing is quite feasible in Calgary, with high quality blooms being produced. Both tender and shrub roses are good subjects, but climbers are not recommended. Be prepared for some winter kill even when the roses are well covered. Because of winter kill hybrid tea and floribunda roses never attain the stature expected at the Pacific coast for example, nor is the quantity of bloom produced as large. Shrub roses can be expected to flourish if given a reasonably protected situation but they too should be protected unless more or less top kill can be tolerated.



GERMINATION. *Seeds of phlox, salvia and verbena germinate irregularly. A few seeds will germinate and the rest may lie dormant for 3 or 4 weeks. To speed germination, place the seeded pots or flats alternately in a warm room (80°F.) and a cool one (50°F.) for 2-day periods until germination is complete. R. W. Oliver.*

Starting Annual Plants Indoors

JOHN WALKER

Soil

Soil for early-sown seeds should not be too rich. A friable loam soil from the field or garden is quite satisfactory. It can be improved by the addition of sand, one part to two parts of soil. Coarse material should be screened out; use one-quarter inch mesh screen. Clay soils need more sand added to make them suitable.

Soil used for starting plants indoors should be sterilized to reduce losses by damping-off fungi. Steam or boiling water may be used for sterilizing small quantities of soil.

Seedlings may also be started by sowing seeds in vermiculite, turface, sand or sphagnum moss. With these materials more attention is required as regards watering, and delay in transplanting may cause deterioration of seedlings because they contain no nutrients to support plant growth.

Seeding

Seeds are sown in shallow boxes commonly called flats. These are usually about four inches deep, 12 to 15 inches wide and 24 inches long. When small quantities of seeds are to be germinated, it is customary to sow them in a flower pot, seedpan or other container. Bottom drainage in these containers is necessary. A small clay pot inside a larger pot with peat moss between them can be used (keep wet).

The depth of sowing is governed by the size of seeds. Very fine seeds, like those of lobelia, petunia, celery and parsley, should be barely covered when sown. Soil for covering the seeds should contain a high percentage of sand to keep the top from "crusting", and should be screened through mosquito wire netting.

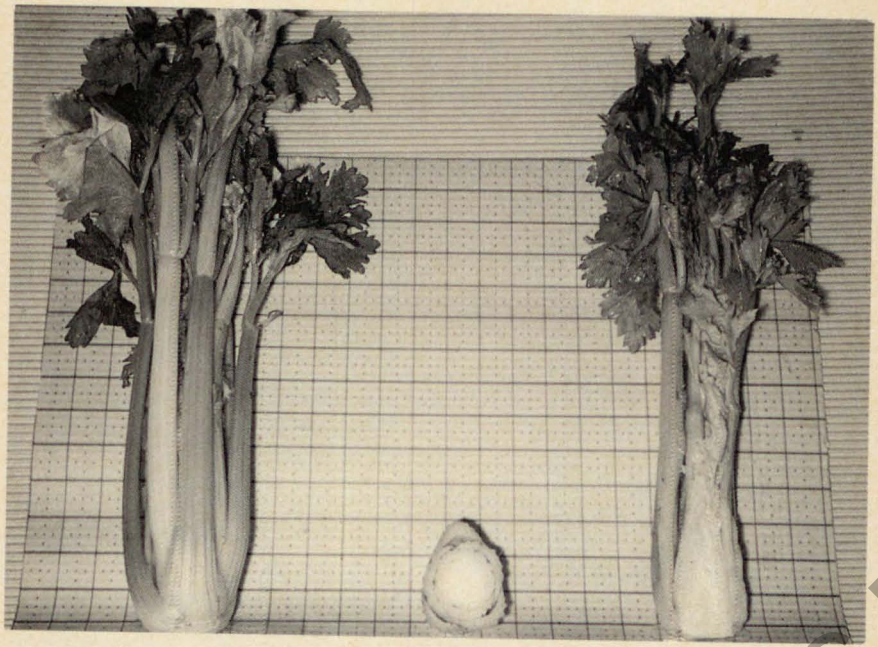
For watering newly-sown seeds it is wise to have available a shallow pan or tank into which the seed flat, pot or seedpan can be placed so that water may wet the soil FROM BELOW; care must be taken that no water rises over the edge of the flat or seedpan. This practice ensures thorough wetting of the soil and lessens danger of losing seedlings by damping-off fungi. By placing panes of glass, plastic covers or paper over the containers until seedlings begin to appear, the need of frequent watering can be lessened.

Guard against too early sowing of seeds in spring. Sowing during the last two weeks of March is desirable for dianthus, lobelia, petunia, snapdragon and celery, while the third week of April is satisfactory for marigold, stocks, zinnia, cabbage and tomato. An in-between date will suit most others requiring an early start. Record on list giving name, source of seed, date and number — put number on label in pot.

Germination of early-sown seeds will take place when containers are placed in a sunny window, greenhouse or hotbed where a temperature of about 20°C (65 - 70°F) can be maintained.

Seedlings Require Transplanting

This is an intermediate step prior to planting in the garden. Transplanting of seedlings should be attended to as soon as the first pair of true leaves has



developed. They require sufficient space to permit normal development of foliage and of an extensive root system; when transplanted, the distance between seedlings may vary from two to four inches each way.

Flats are desirable and a lower temperature than recommended for germination is necessary for the production of sturdy transplants. Soil for transplants should contain less sand than that used for seeds. In addition, a small amount of well-rotted manure or leaf mold improves the texture. Too much sand tends to cause the soil to crumble and fall away from the roots when the plants are planted in the garden.

Roots of seedlings should be preserved as much as possible during the transplanting operation. To avoid damage to roots try lifting the seedlings from the seedpan in clumps by using an ordinary table fork. The soil around the roots will readily crumble and individual seedlings can be separated.

In transplanting, a "dibble" or "planting stick" is necessary to make a hole for the seedlings' roots and to firm the soil about them. A thorough watering with a fine spray should immediately follow. Shade from direct sunlight for about two days is also necessary. A favorable temperature for growth is one that varies from 15 to 20°C (60 - 70°F). Sturdy seedlings can be developed in direct sunlight in a greenhouse or slat-covered hotbed or cold-frame.

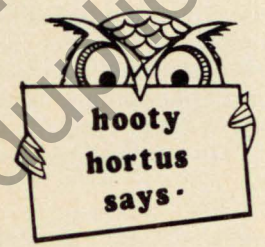
Planting Outdoors

Prior to planting them outdoors, seedlings should be hardened off by exposure to outdoor temperatures and light and by a slight reduction in water supply. Early in May, covers may be removed from hotbed and cold-frame or flats may be placed

outdoors. Give water less freely and less frequently and, should frost threaten, the seedlings must be given some protection.

Time to plant in the garden or border will be governed by the size of planting operations and the susceptibility of plants to frost damage. For example, flowers like celosia, dianthus, petunia and snapdragon, and vegetables like cabbage and other crucifers, head lettuce, onion and parsley may safely be planted outdoors prior to May 24 in most districts.

To facilitate easy handling of plants for planting in the garden they should be given a thorough watering a day in advance. Take time to separate the individual plants and to disturb as little as possible the soil around their roots by using a knife to cut out a square of soil for each. By so doing, the full benefit of an early start indoors will be realized, and plants will be set back a minimum amount.



Raspberries can be profitably produced when plants are grown in the "hill" system, i.e. not in a continuous row.

If canes in each "hill" are tied tightly together at the top (4 to 5 feet high), no other means of support is needed; canes support each other. By this method of support picking of fruit is also facilitated because most of the fruiting spurs develop in an outward direction.

The Amazing Pelargoniums and All Their Kin

by ANN STACEY

A rose is a rose is a rose but a geranium is really a pelargonium. The pelargoniums, more specifically, the zonal pelargoniums which we know commonly as geraniums, are but one branch of the genus Geraniaceae, most of which grow wild in places like South Africa. The "zonal" refers, I believe, to the zones of shading in the leaves; sometimes the shading of green, grey, black or purple is hardly noticeable, other times they are very marked. What a fantastic family is the zonal pelargonium! One could spend a lifetime (and some have!) studying them, cultivating them, enjoying them.

The earliest pelargoniums to achieve house-plant status were introduced to Europe by way of Holland in 1609, brought there from South Africa by a Dutch Governor of Cape Colony. Since then, geraniums — pardon me, pelargoniums, have enjoyed cycles of popularity, reaching their peak in Victorian times, declining, and are now on the upsurge again (I hope). The flowers alone are worth their cultivation, five-petaled, they are carried on umbels and may number as many as a hundred florets to a truss. There are cactus-flowered pelargoniums, also double-flowered, single-flowered, ruffled, feathered, two-toned, blotched, varigated and margined in all the imaginable shades of red and orange, pink and mauve as well as in white.

Personally, I don't know anyone who hasn't had a go at growing pelargoniums with varied success and enthusiasm. Some folks turn up their noses at its most common variety and disdain them as house plants. Others allow them entry but confine their existence to the kitchen window. Still others get flats full of started cuttings every spring for outdoor displays, and parks and public buildings rely on them for great masses of spectacular color. One would almost assume there were only red pelargoniums available with possibly a salmon-pink and a white variety in lesser numbers. Fancy my surprise then, to learn that there are literally hundreds of varieties of pelargoniums; the zonal branch alone ranges in size of plants from a few inches in height to six or seven feet! Read, an Englishman, has spent most of his life developing the miniature or dwarf species, most of

which grow less than six inches in height. They bloom profusely in all possible splendid colors, the flowers almost covering each tiny plant. Other pelargonium lovers have grown such large plants they have covered entire walls!

This past summer I grew bold and planted ivy-leaf pelargoniums in our outdoor stone planter as a change from our usual nasturtiums. I was delighted by the deep green arrow-shaped leaves trailing over the pink and grey stonework and especially pleased by the profusion of blossoms. This year my favorite garden catalogue offers seeds for **fifty** varieties of ivy-leaved pelargoniums alone! Hopefully, we will see more and more of these variations turning up at local nurseries.

One of the most fascinating branches of the zonal pelargoniums is the one with fragrant leaves. Rose

"geranium" is the most well-known. A touch of its leaves releases the tantalizing aroma of roses and spice. Then there are nutmeg-scented pelargoniums, a peppermint variety, also attar-of-roses-scented, and orange-lemon-lime- and apricot-scented plants to name a few. In Victorian days, little jars of scented leaves were kept in the parlor, the lids removed when special occasions arose. Little ruffled organdy sachets were kept in linen closets, in lingerie drawers, or chamingly, in milady's handbag. Teas and jellies were made from scented pelargoniums and often several leaves were tucked into the sugar canister where later in baking, their fragrance added a delectable flavor to cakes and cookies. If you like experimenting with herbs, here's a whole new field to try.

After the zonal pelargoniums, another branch, the "regal" pelargoniums have been bred mainly for the color of their leaves. In this group flowers are of less importance, the color is provided by the leaves which are sometimes yellow, sometimes bronze and crimson, sometimes white, cream and green or spectacularly, a four-color version in purple, red, cream and green. These plants are trickier to grow and are generally the forte' of nurserymen or other fortunate owners of solariums or greenhouses. A sub-group of the "regals" are the "uniques" and finally the "angels", which are shrubby little bushes less than a foot high. These groups of plants more or less complete the pelargonium part of the great geranium family.

Amateur gardeners with a sunny windowsill or with the help of fluorescent lights can have a great variety of pelargoniums thriving from seed with little expense. Another way of acquiring differing plants of this amazing family is by cuttings. All the pelargoniums are rooted easily in a cutting medium, so when you meet someone who has a variation of the pelargonium theme, you will be very charming, won't you?

LET'S PLAN A GARDEN

Three rows of Peas	— Preparation Promptness Perseverance
Three rows of Squash	— Squash indifference Squash gossip Squash unjust criticism
Three rows of Turnips	— Turn up promptly for meetings Turn up with a determination Turn up to be more co-operative
Three rows of Lettuce	— Let us be loyal Let us be enthusiastic Let us be big enough to accept constructive criticism and profit by it.

Snow Mold Control Begins Before Freeze-Up

G. PLATFORD

Next fall you can protect your following year's lawn against snow mold damage by treating your grass before freeze-up.

Incidents of snow mold and the damage caused by this fungus depend greatly on the type of fall weather. In years when the ground is frozen solid before the first blanket of snow arrives there is usually little damage, however, when a heavy snowfall is experienced **before** freeze-up, there is often considerable damage to lawns in Manitoba.

The most effective way of controlling snow mold is by applying mercuric chloride, or compounds containing mercuric chloride, in the fall before freeze-up. Mercuric chloride (corrosive sublimate) should be applied at four ounces of chemical in 10 gallons of water for every 1,000 square feet of lawn area. Any of the compounds on the market containing inorganic mercury are also effective, and should be applied according to the manufacturer's directions. Some of these are: Calo-Clor, Calocur, Merfusan and Mersil.

When using mercuric chloride, protective clothing should be worn, as it can be irritating to the skin. Compounds containing this chemical will also corrode metal and should be treated with care.

Nature's Treasures

(Delicious Wild Fruit)

VIRDEN HORTICULTURE SOCIETY

As we live in a modern day where everything is more or less instant, we purchase most of our daily needs at the corner store. What a shame! For our fair province is blessed with a great variety of wild fruit, with many uses. The side benefits are the warm sun, the picnic baskets, and the laughter while searching for the berry patch.

Wild strawberries appear and the berry season has begun. Found in the pastures and "go-back grassyland", strawberry picking was often tedious, but the dreaming was easy. Preserves, jams, canned with rhubarb or gooseberries, or fresh with cream and "fit for a queen", these thoughts made time pass quickly.

Saskatoons are another wild fruit familiar to most Manitobans. They were the stand-by fruit of yester-year, including the 'dirty thirties'. Mostly used as fruit preserves, plain or with rhubarb, they also make excellent jam, jelly or berries with cream. These berries also freeze well so you can make a pie in December that tastes just as if the berries had been picked that morning!

Raspberries are found in abundance and the uses are similar to those of strawberries. Always versatile, they can be used for a short-cake, or try raspberry vinegar for a cool summer drink. However, while your head is in the clouds, keep your eyes on the ground for you run the risk of stepping in a hornet's nest. We know from experience!

There is barely time to gather black currants and gooseberries for jam and jelly before the big search for pin cherries begins.

Pin cherries, another prairie fruit, are found on tall slender trees. These berries are rare but if you are lucky enough to find a patch the jelly from this fruit is unexcelled. We are sorry to add that pincherries are one of the wild fruit trees that is rapidly becoming extinct.

Chokecherries are plentiful in most localities. Their uses are wide and varied, ranging from jelly to wine. The syrup made from these was a special treat for most families, especially when mixed with cream! They make delicious jams when blended with crabapples and chokeberry vinegar matches the raspberry for summer drink attention. Just try it!

FRUIT VINEGAR

—Grind 4 quarts of ripe berries in a meat grinder. (with chokeberries, grind pits and all).
—Put the ground berries in a crock and cover with white vinegar.
—Let stand for three days and then strain.
—Add ¾ cup of white sugar to each cup of liquid
—Boil 15 to 20 minutes and bottle
—Add 1 tablespoon of mixture to a glass of cold water, find a shady corner, and enjoy!

Wild cranberries can be found in the swampy areas of the province. Unlike the ones found in the stores, these are a high bush berry and have little pits. They make a beautiful jelly with a distinctive flavour to serve with fowl, hot biscuits, or toast. In days of yore, the tasty catsup was made from the pulp of this berry plus vinegar, sugar and spices.

The wild plum is not too common but may be found in some areas. This is a tart, pucker-your-mouth fruit which is enjoyed by many. The uses are like those of most fruit, jams, jellies and pies.

*'Tis then and when the fruit is ripe
That I am filled with pleasure,
Who has not gasped with sheer delight.
When tasting natures treasures?

P. Peters
*This Land of Ours 1972

TWO GARDENS

I took a walk, one summer day,
I passed a garden on my way,
I stood and gazed as others may,
Lo, there the hand of someone spent
days of toil,
To plant those seeds among the soil.

But now the flowers are blooming there,
Their sweet perfume filled the air,
Roses trellised, of every hue,
Still damp and fresh from the morning dew.

Pansies grew in their corner small,
Hollyhocks tall, stood by the wall,
Larkspur and snapdragon nodded
to passers by,
Flowers of many colors caught my eye.

God bless the gardener I whispered low,
The land he tilled and the seeds did sow,
In Heaven he'll find a garden fair,
Which young and old will surely share.

E. Ruth Faust

Arbor Day

DIANE BEAVEN

Other Holidays Repose Upon the Past — Arbor Day Proposes for the Future

These words are inscribed on a monument erected to the memory of Julius Sterling Morton, who conceived the idea for Arbor Day. Mr. Morton was then a member of the State Board of Agriculture, and later United States Secretary of Agriculture. At a meeting of the State Board of Agriculture held in Lincoln, Nebraska, January 4, 1872, he introduced a resolution providing for a day to be especially set apart and consecrated to tree planting. The resolution was adopted and more than a million trees were planted on Nebraska's first Arbor Day.

Gradually his plan for a special day devoted to tree planting spread throughout North America. In Canada no specific day has been designated for this event, although a number of provinces hold it in conjunction with National Forest Week (second week in May). National Forest Week is sponsored nationally by the Canadian Forestry Association and provincially by its member associations, of which the Manitoba Forestry Association Incorporated is one. Most of our associations, in the past few years, have placed particular emphasis on Arbor Day and arranged numerous and varied projects in observance of the day. Particularly in Western Canada, where there is much treeless prairie, this beautiful and useful custom of planting trees arouses a great deal of interest.

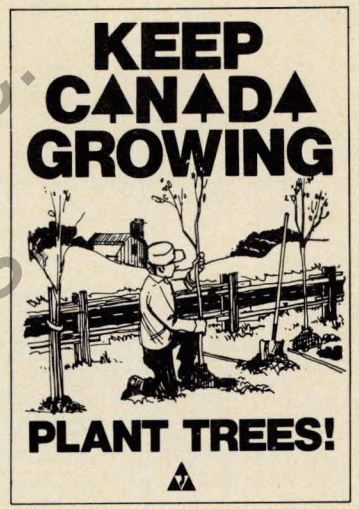
Arbor Day provides an opportunity for events involving families, schools or whole communities, and the purpose of any program planned for this day, of course, is to stimulate interest in tree planting. Planting trees is a meaningful activity which can be used to emphasize the importance of conservation and the significance of trees and forests to the Canadian way of life. It is a practical way to demonstrate faith in the future and is an unselfish act which will benefit others.

Planning an Arbor Day Program

Planning for an Arbor Day program should start well in advance. When the plan is formulated, a schedule for carrying it out should be set up. Good preparation is essential for a successful program and it is particularly important to involve as many people as possible. In organizing such a program, several points should be considered.

1. What the program is meant to accomplish and for whom;
2. Where and when it will be held (take into account local weather conditions, etc);
3. Who will take part and in what way;
4. What individuals or committees will look after the different details of the Arbor Day program and related events;
5. Where will the trees be obtained (the Tree Nursery, P.F.R.A. at Indian Head, Saskatchewan will provide planting stock free of charge, shipping costs extra, in specific cases), who will arrange for securing the trees, how will they be looked after before planting, who will look after the tools and the actual planting, who will care for the trees following the planting (for best results trees should be carefully chosen according to soil and site conditions);
6. How can you involve others in your plan;
7. How can you receive the best publicity from the news media and thereby assure additional interest?

Arbor Day comes from the botanical word "arbor" meaning tree, but the idea goes beyond the mere planting of trees. An essential part of the program is the continued care of those trees by individuals, schools or youth organizations. Familiarity with trees breeds respect, and assisting and observing their growth provide the opportunity for continuing involvement.



Benefits of Trees

In addition to providing over 5,000 articles used in our daily lives, trees also serve man in numerous other ways. On the farm, as shelterbelts and field shelters, they conserve moisture and help prevent wind and water erosion, thereby making possible more successful crops, and assuring at least some crop return even in the worst years of drought and wind. They offer protection to farm gardens, and beautify farm homes. Trees regulate stream flow, and prevent the rapid melting and run-off of snow in the spring which could result in severe flooding. Roadside tree plantings help to keep roadways clear of snow in winter. Forest areas offer rest and relaxation to thousands of Canadians each year.

In the city trees provide protection from sun, wind and noise and are used extensively to add beauty and comfort to homes and commercial buildings, often increasing the building's value on the real estate market. Green areas throughout our

cities are for the enjoyment of all citizens, but perhaps offer the greatest benefits to those who are not able to spend time in the country.

By realizing the many varied and essential uses of trees, we make the act of planting one on Arbor Day even more significant.

To Publicize Arbor Day

Other projects can be effective in focusing public attention on the importance of Arbor Day. These might include library displays of tree books; tours of tree nurseries, parks, arboretums, forests and wood-using plants; art projects; collections of woods; development of a tree nursery; preparation of poems, songs and essays on trees; building of tree models and displays; encouraging others to support tree planting; surveying trees of your area for species, condition, etc.; making a tree planting plan for your yard, school, street or park.

Those who keep Arbor Day year after year, and in particular the girls and boys who have planted small saplings and watched them grow inch by inch, know the real value of a tree. Arbor Day stands for the preservation of our forests all across the country.

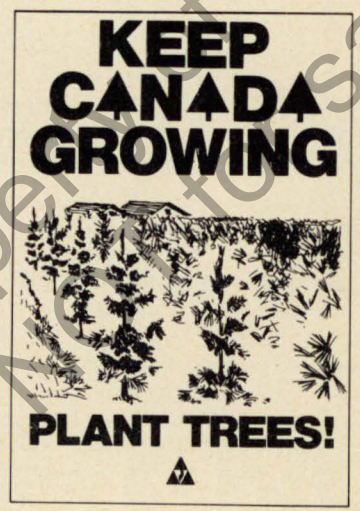
The M.F.A.

The Manitoba Forestry Association, a non-profit, public service organization, is devoted (as are its sister associations across Canada) to the protection and wise use of all natural renewable resources, and the encouraging of tree planting for shelterbelts and home beautification. The MFA, therefore, is actively involved in promoting the objectives of "Arbor Day", not only on this special date each year, but throughout the entire year. In addition to voluntary grants and donations on which it operates, it receives co-operation and help from numerous groups and individuals in carrying on special features such as Arbor Day.

Perhaps the real meaning and significance of Arbor Day is summarized in the following poem:

We reverence these famous trees,
What better monuments than these
How fitting on each Arbor Day
That we a grateful tribute pay
To poet, statesman, author, friend;
To one whose deeds our hearts
commend,
As lovingly we plant a tree
Held sacred to his memory;
A fresh memorial, as each year
New life and buds and leaves
appear —
A living monumental tree,
True type of immortality!

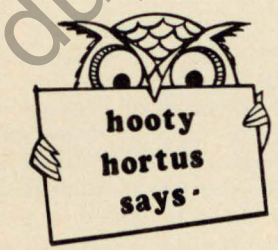
— Author Unknown —



REFERENCE TABLE

Fall and Winter Storage

Vegetable	Temperature	Relative Humidity	Average Storage Period
Pumpkin	50-55° F.	70-75%	3-6 months
Squash	50-55° F.	70-75%	3-6 months
Vegetable marrow	50-55° F.	70-75%	3-6 months
Beets	32° F.	90-95%	1-3 months
Cabbage	32° F.	90-95%	3-4 months
Carrots	32° F.	90-95%	4-5 months
Celery	32° F.	90-95%	2-4 months
Parsnips	32° F.	90-95%	2-4 months
Potatoes	38-40° F.	85-90%	5-8 months
Turnips (Rutabaga)	32° F.	90-95%	4-5 months
Dried Beans	32-50° F.	50-65%	indefinitely
Dried Peas	32-50° F.	50-65%	indefinitely
Onions, Onion Sets	32° F.	70-75%	6-7 months



Potato Seed Piece Treatments

There are several diseases of potatoes spread through the use of disease infected seed tubers. These diseases include Bacterial ring rot, potato virus diseases, and Fusarium dry rot. The first two can be controlled by using certified disease-free potato tubers. Fusarium dry rot and seed piece decay can be controlled by using a fungicide recommended for potato seed piece treatments. Recommended fungicides include Captan 50% or 75% WP, Polyram 7D, Dithane M-45 (8D), Manzate 200(8D), Captan 5 or 7.5 D and a newly released fungicide NF44. The directions for usage are on the product label. To avoid all of these disease problems, growers should use certified seed potatoes.

The Manitoba Conservation Training Area

ALAN BEAVEN

During 1975 nearly 10,000 Manitoba students spent a day at the Manitoba Forestry Association's Conservation Training Area. They learned how a forest lives and grows and the part it plays in the natural environment. This outdoor classroom is located sixty miles east of Winnipeg on the Trans-Canada Highway near the town of Hadashville. The Training Area includes over 300 acres of mixed forest along the banks of the scenic Whitemouth River.

The Manitoba government set aside this land in 1957 for the Manitoba Forestry Association to carry out youth training in forest conservation. The Training Area program was designed to give young people the actual experience of "learning by doing" for, as Jean Agassiz said, "If you study nature only from books when you go outside you cannot find her". Under the guidance of experienced instructors the students are taken into an actual forest setting where they explore and learn the secrets of trees and how they grow, an experience they will remember and appreciate for the rest of their lives.

The location of the Training Area is an excellent one from both a learning and teaching standpoint. It provides a complete cross-section of the forest environment of south-eastern Manitoba. From jack pine ridges to black spruce swamps, the students learn how varied and complex are Manitoba's forests.

During their day at the Training Area, the students are given four main lessons: "how a tree grows", "tree identification", "forest fire detection and suppression", and "forest ecology". The tree identification and forest ecology lessons take place as the students wind their way along one of the several nature trails at the Area. One of the trails includes a 116 foot suspension bridge across the Whitemouth River. This bridge was built in 1963 by the Sixth Field Engineer Regiment R.C.E. from Pine Falls and is an interesting and useful addition to this school. The forest fire lesson is held in a twenty foot model tower that contains exactly the same equipment as is found in a standard government steel lookout tower. During the fire control period the students are allowed to use available fire control equipment so as to better understand its operation. The tree growth lesson is held among the trees

and includes telling the age by using an increment borer. During adverse weather a large auditorium with a seating capacity of 140 is available.

After their lessons, the students have an opportunity to visit the natural history museum on the grounds. The museum contains many displays of the flora and fauna of the surrounding area. From the museum the students end their visit to the Conservation Area by planting a tiny spruce tree in a suitable container to take home. Courtesy of the Pineland Forest Nursery, these tiny trees are a living and growing reminder of a day at this "school in the trees".

Many school teachers have made the lessons at the Conservation Area a regular part of their school program and they return year after year. The Manitoba Forestry Association also provides teachers with extra information so they can prepare their students for the trip to the Area and then continue with follow-up work. It is very important for young people to have a knowledge and understanding of the outdoors, so they may more fully appreciate and enjoy their natural heritage and realize their personal responsibility in its wise use and protection.

The newest addition to the Conservation Training Area is the famous Tree Planting Car. This railway car was donated to the Area in 1974 by the Canadian Pacific Railway. From 1919

Students cross the Whitemouth River on one of the few suspension bridges in Manitoba. This forms an exciting part of their visit to the Conservation Area.

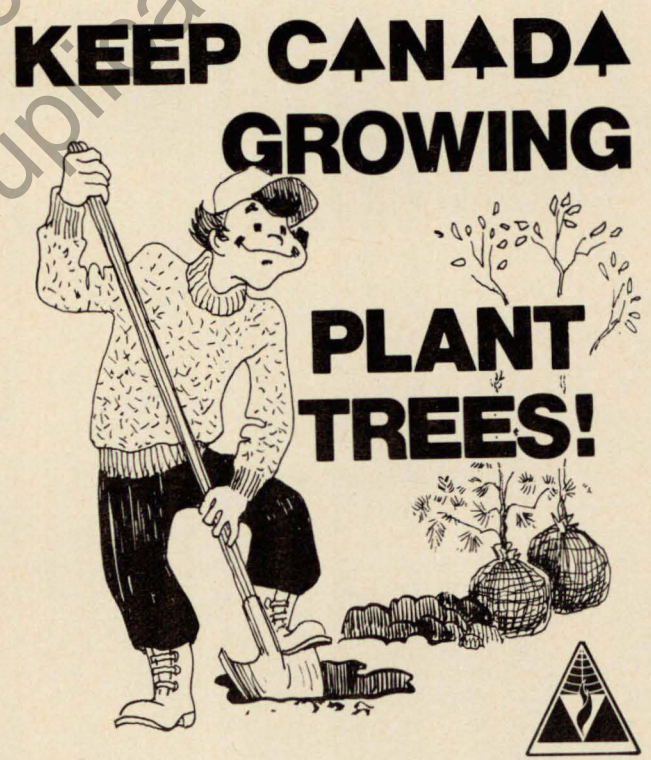
Before leaving for home each visitor to the Area receives a tiny spruce tree seedling to plant in a cardboard container and take home as a living and growing reminder of a day in the forest.

to 1973 the Tree Planting Car provided an annual service to the rural areas of the prairie provinces in the promotion of tree planting. After 55 consecutive years of service, 263,000 miles of rail travel and attendance by over a million and a half people, the Car has been retired to the Area and now serves as a stationary theatre and lecture hall for conservation programs.

Guided tours are held at the Training Area during July and August. These tours are designed to create an awareness of our dependence on our forest resources and their contribution to our enjoyment and welfare. Special tours for organized groups are often arranged throughout the year with reservations being made through the Association's office. Besides the regular facilities, visitors

have a chance to become amateur foresters in the Tree Identification Building.

Since the Conservation Training Area was established in 1957, over 100,000 students from Winnipeg and surrounding rural communities have enjoyed a day in this "outdoor classroom". The Training Area is just one of the educational programs carried out by the Manitoba Forestry Association. The Association is a non-profit, public service organization financed entirely by voluntary grants and donations. The main objective of the programs carried on by the Association is to secure greater public co-operation in the wise use and protection of our renewable natural resources.



Suggested Seeding Dates for Vegetables

JOHN WALKER

The information which follows represents an attempt to summarize some of the contents of Manitoba Department of Agriculture Publication No. 341: "Recommended List of Vegetables for Manitoba". Publications containing similar information are no doubt available from the same departments in Saskatchewan and Alberta.

Chief concern at this time is to deal with dates for sowing vegetable seeds, but in Publication 341 there are 14 "Hints for Starting Vegetable Transplants Indoors for Early Production", ALL IMPORTANT FOR SUCCESSFUL RESULTS. Other sources of information have been used.

A — Vegetable seeds which are recommended to be sown early INDOORS are:
March 1 — Spanish onions.
March 15 - 20 — celery, egg plant, pepper.
April 5 - 10 — broccoli, early cabbage, early cauliflower, head lettuce, parsley, tomato.

B — Soil conditions will influence how early vegetable seeds may be sown OUTDOORS:
May 1 - 5 — beet (early use), carrot (early use), leaf lettuce, onion (multiplier, seed, sets), parsnip (sow some radish seed in the same row), peas, radish, spinach, turnip (early use).
May 10 - 15 — broad bean, potato, sweet corn, swiss chard
May 25 - 30 — cucumber, kidney (bush) bean, runner bean, muskmelon, pumpkin, squash, vegetable marrow, watermelon.
June 1 - 5 — beet, carrot, rutabaga (all for winter storage).

Remember:

Most vegetables succeed in full sun and wrinkled peas may rot if sown in soil that is very wet and cold.

Seeds of beet, carrot, celery, parsnip, spinach may be slow to germinate.

Do not expose celery transplants to near freezing temperatures, otherwise seed stalks may develop prematurely.

Transplants of broccoli, cabbage, cauliflower, celery, onion which have been "hardened off" may with safety be planted outdoors around mid-May.

Unless hot caps or plastic tunnels are used, transplants of egg plant, pepper, tomato, AS A RULE, should not be planted in the garden until the first week of June.

A GARDENING MORAL

I had a little spot of ground
Where blade nor blossom grew
Though the bright sunshine all around
Life giving radiance threw
I mourned to see a spot so bare
Of leaves of healthful green
And thought of bowers and blossoms fair
I frequently had seen.

Some seeds of various kinds lay by,
I knew not what they were
But rudely turning o'er the soil
I strewed them thickly there
And day by day I watched them spring
From out the fertile earth
And hoped for many a loving thing
Of beauty and of worth.

But as I marked their leaves unfold
As weeds before my view
And saw how stubbornly and bold
The thorns and nettles grew,
I sighed to think that I had done
Unwittingly a thing
That where a beauteous bower should thrive
But worthless weeds did spring.

And thus I mused the things we do
With little heed or ken
May prove of worthless growth and strew
With thorns the paths of men.
For little deeds, like little seeds
May flowers prove or noxious weeds.

Useful Wild Plants of Manitoba

URSULA MUELLER and ROBERT WALKER

Knowing something about a plant — "Can I eat it? Did the pioneers or Indians use it for something?" — opens up a whole new world when you are walking through the woods and meadows. Knowing which wild plants are useful creates a feeling of personal acquaintance with wild flora. There are many tasty tidbits to be had free while hiking or strolling, simply by keeping your eyes open.

Original Inhabitants

The original inhabitants of this area, the Crees, Ojibways and Assiniboines, enjoyed the smell and taste of a wild mint leaf casually picked while strolling by a marsh, as much as we do today. But to the North American natives of a few hundred years ago wild plants were more than just a tasty snack, they often meant the difference between life and death. The hunt sometimes failed and then empty bellies were appeased with roots and herbs. Many herbs and fruits were used as flavoring for stews, to appease the desire for sweets, as a source of necessary vitamins, and as an ingredient in healthful beverages. Wild plants were used for many other purposes as well, such as medicines, tools, adornments, and shelter.

Before Europeans arrived the Indian people had inhabited this continent for at least 15,000 years and probably much longer. Over these thousands of years, through necessity and curiosity, a great knowlege of the native plants developed and was passed from generation to generation. In all of North America, north of Mexico, native people are known to have utilized 1,112 species of plants as food! Of these, at least 19 were cultivated. The Indians of the Great Lakes region utilized an estimated 275 species of plants for medicine, 130 for food and 27 for smoking.

White Man's Introductions

When white man settled this continent he introduced new "weed" plants from Europe as well as domestic grains, fruits and vegetables. To the pioneers, however, these weren't always weeds — the dandelion for instance was once cultivated. Settlers utilized the wild flora much more than we do today, simply because they didn't have a supermarket full of

exotic fruits and vegetables around the corner. What they could not grow, they harvested free from nature. Perhaps the Indians and pioneers appreciated nature more than we ever can today, because they were more directly dependent upon it.

As for myself, I have had neither the time, hunger, or ailments to try every useful plant of this area personally. However, those that I have tried have been recommended by reputable sources. I hope they may prove to be valuable, or at least interesting!

The Few Poisonous Plants

First a word about the few poisonous plants that grow in Manitoba. These are so few in number it is probably easiest to learn them, and than assume that everything else, if not tasty, will at least not harm you. Some of the deadly poisonous plants grow in marshes and are seldom encountered by people, other than the most enthusiastic outdoors' men and women.

THE SPOTTED WATER HEMLOCK **(Cicuta maculata)** looks like a white-flowered dill plant growing up to six feet high. Its stems and roots contain cicutoxin, one of the most violent natural poisons known to man.

Another species is the BULB-BEARING WATER HEMLOCK **(Cicuta bulbifera),** also of wet places. It has tiny, fleshy bulbs distributed on leaf stalks which fall off and become new plants. It should also be avoided. The harmless Water Parsnip **(Sium suave)** is similar to the above two species. Therefore, it is obvious that all these marsh-dwelling members of the carrot family should be avoided.

Mushrooms

The mushrooms are another problem area. One cannot assume that unknown species are good to eat. The AMANITAS are the most important of the deadly mushrooms. They usually grow in woods and are characterized by a white spore deposit, a ring or annulus on the stem and a cup or volva at the base. The most common Amanita is the deadly poisonous FLY AGARIC **(Amanita muscaria).** Its spotted, orange cap is easily recognized. However, there are other very deadly Amanitas, such as the pale DESTROYING ANGEL **(Amanita verna)** which are neither orange, nor spotted. Remember to look for the annulus on the stem and the cup-like volva in the soil or humus at the base of the stalk. Every mushroom collector should know what an Amanita looks like.

Fortunately, there are several distinctive types of fungi which are good to eat and cannot be confused with the Amanitas.

The many BOLETUS mushrooms have the typical mushroom shape, but under the cap have pores in a meaty flesh rather than thin gills. A few are poisonous, but these have red undersides (pore mouths) and the flesh turns blue-green when broken. The EDIBLE BOLETUS **(Boletus edulis)** is very highly regarded but is very difficult to find without insect larvae in the spore tubes. This part of the plant can be cut away before cooking. It can be sliced and dried and retains its rich, nutty flavor when used in gravies and stews.

The COPRINUS mushrooms, commonly called Inky Caps, have gills, but the cap is distinctively elongated, later splitting and becoming conical. When older, the edge of the gills dissolves into an inky, black fluid. The SHAGGY MANE **(Coprinus comatus)** commonly grows on lawns or on edges of gravel roads. Despite their

"icky" appearance when mature, the fresh firm specimens are delicious fried in butter with salt and pepper and served on toast.

The MORELS have no gills, but can be recognized by the conical cap, which is deeply pitted. A favorite in May and June, they are usually found growing in open woods. True morels such as the common BLACK MOREL **(Morchella angusticeps)** should not be confused with the poisonous FALSE OR BEEKSTEAK MOREL **(Helvella esculenta)** which has an irregularly shaped wrinkled top which looks like brain tissue.

Puffballs Are Delicious

The common Puffballs are probably the safest group of fungi to eat as none are poisonous and all have a very distinctive form. When cut in half the flesh is white and homogenous, rather like a marshmallow. An immature Anamita may look like a Puffball, but it has the characteristic mushroom form inside the unopened volva. In the interior of a Puffball the spongy flesh breaks down into dry spores which escape through a hole in the top. Needless to say, you must collect them for eating before they reach this stage. Puffballs are common in meadows and pastures and while white and firm, they are delicious fried or used in soups. The Indians used the dried, immature Puffballs as gauze on wounds and the dry spores as a coagulent to stop bleeding. Sometimes, while searching for mushrooms you may encounter the strange and beautiful EARTHSTAR **(Geastrum saccatum),** the most unusual of all the Puffballs with five large membranous points projecting out from the base. It can be used as a dried decoration in the home and an interesting conversation piece.

Poisonous Wild Berries

Berries are probably the best known and favorite wild food of everyone. However, there is at least one poisonous kind, the BANEBERRY **(Actaea rubra).** Also known as Doll's Eyes, this herbaceous plant has shiny bright red or pure white berries on a spike above the divided leaves. Many other berries are bitter or bad-tasing; therefore they are considered inedible but are not really harmful if consumed.

Poison Ivy

The ill-reputed Poison Ivy **(Rhus radicans)** is very plentiful on the slopes of the Manitoba escarpment and along river valleys. The sap can cause skin irritation in the form of painfully itchy blisters in susceptible people. On some, sensitivity is acquired by repeated exposure, others are immune. Certain people are even affected by the vapourized oils from this plant. Jewelweed juice and commercial salves may provide some relief, but prevention is better than cure, so learn to recognize the three notched leaflets both in summer, and in autumn when it is brilliant orange or red.

Here in Manitoba you cannot walk in a straight line for very long without entering a different plant community from the one in which you started. This is particularly true of the unique Western Highlands of Manitoba, where the three great life zones of North America — grasslands, coniferous forest, and hardwood forest — meet. One way of studying plants is according to the type of community in which they live. But like everything else in nature, there are always exceptions to the rule and you find things growing where you don't expect them. Nevertheless, most plants grow

under certain conditions and in association with certain other interdependent species of living things.

NOW, SOME USEFUL WILD PLANTS OF THE DECIDUOUS WOODS!

Speckled Alder (Alnus rugosa). A bright orange or red-brown dye can be obtained from the inner bark.

Mountain-Ash (Sorbus decora). A delicious jelly can be made from the red berries, which are a favorite of migratory and winter birds. The fruit is considered unpleasant in the raw state by some people.

Choke Cherry (Prunus virginiana). The black astringent berries make a delicious jelly, especially combined with wild plums or apples and also an excellent wine. The inner bark can be used as a cure for diarrhea which may be caused by the eating of berries of the same plant. The leaves and fruit pits contain HCN, hydrocyanic acid, and can be deadly when consumed in quantity.

High-bush Cranberry (Viburum trilobum). The sour red berries are best as jelly or used in baking with plenty of sugar. The bark was used for cramps, convulsions, and spasms.

Wild Plum (Prunus nigra). The slight bitterness in the skin can be eliminated by soaking the plums in hot water and baking soda. These are excellent raw, as a jam, or a plum cake.

Hop (Humulus lupulus). The dry fruit is a basic ingredient in beer and ale. Young shoots can be boiled as a potherb. In autumn the dried fruit gives off a delicious tangy odor when crushed in the fingers.

Ostrich Fern (Matteuccia struthiopteris). The fiddleheads (young curled leaves), cleaned of their wool and leaves, makes a wonderful salad or they can be soaked as greens.

White or Paper Birch (Betula papyrifera). The bark was fashioned into baskets and cooking vessels in which hot rocks were dropped to boil food. The sap, with much boiling makes a sweet syrup.

Manitoba Maple (Acer negundo). In the spring, the Maple's rising sap can be tapped and boiled down into a syrup or sugar.

Trembling Aspen (Populus tremuloides). The fluffy seeds can be used for wound padding, and for stuffing toys, pillows, and other articles. The bark was used as a quinine substitute, for fevers and as a tonic.

Balsam Poplar (Populus balsamifera). The yellow sticky balsam on the buds is used in wounds as a local anaesthetic and antiseptic. It really works!

Rose (Rosa sp.). The rose hips (the red fruits) are exceedingly high in Vitamin C. They are better after the first frost, and good throughout winter. To make jelly, boil hips in water, mash through a sieve, mix with an equal amount of sugar, and boil until they jell.

There are many uses for rose petals including: imaginative cooking, as a jam or candied confection, in the making of distilled rose water which may be used as a lotion for sore eyes or throat, in cosmetics, in syrups and a thousand and one other healthful and delicious uses.

Violet (Viola sp.). These familiar spring flowers are extremely rich in Vitamins C and A. The flowers can be candied by brushing in egg whites, sprinkling with granulated sugar, and allowing the blossoms to dry. This is a vitamin pill with a difference. Historically, the violet has long been known to be healthful, and other pleasant ways have been devised for taking it,

such as in jelly, syrup, or salad. The new leaves can be cooked like spinach. Both blossoms and leaves have mild laxative properties.

HELPFUL PLANTS
OF THE SPRUCE AND
PINE FORESTS

Bearberry (Arctostaphylos uva-ursi). The leaves were smoked by Indians in their "kinnikinnik". In Russia the dried leaves are used as a tea. The dry, mealy red berry is valuable as an emergency food.

Bunchberry (Cornus canadensis). The plant was used as a tonic. The ripe red berries make a dye.

Blueberry (Vaccinium sp.). This famous berry, which is delicious raw, preserved or in baking, can also make a purple dye.

Balsam Fir (Abies balsamea). The branches make a fragrant bedding, the leaves a spicy tea. The sticky resin has antiseptic qualities and is extremely flammable and can be used as fire-starter.

White Spruce (Picea glauca). The springy branches are commonly used as wilderness bedding and roofing for lean-tos. Young tender buds are edible. The resin is also antiseptic. The inner bark (cambium) of spruce, pine and fir can be used fresh or dried, as an emergency food. The smaller roots may be dug up and used as pliable ropes.

MEANWHILE — DOWN
IN THE SPRUCE BOG

Labrador Tea (Ledum groenlandicum). A fragrant and stimulating tea is brewed from the dried leaves of the appropriately named Labrador Tea. The Indians used this tea to cure various ailments and it is believed to contain a medicinal compound.

Peat or Sphagnum Moss (Sphagum sp.). The acid qualities of this most important bog moss discourages infection, so it can be used as first-aid padding on wounds. The dried moss is said to absorb twenty times its weight in water. It was also widely used as "diapers" for Indian babies, and "sanitary uses" for the women, as it is absorbent and prevented rash. It also makes a warm soft foot padding for tired blistered feet.

PRAIRIES HAVE MANY
VALUABLE PLANTS

Wild Bergamot (Monarda fistulosa). The dried fragrant leaves of this mint make a pleasant tea, and are good in poultry dressing. These contain "thymol", which when boiled and applied to the skin, helps acne and other minor skin infections.

Giant-Hyssop (Agastache anethiodora). The fragrant leaves of this mint can be used as tea or flavouring in cooking. The occasional plant will taste like licorice!

Wild Licorice (Glycyrrhiza lepidota). The roots are chewed like a natural candy and are good for the throat and for aching teeth.

Locoweed (Oxytropis sp.). Although this plant is infamous for poisoning livestock, the Indians used the boiled roots to relieve toothache and the leaves for a sore throat.

Seneca Snakeroot (Polygala senega). The bitter roots are used as a flavouring and fixing agent in medicines. One ounce of the dried root in boiling water is good for a sore throat. Caution must be exercised, though, as an overdose is poisonous.

Hoary Puccoon (Lithospermum canescens). A yellow dye can be obtained from the flowers and a violet dye from the roots. The Indian women consumed the plant to prevent pregnancy and apparently it does contain a natural hormone.

Yarrow or Milfoil (Achillea lanulosa). The fresh crushed leaves, applied to a wound, will stop bleeding and relieve pain somewhat. The bitter tea is improved with honey and a drop of Tabasco sauce. This is a laxative which is reported to relieve headache, stomach troubles, and other mild illnesses.

EXPLORE A MARSH OR SWAMP
FOR USEFUL WILD PLANTS

Cattail (Typha latifolia). The base and immature inside leaves can be eaten raw, tastes rather like cucumber, or can be boiled or roasted. The rootstalks are very starchy, and after peeling are good boiled or roasted; they can also be dried and pounded into flour. Before the pollen is released, the green flower heads can be nibbled raw or boiled in salted water, the male flowers being especially rich and tasting rather like corn-on-the-cob. Later the masses of yellow pollen can be gathered and added to flour, for color and nutrients. The leaves, gathered in mid-summer and dried, were later soaked and used for weaving seats for pioneer furniture, and baskets, mats, and rugs by the Indians. Cattail down was used for stuffing bed quilts, life preservers, and also made an absorbent diaper or bandage.

Marsh Marigold (Caltha palustris). Uncooked, this plant contains the poison "glucoside". However, it can be cooked by adding boiling water to the greens, returning to a boil, and draining. Repeat this two or three times. The unopened flower buds can be treated the same way and then pickled. This plant contains vitamin A and C and can be used as treatment for anemia.

Jewelweed or Touch-me-not (Impatiens capensis). The juicy crushed foliage of this plant applied to skin after contact with poison ivy is supposed to prevent the itchy blistering. It is also reported to relieve insect bites, rashes, eczema and athlete's foot.

Arrow-leaved Colt's-foot (Petasites palmatus). The Indians carefully dried and burned the plant for the salt from the ashes. Used as cooked greens when young, it is also apparently quite palatable.

Willow (Salix sp.). The "sali" in "acetylsalicylic acid" comes from the latin name for this common shrub. This painkilling drug was originally isolated from the inner bark of willows. So the bitter inner bark can make you feel better if you have a headache or cold while tromping through the wilds.

MANY COMMON ROADSIDE
WEEDS ARE VERY USEFUL

Burdock (Arctium minus). The white pitch of the bloom stalk is good boiled in a change of water, with a pinch of soda. The roots of first year plants may be gathered in June and early July and boiled the same way.

Caraway (Carum carvi). This common plant of roadsides produces a delicious-tasting seed used in flavouring other foods.

Scentless Chamomile (Matricaria inodora). This weedy daisy is known for its healthful tea.

Dandelion (Taraxacum officiale). This introduced "weed" was once cultivated for its tender greens, which are high in vitamins C and A and protein. New young leaves are best in the spring or the new fall growth of unbloomed plants. Chilled and seasoned with salt, sugar, crumbled bacon, and a salad dressing, they rival

any domestic lettuce. Older leaves can be eaten curried, steamed or braised like spinach, with vinegar or a dash of lemon juice and tarragon.

The roots make a good coffee substitute when they are washed and peeled, dried thoroughly over low heat or in a 200° oven, and then ground. A purple dye can be obtained from the roots.

The blossoms can also be used to make a yellow dye, but very large quantities are needed. The best use of dandelion blossoms is probably in wine, and here's one recipe:

Dandelion Wine

1 gal dandelion flowers
1 gal boiling water
cover and let stand for three days, stirring twice a day. Remove the flowers and add, one at a time
3 oranges and 3 lemons, chopped
3 lbs sugar
1 oz yeast
Stir. Boil 30 minutes and let ferment three weeks. Bottle by stirring through a cheesecloth or filterpaper.

These are but a few of the useful wild plants of Manitoba. Many more are described in currently available books. Some of these are

BERGLUND, B. and C. E. BOLSBY *The Edible Wild*
1971 Pagurian Press Ltd. Toronto
$2.95 188 pp.

BROWN, A. *Old Man's Garden*
1970 Gray's Publishing Ltd. Vancouver
$5.50 168 pp.

CHASE, M. C. *Field Guide to Edible and Useful Wild Plants of North America.*
1965 Nature Study Aids, Red Wing, Minnesota 140 pp.

GIBBONS, E. *Stalking of the Healthful Herbs*
1966 David McKay Company, Inc. New York
$3.50 303 pp.

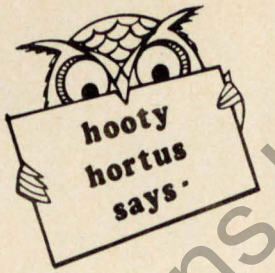
Stalking the Wild Asparagus
1962 David McKay Company Inc. New York
$3.50 303 pp.
Stalking Wild Foods on a Desert Isle
National Geographic, July 1972, P. 46 - 63

GRIEVE, Mrs. M. *A Modern Herbal*
1971, Dover Publications, Inc. New York (A-H)
$5.00 94 plates 427 pp.
A Modern Herbal
1971, Dover Publications, Inc. New York (I-Z)
$5.00 96 plates 461 pp.

GROVES, J. W. *Edible and Poisonous Mushrooms of Canada.*
1962 Research Branch Canada Department of Agriculture, Ottawa, Ontario Publication 1112, Queen's Printer
$7.75 410 plates 198 pp.

Mushroom Collecting for Beginners
June 1958 Publication 861 Queen's Printer 1965 Canada Department of Agriculture, Ottawa, Ontario
26 plates 30 pp.

LANGDON, E. *Pioneer Gardens at Black Creek Pioneer Village.*
1972 Holt, Rinehart and Winston of Canada, Ltd. Toronto, Montreal.
66 pp.



Spruce and Pine Needle Cast

This disease is caused by a number of different fungi attacking both spruce and pine. The trees most commonly infected are blue and white spruce as well as Scots and Mugho pine. Disease symptoms include irregular tan, yellow, red-orange, reddish brown or black spots, specks or bands on the needles. The needles later turn olive green, yellow, red or brown often from the tip downward. Affected needles commonly drop early. Twigs of infected trees appear stunted and may die back. The foliage on these trees appears sparse and often tufted. The lower branches are usually attacked first.

Needle cast organisms usually invade the trees following a period of stress conditions. Infected trees may appear after periods of drought, frost, cold winter winds and fluctuating soil water table.

Control of needle cast includes the following steps:

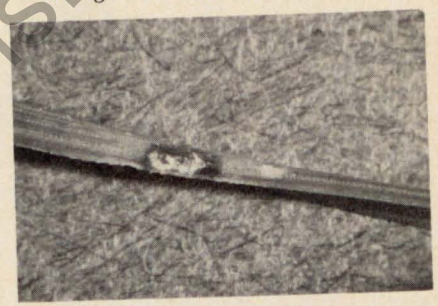
(a) Collect and burn fallen needles.

(b) Prune and burn dead twigs.

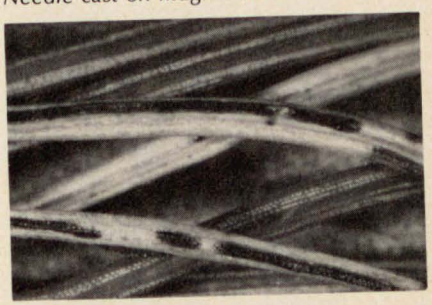
(c) Water thoroughly during dry, hot periods.

(d) Fertilize trees in fall or early spring to maintain vigour.

(e) Spray valuable ornamentals with Maneb. Young trees should be sprayed when their needles are half grown and again about two weeks later. Since this chemical does not readily adhere to the evergreen needles, use a commercial wetting agent or household detergent at the rate of 1 tsp/gal along with the chemical.



Needle cast on Mugho Pine.



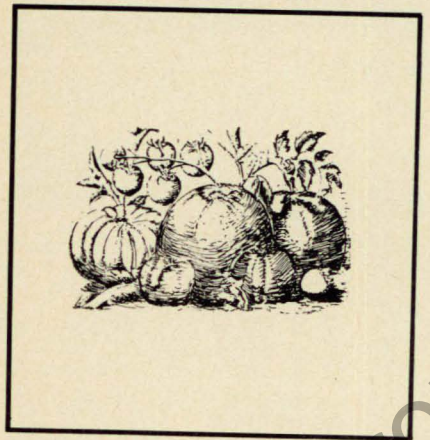
Needle cast on Spruce.

"The foolish man sees happiness in the distance; the wise man grows it under his feet".

—Openheim

Home Gardening
A NEW BEGINNING

Since the last great gardening flurry — The Victory Gardens of World War II — a whole generation of North Americans has grown up getting further and further from the soil. Rising food costs in 1974 turned an unexpected number of these families to raising at least some of their own food. Every indication is that the trend will continue to accelerate.



The seed catalogs will soon be in the mail and many old-time gardeners will place their orders early to avoid disappointment and delays at the critical planting time. While the oldtimer may not look as though he is using a plan, experience over the years has taught him what vegetables to plant, how many feet of row he will need for each, how much seed or how many transplants will be required, how much fertilizer is needed, and how much space to prepare and when to prepare it. It may be just a faded and battered piece of paper tacked to the garden shed wall, or it may be a detailed map in a file in the house. It may not show, and it may be subject to change, but a plan is there. This is the time to get started with your own plan.

To Make a Plan

To start, draw up a list of the vegetables that your family likes. Then decide whether you just want fresh vegetables for the table in season, or whether you want to produce enough to freeze or can.

If your garden plot is limited and you are interested in maximum quantity from your plot, you must forego vegetables that require much space, such as corn, pumpkins, and peas. Also omit vegetables that can be obtained economically from the grocery store in good quality, such as cooking onions, potatoes, or winter squash. The things to concentrate on are the high producers, and those whose quality deteriorates quickly in the market.

After considering your space requirements, the next thing to consider is the ease of culture. To help insure success, a beginner should adhere to the old KISS rule (Keep It Simple, Stupid). Ease of planting and germination are both directly related to the size of the seed. Corn, snap beans, chard, peas, and squash all have large seeds, while carrots have small seeds. Many plants can be obtained ready for transplanting, such as tomatoes, cabbage, broccoli and peppers.

Having decided which vegetables to grow, and what your row needs are to fill your produce demands, start drawing a scaled map of your garden area grouping all plants of similar size and growth pattern together. If the rows tend to run east and west, put the tall plants like corn and staked tomatoes on the north side to prevent shading of smaller plants. If the land slopes, run the rows along the contour to help hold the water after rains.

Planting Dates

In establishing planting dates for the rows on your plan, several things must be considered. First, when does a particular vegetable grow best. The accompanying table will help with this. The second thing to be considered is when you want to harvest the crop. Do you want a long extended harvest? Or do you want to concentrate the bulk of it to put in an intensive, but short effort at canning or freezing? Don't forget to consider when you will be away on vacation.

Some crops, such as corn, cabbages and peas, may have extended harvests by planting two or three varieties having different maturing times. For others, the season can be extended by using successive plantings at two or three week intervals, such as bush beans, lettuce and radishes. Many crops can have their season extended simply by judicious

harvesting. Chard, summer squash and broccoli, will produce just so long as they are prodded by continual harvest. Keeping young beans picked will extend their harvest time considerably as they continue to try to produce mature seeds. Beets and carrots may be picked as soon as they are large enough to eat, and will continue to grow if left. One reason tomatoes are such favorites is that they will continue producing until frost wipes them out in the fall.

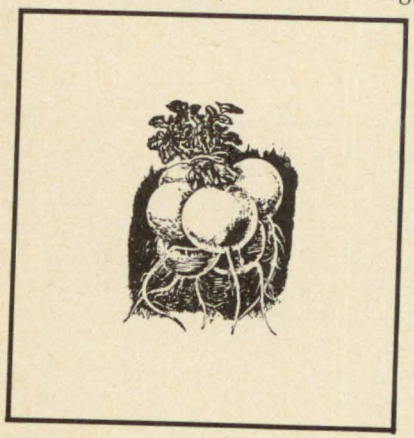
If space is a problem in planning planting dates, give special attention to reusing the space where you planted early crops like peas, lettuce, radishes or spinach for late season crops.

If your plans have not been limited by the space available for your garden, there is one universal piece of advice that you will probably get from experienced gardeners. Look your plan over carefully and then throw out about half of it. Anyone can plant a big garden in just a few hours.

However, to bring it to proper fruition, it will take many hours of labor.

Soil

The home owner may have little choice as to where he will plant his garden. It should have at least five or six hours of full sunlight, for shading will seriously affect the yields. Few vegetables can stand wet feet, so avoid areas where the puddles remain for several hours after a rain. Areas composed of fill may be difficult because the subsoil, mostly stones and debris, may contain little organic matter. But with proper conditioning,



through cultivation, the addition of organic matter, and the use of commercial fertilizers, even poor soil can be made to serve.

Vegetables are reasonably tolerant of soil acidity, but do best at pH levels between 6 and 6.8, which are only slightly acid. It would be wise to take a soil sample to the Provincial Soil Testing Laboratory, Department of Soil Science, University of Manitoba to have it checked, and if lime is required they can give you advice on how much to apply. To get a soil sample, plunge a trowel directly into the ground its full depth, and put the contents in a clean pail. Half a dozen such samples dug at random from different areas of the garden and thoroughly mixed will give an average of the whole garden.

Fertilizer

In the use of commercial fertilizer timing is also important. A good rule of thumb is about four or five pounds of a complete fertilizer, like 5-10-5 or 5-10-10, for each 100 square feet of garden. These figures apply to the proportion of available nitrogen, phosphoric acid, and potash, respectively. In loamy or clay soils, broadcast about half the fertilizer before plowing, either broadcasting the rest after plowing, or using it to sidedress the plants. Because sandy soil drains faster, fertilizer is leached out of it more quickly, therefore it is better to broadcast half the fertilizer after plowing, and sidedress the vegetables with the remainder during the season. The critical thing about sidedressing plants is that the young roots may be "burned" if the fertilizer is too close.

Farm manure, with the addition of 1 to 1½ pounds of superphosphate per bushel, will supply the basic elements your garden requires if applied at the rate of one bushel each 50-75 square feet. Sheep, goat and chicken manure are richer, and should not be used any more than one bushel for each 100 square feet. The big advantage of barn manure is that it furnishes organic matter.

Equipment

The equipment needed for the home garden is simple. A spading fork, hoe, rake, spade or round pointed shovel, some stakes for marking rows and some twine to help keep rows straight will take care of your basic needs. A good wheel hoe or cultivator will be a big help in a medium size garden, while in a larger one a small garden tractor will facilitate soil preparation and cultivation.

Preparation

Plowing may be done as soon as the soil is ready to work in the spring with harrowing or raking done shortly after to break up the clods before they have had time to dry excessively. There is a simple test to see if the soil is ready to work. Mold a handful of soil into a ball in your hand, and if it is not sticky, and if it crumbles easily when pressed with your thumb, it is ready to work. Working soil that is too wet, whether in the spring or later during the season, will lead to compaction, reducing its water holding capacity, drainage, and aeration, and making it harder for the roots to penetrate and grow.

Planting

When the ground is ready to plant, stake out all the rows according to the plans. Space between rows is determined by two things, first, the growing needs of the plants, and second the cultivation and harvest methods that you plan to use. Where space is no problem and you are using a small garden tractor, 3 and 6 foot spacing is convenient. If hand tools are used, much closer spacing will reduce the work of maintaining the garden during the summer.

Straight rows are not hard to make if you use a heavy cord between stakes at either end of the row. Walk backwards, stepping on the cord to keep it in place, and use it as a guide to make the furrow with your hoe. For small seed like carrots and lettuce, use the hoe handle to make the furrow.

The table with this article gives planting depths as guides. In heavy soils early in spring plant a little shallower, and after the soil warms up and dries out, the same seeds should be a little deeper to get better moisture. After planting, the soil should be firmed down along the row.

The table also tells about how far apart the plants should be. Plant seeds a little thicker than this and thin out plants if they come up too close together so they will not suffer from over competition.

As the weather turns hot and the ground dries, sometimes you may have trouble with second and third plantings. Watering the rows every evening helps. Better still, is covering the row with a board, paper or cardboard until the seeds start to germinate.

There are several vegetables that will do much better if you buy started plants in a flat, and transplant them. They usually come a dozen in a box, more than most home gardeners will need. Get together with one of your neighbors and split flats.

Transplanting

Transplanting is not hard, but there are several little tricks that will improve your success. An hour or so before you plan to start, water the flats so that they go into the shock of transplanting with plenty of water in their systems. Dig the holes deeper and larger than the dirt and root mass of the plant. Put in the plant, firm the soil around the roots, water with a transplant solution. Finish by leveling the hole so that soil is slightly above the original ground level on the stem. With tomatoes, particularly tall thin plants, plant them very deep. You can make your own transplanting solution by mixing one cup of 5-10-10, or simi-

lar complete fertilizer to twelve quarts of water.

Weeding

As I said earlier, anyone can plant a garden. Now we come to the work — that time when the weeds must be kept down so that the plants can grow. Don't let weeds get ahead of you. They compete directly with vegetables for moisture and nutrients. They harbor insects and disease. They will shade your plants and interfere with air circulation, slowing up evaporation and drying, which during wet periods can lead to increased infection from bacteria and fungi.

Weeds may be controlled by hand weeding, hoeing, cultivating, mulching, herbicides, or by any combination of these. Shallow cultivation of small weeds is just as effective as deep, and does less injury to the roots of the crops. In soil that is not too stony, a wheel hoe with weed knives is the most effective. From personal experience in gardening a rock pile, the only hoe to use is a pointed one.

The alternative to destroying weeds is to prevent them. In recent years black plastic has been used very effectively for this. Its use is simplest with transplants, for the plastic can be put down and the plants placed in the ground through holes cut in the plastic. To place the plastic, dig two furrows about 3-4 inches deep, throwing the soil to the side away from the plastic. The furrows should be just a little closer than the width of the plastic. Anchor the loose end of the roll in a cross-ditch, then unroll, covering the edges as you proceed .

Black plastic absorbs heat during the day faster than bare soil and may increase warm season crops. At night it also radiates heat faster than bare ground or organic mulch, and therefore, reduces frost liability.

Two words of caution, however: the ground should be well supplied with moisture before plastic is laid. Don't try to lay it on a windy day.

Mulches

Organic mulches such as sawdust, wood shavings, straw, old hay, grass and leaves have been used effectively for years to smother weeds, help retain moisture and prevent erosion. Because mulches help retain soil moisture and keep the soil temperature several degrees cooler, they are particularly good for cool season crops, and sandy soil.

Organic mulches are usually applied after the first cultivation, when the soil has warmed, and when the plants are 2 to 3 inches high. Straw mulch should be 3 to 6 inches thick, peat moss, grass clippings, composted leaves and sawdust, 1 to 2 inches thick. To avoid nitrogen deficiency when using sawdust, add ½ pound of ammonium nitrate to each bushel. Leaves collected in the fall make an excellent mulch when placed in flat-topped piles where they will become soaked with melting snow and spring rains.

Irrigation may help during periods when there have been no soaking rains for 10 to 14 days. However, unless adequate water is supplied, you may do more harm than good. To be effective, the water should penetrate a loam soil 5 to 6 inches, or a sandy soil, 10 to 12 inches. This operation requires about 65 gallons per 100 square feet, comparable to a one-inch rain. When using a sprinkler, you can place several straight sided cans in the area and sprinkle until you have an inch of water in them.

Weed and Insect Control

Chemical weed control plays an important part in commercial crop production, but because of the need to calculate exact dosages, the exact timing requirements and delicate crop tolerances, chemical weed control should be avoided by the beginning gardener.

Insect and disease control with chemical dusts or sprays is a must for certain common crops, particularly the cabbage and squash clans. Fortunately, dual purpose formulations are available as either dust or spray. Pesticides are poisons, so read the directions carefully and follow the instructions.

To be fully effective, chemicals must be distributed over all the surfaces of the plants. Spraying will do this better, but dusting is quicker and easier. Don't wait for the pests to appear. Keep ahead of them with a 7 to 10 day schedule. Because the winds are at a minimum, the best time to spray is early or late in the day.

Picking

One of the advantages of raising your own vegetables is that you can get top quality fresh ones. Top quality does not mean biggest; on the contrary, it usually means before they have reached full size. Harvest your summer squash while the skin is soft and tender, when they are only 8 or 9 inches long. Pick the snap beans before the beans begin to bulge and keep them picked at least every other day. Greens, whether chard, beets, turnips or mustard are best from young, fast growing leaves not yet fully grown. Keep the older greens picked, and left as mulch or thrown on the compost pile. Harvest your early cabbage just as soon as it is big enough, or shortly the heads will split. Start using your beets, carrots and green onions just as soon as they are big enough.

Some things, however, should go full term. Tomatoes are best if picked when ready for the table, though they may be picked green and held for ripening later. Winter squash should harden before harvest, and onion stems should dry and topple before they are brought in for the winter.

Fall Work

It is easy to quit after the harvest, but you have been taking nutrients from the soil all summer. If you want your garden to continue producing at a high level , you must give something back. Remove the unharvested residue which may be harboring insects and disease, placing it on the compost heap. Plant winter rye at the rate of about one pound for each 400 square feet of garden as a green manure cover crop to protect the soil from erosion and leaching during the winter, and to plow under next spring to return valuable organic matter to the soil. Winter rye can be interplanted between the crops like cabbage and kale which will go on into

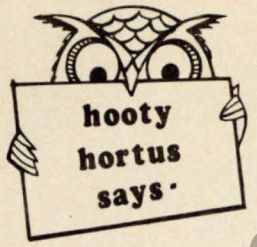
Indian summer. Ryegrass is also a good winter cover crop, but because it germinates slowly, it must be planted during August, where it will grow between the rows without interfering. It will start its serious growth during the cool weather after the crops are finished growing. Ryegrass has smaller seeds, so it is planted at the rate of ½ pound for each 1,000 square feet of garden.

These are only a few hints, but for more information about gardening, contact the Horticulture Section, Manitoba Department of Agriculture, Soils and Crops Branch, 908 Norquay Building, Winnipeg, Manitoba or the Publications Section, Manitoba Department of Agriculture, 411 York Avenue, Winnipeg, for publications, which are also obtainable from all "Ag. Rep." offices throughout Manitoba.

If you have always thought of Ag. Reps. as working just with the commercial farmers, you will be surprised the extent to which materials have been beamed toward the home gardener. Being locally involved, they can give you information as it applies to your community.

Courtesy: "Conservation Comment"
— Prov. of Manitoba

	Spacing in inches		Depth of seeds (in inches)
	Rows	Plants	
Beans — Snap, green	18-30	2-4	1½-2
Beans — Snap, yellow	18-30	2-4	1½-2
Beets	16-24	2-3	½
Broccoli	30-36	18-24	—
Cabbage	24-36	12-18	—
Carrots	16-24	1-3	½
Chard	18-24	4-8	½-¾
Corn — Sweet	30-36	10-12	1
Cucumbers	48-60	12-15	½-¾
Lettuce — Leaf	12-18	3-8	¼-½
Peas	8-30	1	½-1
Radishes	6-12	1	½
Squash — Summer	36-48	18-24	½
Squash — Winter	60-72	36-48	1
Tomatoes	24	18-24	—
	60-72	24-36	



Strawberry Soft Rot

Strawberries are very susceptible to fruit rot. This disease is severe in wet weather and can be recognized by small, tan or water soaked to dark brown, spongy, leathery or hard enlarging spots on ripening fruit. The rotted areas may be covered with white, blue-green, tan, gray or black mould. The fruit may collapse rapidly and the juice run out. Fruit resting on the soil or in dense plants is most commonly attacked. Flowers may blast and not set fruit.

Control of strawberry soft rot includes the following steps:

(1) Pick fruit frequently, and early in the day when possible.

(2) Handle fruit carefully.

(3) Cull out all diseased berries.

(4) Spray with Captan 50% E.C. 3 lbs or Benlate 50% WP 1 lb at 100 gal/acre at 100-200 lbs p.s.i. when berries are forming. Repeat in seven days or more often when weather is wet.

NB — *If Benlate is used for fruit rot control, alternate with Captan. Continued use of Benlate could result in a build up of Benlate resistant fungi.*

My Friendship Garden

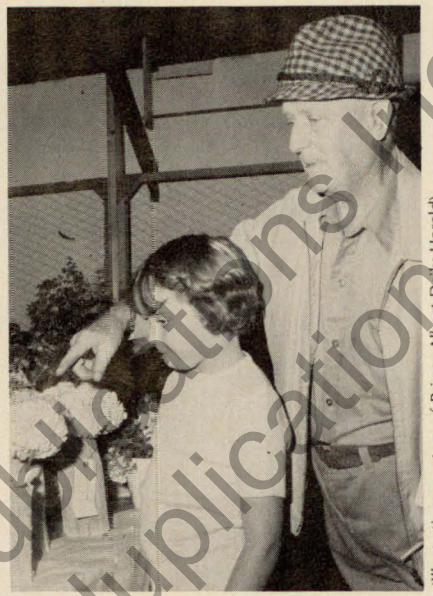
(MARJORIE HUGHES-CALEY)
Prince Albert, Saskatchewan

For garden lovers of any type one of the easiest ways of making new friends is to join the local Horticultural Society — or even to start one if a person has the necessary experience, and arrives in a district where there is no Society. Membership of such a group goes beyond the bounds of Church or Lodge and provides interest for the champion grower of sweet peas, dahlias or gladiolus varieties, as well as for the complete novice or the home-owner who wishes to make his or her vegetable gardening more exciting. Most things in my garden remind me of friends I have made since I struggled with knee-high Russian pig-weed and a score of other pests when we first arrived in Prince Albert.

My entire vegetable garden is dedicated to the memory of the old lady who told me about the local Horticultural Society and introduced me to the secretary and his wife. For a year or two before her death I was able to provide that old lady with fresh vegetables when she was forbidden to do any more gardening. She was very anxious for me to win the Amateur Vegetable trophy which she had presented in memory of her husband. With a long interval in between I managed to do this once before her death, and again in 1975.

Although vegetables are my first love because of the way they help with housekeeping, most of my friendship memories are centered around flowers. The pink honeysuckle and the golden broom (planta genista) which were early gifts of the horticultural members, have grown with the years and are always a joy in early spring. The red honeysuckle was purchased from another member of the Society who sold many of the plants he grew. A third variety grew from a small root that was thrown away when repairs were being made to our local cathedral; I call this one St. Alban.

Despite its poisonous nature, one small root of Monk's Hood has been divided to form four large clumps of rich purple flowers which contrast beautifully with the helianthus and blanket flowers given to me by other people. All my lilies, which are now numerous enough for me to share with others, were given to me by friends.



(Illustration courtesy of Prince Albert Daily Herald)

"The youngest trophy winner receives instruction from the oldest trophy winner at the Prince Albert Horticultural Show 1975."

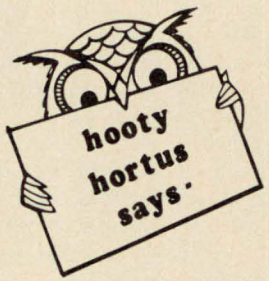
Even Mother Nature made her contribution to my Friendship Garden, for anemones, wild roses, wild asters and goldenrod grew in patches to remind me that only a few years ago this area was farm land.

As I walk in my Friendship Garden I am reminded that the time has come for me to share my wealth with newcomers starting gardens in recently developed areas, and to encourage people to become members of the Society that has brought me so much pleasure. I am also interested in young people who start growing for the first time. I was recently impressed by the joy of a boy from a single parent home who had won his first prize for vegetables in the Junior section of our show. At the Prince Albert Exhibition I saw that the prize gladiolus in the Youth section was grown by a girl whom I had held in my arms as a baby when her mother visited me. Centuries ago Sir Francis Bacon said in one of his essays: "A garden is a lovesome thing."

All honour be to those who pass on to others their love of growing things.

NOTE: Mrs. Hughes-Caley is now 76 and is still an active gardener. She takes much pleasure in encouraging and helping youngsters to love and care for their gardens. We wish her many more years of pleasurable gardening.

— Editor



When planning the arrangement of rows in the vegetable garden there is the optimum benefit from sunshine when rows "run" north to south.

Plan also to plant seeds of vegetables with small tops like radish, lettuce, carrots, in rows adjacent to each other, and seeds and/or plants of those with larger tops like beets, cabbage, parsnips, in rows adjacent to each other; rows are usually further apart than needed for the former group.

By adopting this plan vegetables with large tops will not shade those with small tops.

Broccoli Production in Alberta

R.M. TRIMMER

Introduction

Broccoli belongs to the Brassica group of vegetables which also includes cabbage, cauliflower, brussels sprouts, Kohlrabi and kale. The group probably originates from wild cabbage species that can be traced to the English Channel and Western European coast.

In Alberta production and use of this vegetable is increasing, both in home gardens and for commercial production. It is a popular item in market garden operations.

Broccoli is a cool season, hardy crop that will withstand cool weather and even light frosts. It is well adapted to Alberta's climate and is also suited to a wide range of soils.

Cultivars

Cultivars that have proved satisfactory in tests throughout Alberta are Improved Comet, Green Comet, Bravo, Crusador, Early Purple Head, and Waltham. These have been selected for characteristics of yield, quality and maturity. For home gardening most cultivars available locally are probably satisfactory. Harvester is a single stemmed cultivar requiring less space.

Soil Management

Broccoli does well on a wide range of fertile, well drained soils. Where there is a choice, a medium textured soil is preferable. Very sandy, very heavy clay, excessively wet and salty soils should be avoided.

It is essential to have a good supply of organic matter, which can be supplied by the addition of livestock manure or green manure. Crop rotations that include grass and legumes will aid greatly in maintaining organic matter, which breaks down rapidly under intensive cultivation.

In preparation for planting, fall cultivation of stubble or manured land is usually necessary. It is important to provide a firm, fine seed bed for seeding or transplanting.

Fertilization

The need for the application of commercial fertilizers should be determined by a soil test. Nitrogen and phosphorus are the nutrients most likely to be required. When soil nutrient levels are low, fertilizers are generally broadcast and worked into the soil during seed bed preparation. Additional nitrogen can be applied as a side dressing three to four weeks after emergence or transplanting. Transplants will also benefit from the use of a starter solution using a soluble, complete fertilizer such as 10-52-17.

Seeding and Planting

Broccoli can be grown either by the use of transplants or by direct seeding. Transplants will result in earlier produce. For home gardening, transplants will probably be preferred. For commercial production, both methods are used depending on market expectations, facilities for starting plants, labor and other management considerations.

Four to five ounces of seed will provide transplants for one acre. For direct seeding one half to two pounds will be required, depending on the seeding equipment used. Precision seeding will require the lesser amount.

Recommended spacings are rows 24 to 36 inches apart and plants 12 to 18 inches apart.

When growing transplants start four to five weeks prior to setting into the field. Germinate at 20 - 25°C. Prick out the seedlings into flats or peat pots when the first true leaves appear (7 to 10 days after seeding). For field setting the plants should be four to six inches high. "Damping off", a condition causing wilting and dying of emerging seedlings, can be avoided by pre-treating the growing media with one of the fungicides available for this purpose. Treatment is also possible after damping off begins to occur. **In all cases follow manufacturer's directions.**

The seedlings should be "hardened off" for at least a week prior to field setting. This lessens the shock associated with transferring the plants from the greenhouse or hotbeds to the less favourable field environment. Hardening off is accomplished by gradually exposing the plants to cooler conditions, increasing ventilation, and decreasing the amount of water applied. Any treatment that slows plant growth increases hardiness.

Some greenhouse and hotbed facilities will be required for producing plants, or they can be purchased from commercial greenhouses or nurseries. The latter may be preferable for the home gardener where only a few plants are required.

The seedlings are field set during the period May 1 to May 25, depending on conditions and locality. Mechanical transplanters are available for this operation and are essential for large scale plantings.

Direct seeding is practical for late summer crops, especially for commercial production. Seeding is usually done as soon as possible in spring, normally one to two weeks before transplantings are set out. This ranges from April 20 to the end of May, depending on locality.

Mechanical planters are desirable for larger plantings and, of these, "precision" seeders are much preferred. Precision seeders plant seed at the desired spacing, thus eliminating extensive thinning.

Seed should be placed in moist soil, at a depth of ¼ to ½ inches.

Cultivation

Cultivation need not be excessive. It should be required mainly to control weeds or to overcome severe crusting or packing that may be affecting plant growth due to poor tilth and soil aeration. Cultivation should be shallow to prevent side shoot damage.

Irrigation Broccoli requires about 16

to 20 inches of water during the growing season. Available moisture in the effective root zone, which is about a two foot depth, should be maintained at 50% to 65% available moisture throughout the growing season, with the larger amount after heads are formed. If irrigation facilities are available frequent light irrigations are desirable at any time, when required. During peak water use periods (June, July, and August) ¾ to ½ inches maybe required every seven to ten days, depending on rainfall. Just after setting transplants is also a critical period of moisture.

Chemical Weed Control

Broccoli belongs to the mustard family and weeds of the same family such as mustards, shepherds purse, stinkweed, rapeseed etc. may not be controlled by chemicals recommended.

Consult local authorities and Alberta publication 252/642 "Weed Controls in Cabbage and Cauliflower" for herbicides and rates to use.

Insects

Broccoli, as well as other cole crops, are commonly attacked by four types of insects, however the incidence of infestations of any one or all vary from year to year and district to district. In order of appearance these are root maggots, flea beetles, European cabbage worms and cabbage looper.

Insecticides are available for the control of these pests. Consult local authorities and Alberta publication 625 "Control of Garden Pests" for recommendations.

Harvesting and Storage

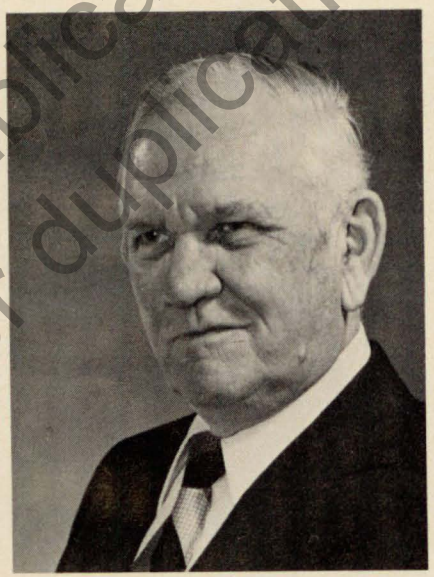
The edible portion of the plant is the inflorescence that develops as a head, composed of a cluster of green flower buds. At first this head is rather compact but spreads out later on. The cluster with six to eight inches of stem should be harvested before the flower buds open. After the central head is removed, lateral shoots develop in the leaf axils. These provide smaller heads that can be harvested to provide an additional supply for several weeks.

The broccoli heads continue to develop after harvest and the flowers begin to open and turn yellow. The product then becomes less usable and unsaleable. At room temperatures this occurs in about three days, therefore it is important that the harvested broccoli be kept refrigerated. For best results, the newly harvested heads should be hydrocooled to about 5°C and kept refrigerated until used or sold. Broccoli can be stored for up to one week with a temperature of 0 - 1°C and relative humidity of 95%.

There are no grade regulations for broccoli, however, growers should strive for top quality. The produce should be fresh, not wilted; firm, compact heads with no leaves growing up through the centers and no evidence of flowers beginning to open; outside leaves should be removed from the stem.

Gardening brings out almost as many people to their knees as religion — only the words they use are different.

Dr. W. A. Cumming



William Archibald Cumming of Morden was born in Teulon, Manitoba on March 18, 1911. He was the oldest son of Hugh Duncan Cumming, principal of the Teulon School from the time it was a one-room school until it became a 12-room consolidated school.

Bill's love for nature can be traced to the field trips taken with his father, who was a well known naturalist. Horticulture served as a means of expressing this deep interest with which he has been associated throughout his career.

Teulon was where Bill received his primary and high school education. Following his high school, he entered the University of Manitoba and graduated with a BSA (cum laude) in 1932.

From graduation in 1932 until 1936 Bill was associated with the Manitoba Department of Agriculture as apiary regulator. From 1936 to 1945 he was employed by the Canada Department of Agriculture in Pest Act Regulating Services, advancing from inspector to District Supervisor.

During 1945 Bill left the government service and became manager of Skinner's Nursery, Dropmore, Manitoba, where he remained until 1955. This experience gave him the opportunity to become thoroughly acquainted with the practical aspects of plant breeding. In 1955 he left Dropmore, transferring his interest and his abilities to the Morden Experimental Station, where he became plant breeder, ornamentals, and in 1966 was given the added responsibility of the research in the fruit section.

Bill Cumming is a highly productive

researcher who has made an outstanding contribution to the knowledge and development of hardy ornamentals. Among the many results of his research activities has been the combining of hardiness with other desirable characteristics in the release of new varieties. Since 1955, under his direction at Morden, 22 chrysanthemums, two asters, four roses, two philabelphus, two malus, one lilac and one weigela cultivars have been released. The results of his research have been published in a number of scientific papers and bulletins. He is a frequent contributor to meetings and organizations (provincial, national and international) associated with horticulture.

In addition to his numerous scientific publications, many articles of a general nature have been prepared for such publications as "The Prairie Garden", "Trees" magazine, "Research for Farmers", etc.

Seldom has one man been so widely acclaimed for distinguished achievements in the field of scientific horticulture. The Prairie Provinces and the bordering States have been, and will continue to be, enriched by Dr. Bill Cumming's contributions to the value of prairie life.

Dr. Cumming is a member of a large number of societies and contributes actively to their welfare. In recognition of his outstanding abilities to Canadian horticulture, the Prairie Nurserymen's Association bestowed honorary life membership on him in 1964. He is also a recipient of the Jackson-Dawson Medal of the Massachusetts Horticultural Society, he is also an honorary life member of the WCSH and the CSHS. In 1969 the CDA gave him the Canada Department of Agriculture Merit Award.

The University of Manitoba in 1971 honored him by conferring on him the Honorary Doctor of Science for his contribution to the development of this country and its people.

Dr. Cumming has won the deep respect of those professional men who possess a particular insight into the nature of his work. What should be noted too, is the satisfaction of Dr. Cumming's achievements relating to the ordinary citizen. The prairie landscape is more pleasant because of his work.

Dr. Cumming's record of public service is enviable as well. In spite of personal physical disability suffered from a severe stroke some ten years ago, Dr. Cumming has served beyond the call of duty. He has gone the second mile in sharing knowledge with organizations throughout Canada and the United States.

Dr. Cumming retired on November 14, 1975 and his many, many friends will wish him many years of happy retirement. However, he is not one to lose touch with his life-long work and, fortunately, we will be able to make use of his talents for many years yet. This year he is teaching in Ryerson College, Toronto!

Remember the good old days — when water pollution was a Saturday night bath?

Blossoms Throughout the Year!

JOHN WALKER

Fibrous begonias **(Begonia semperflorens)** make a lovely bright showing when planted where there is good shade in the garden. They can be destroyed, however, by an early sharp frost in the fall. If you wish to carry a few plants over the winter, follow this plan:

Provide a container, (I use an aluminum pan), approximately 15 inches long, 3 inches deep, top width 5 inches and bottom width 3.5 inches. Around mid-September dig up three small plants, each with a small ball of soil around the roots. Set one at each end of the container, one in the middle, and pack garden soil around the roots of each to within one-half inch of the top of the container. Water well before placing the container at a bright (west) window. If watered lightly, as required, plants will continue to bloom throughout the winter.

When the stems become somewhat leggy in early February cut them back to a height of about 4 or 5 inches. Add a touch of chemical fertilizer, (16-20-0 perhaps), water as required, and within two or three weeks fresh stems will be blooming profusely.

The next step is to remove the plants from their "winter quarters" around mid-March. Use a sharp knife to carefully divide the crowns into two or more pieces. Be sure each piece has a share of the root system and use a fibrous soil mix around the roots of each division when planting them in three inch plant pots.

Attend to watering, give good light, and you'll have some sturdy plants to set out in the garden around mid-June to provide another season of bloom.

A Green Corner for Winter

VERA CRAIG

For those of us whose outdoor gardening season is short, nothing can be quite so rewarding as indoor greenery. Interest in houseplants may be mild or indifferent, but for me it's an ardent love for living things which finds an outlet in the growing of plants at any time and season.

There's fun and satisfaction in dramatizing some corner of one's home — in our case it was the outmoded breakfast nook. This spot no longer carried its weight in serviceable space, but proved very adaptable to what I had in mind.

Two shelves with fluorescent lighting have been a tremendous success. Forty watt daylight tubes, controlled by a time-clock, produce good results and give adequate light for the entire area. The lower table-shelf was predetermined by the basement stairway which descended beneath it. With this as a starting point, my husband planned and built the shelf above it, together with three shorter, adjustable shelves. These were hung on the back wall by strappings.

Although most of the plants on the two lighted tables were African violets, many other commonly grown houseplants are grouped effectively in our green corner. Split-leafed philodendron, the variagated philodendrons, ferns, coleus, ivies, a variety of begonias, along with larger tubs of dieffenbachia, are some of our successful plants. Hanging baskets of Paddy's wig and strawberry plants, graceful in their trailing habits, add greatly to the overall effect.

The nicest blooms are put on display in various spots throughout our home for as long as a week at a time. Then they are returned to the light

source and replaced by a fresh group.

Nothing picks up my spirits more than half an hour of working among my plants. So here in the kitchen, in the midst of other activities of our busy retired life, my indoor garden is not only a thing of beauty and a source of great pleasure to me, but it constantly offers a warm welcome to our many visitors.

COLOR SECTION

Fruits and Vegetables

The robin and cedar waxwing are frequent visitors to our garden.

Crossbills and white-breasted nuthatch enjoy sunflower seeds.

'Hansen Hedge' rose hips provide food for winter birds.

Non-staking tomatoes require little or no pruning.

Where space is limited staking tomato varieties should be considered.

Special facility used in tunnel gardening, located at South Indian Lake, Manitoba.

"Early stage" of growth on a garden tunnel showing intercropping of lettuce and onions between later developing beans and tomatoes.

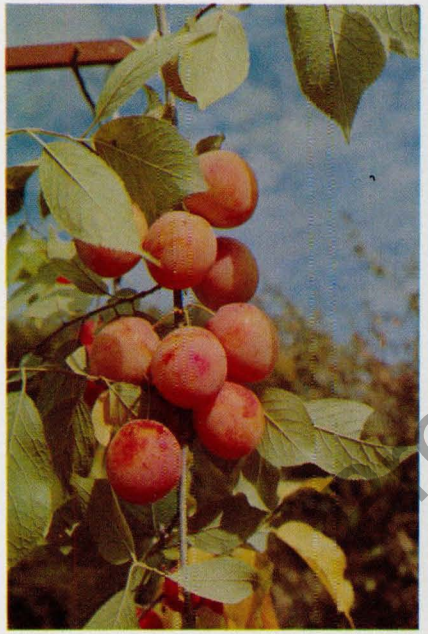
Mission Garden in Brochet, Manitoba — note cold frame structure used to start many of the transplants.

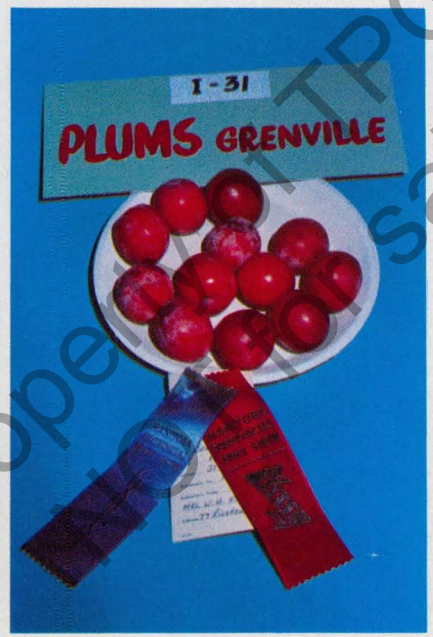
Three stages of self-blanching in 'Snowball' cauliflower.

Fruits of American cranberry bush.

Vigorous spears of Mary Washington asparagus.

'Nantes', a popular and excellent quality carrot.



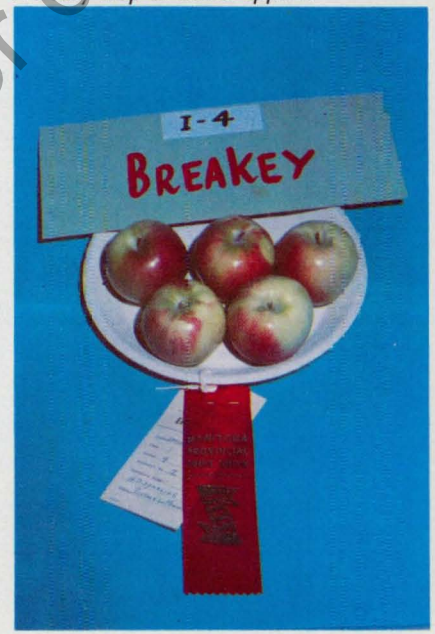


Fiebing and Grenville are high quality plums.

Apple blossoms give promise of delicious fruits.

Fruit and vegetable garden of Mr. Albert Collet, the originator of the Collet apple.

A heavy crop of Collet apples.



A dependable apple, 'Breakey'.

A beautiful crop.

Given protection and irrigation, vegetables succeed in the home garden.

A 4-H garden at Matlock, Manitoba.

Desirable edible and keeping qualities are found in 'Netted Gem' and 'Norland' potatoes.

'Red Sweet' pepper succeeds well in our prairie summer.

Well developed cabbage suitable for family use.

'Buttercup' squash is highly recommended.

'Farnorth' is an early-maturing cantaloupe.

An appetizing display of home-grown vegetables.

Interesting novelties — tomato grafted on potato.

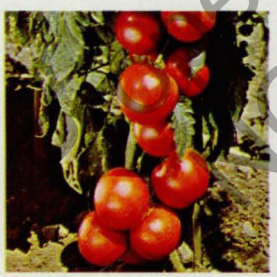
A creature of the imagination.

Gardening needn't be all work!

Production of white "silver skin" pickling onions on an economic scale (below), and drying procedure (above).

Onions for storage should be well-matured like these specimens of 'Ailsa Craig'.

Mission Bell



Fantastic

Pepper Midway

Above photos courtesy T & T Seeds Ltd., Winnipeg.

A List of Common Garden Vegetables, Their Companions and Their Antagonists

VEGETABLE	LIKES	DISLIKES
Asparagus	Tomatoes, parsley, basil	
Beans	Potatoes, carrots, cucumbers, cauliflower, cabbage, summer savory, most other vegetables and herbs	*Onion, garlic, gladiolus*
Pole Beans	Corn, summer savory	*Onions, beets, kohlrabi, sunflower*
Bush Beans	Potatoes, cucumbers, corn, strawberries, celery, summer savory	*Onions*
Beets	Onions, kohlrabi	*Pole beans*
Cabbage Family (Cabbage, cauliflower, kale, kohlrabi, broccoli, Brussels sprouts)	Aromatic plants, potatoes, celery, dill, camomile, sage, peppermint, rosemary, beets, onions	*Strawberries, tomatoes, pole beans*
Carrots	Peas, leaf lettuce, chives, onions, leek, rosemary, sage, tomatoes	*Dill*
Celery	Leek, tomatoes, bush beans, cauliflower, cabbage	
Chives	Carrots	*Peas, beans*
Corn	Potatoes, peas, beans, cucumbers, pumpkin, squash	
Cucumbers	Beans, corn, peas, radishes, sunflowers	*Potatoes, aromatic herbs*
Tomato	Chives, onion, parlsey, asparagus, marigold, nasturtium, carrot	*Kohlrabi, potato, fennel, cabbage*
Eggplant	Beans	
Peas	Carrots, turnips, radishes, cucumbers, corn, beans, most vegetables and herbs	*Onions, garlic, gladiolus, potato*
Squash	Nasturtium, corn	
Onion (including garlic)	Beets, strawberries, tomato, lettuce, summer savory, camomile (sparsely)	*Peas, beans*
Leek	Onions, celery, carrots	
Lettuce	Carrots and radishes (lettuce, carrots and radishes make a strong team grown together), strawberries, cucumbers	
Radish	Peas, nastrutium, lettuce, cucumbers	
Parlsey	Tomato, asparagus	
Potato	Beans, corn, cabbage, horseradish (should be planted at corners of patch), marigold, eggplant (as a lure for Colorado potato beetle)	*Pumpkin, squash, cucumber, sunflower, tomato, raspberry*
Pumpkin	Corn	*Potato*
Soybeans	Grows with anything, helps everything	
Strawberries	Bush bean, spinach, borage, lettuce (as a border)	*Cabbage*
Spinach	Strawberries	
Sunflower	Cucumbers	*Potato*
Turnip	Peas	

Grow It, Enjoy It, Eat It!

(Have you tried rose hip jelly, nasturtium leaves in salad, or pumpkin soup?)

FRANCES SMITH

Spring ushers in the growing season and it is pleasant to see the new shoots, leaves and, later on, the flowers and fruits on various trees, shrubs, etc., and to see the growth in the vegetable garden. The fruits of our labour can be enjoyed throughout the spring and summer months, visually and on the table, and can be stored away to be enjoyed during the winter.

When I was a child, so the story goes, my mother would say, "Don't eat that. It's poisonous." The reply was, "No, it isn't. I tried it." I wouldn't advise everyone, however, to try all growing things, as some are indeed quite poisonous and everyone might not be as fortunate as I.

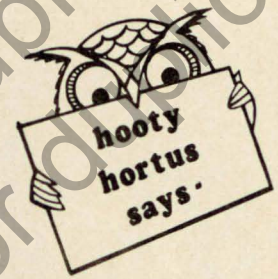
However, I did grow up on jams and jellies of many sorts: citron, marrow, rhubarb with many variations, carrot jam, marmalade and pie, and jams and jellies from all the wild fruits. Pickles, too, from home grown vegetables were much in evidence. Since I've been keeping house, I have made many of them myself, and added some we didn't have as youngsters.

Did you ever try chopped mint leaves in a cheese sandwich, or in salads, or use tangy nasturtium leaves in the same way? Did you ever put a scented geranium leaf in a jar of crabapple jelly, or line the bottom of a cake tin before making a plain cake? Did you ever make rowan berry jelly — delicious with cold meat, fowl, etc.? Did you ever taste highbush cranberry pie? I still make one a year to remind me how much we have for which to be thankful. It has a flavor all its own. Rose hips are said to be very high in vitamin C — higher still than oranges — and combined with crabapples they make a very tasty jelly.

The high cost of living can be further whittled down by making applesauce from crabapples. Freeze some without sugar for applesauce muffins, cakes, etc., and to add to the Christmas puddings instead of buying apples. Pumpkins, too, can be used other ways than in pies and for Hallowe'en. They make delicious loaves, muffins and custards. The Maltese people make a pumpkin soup, and friends from Trinidad say they serve them fried, two recipes I've yet to try. We can learn how to make further use of our produce by cultivating friends from other lands and exchanging recipes.

If you want to add a bit of beauty to your menu, add one or two small begonia flowers to the morning grapefruit, decorate a salad with rose petals, etc., for isn't it true that any meal tastes better if it is served attractively?

It is a challenge to see how much benefit we can reap from our gardens, and we will be healthier for the fresh air, exercise, fresh fruit and vegetables.



CACTUS. *Gardeners having trouble with the Prickly-pear and other hardy species rotting in their heavy-soil borders do well to spread about a quarter inch of coarse sand on the surface of the ground at planting time. The vulnerable spot of this succulent group is where the tissues emerge from the earth.*

Strawberry Leaf Spots

Several types of fungi attack strawberries causing leaf spots. The spots may be white in colour with a purplish halo, or the entire spot may have a purplish colour. Now is the most advantageous time to control these diseases. Apply Captan 50 WP at the rate of 1½ tbsp/gallon for small plantings or 2 lbs/100 gallons per acre for large plantings. Apply at 7-10 day intervals. In small home garden plantings, removal of old dead leaves will help to destroy the source of infection. Strawberry plantings should not be kept in production more than four years because of disease build up. When replanting a strawberry patch, use virus free plants. Contact your local nurseryman as to availability of plants.

Kohlrabi

BERT SANDERCOCK

If you are looking for a variety in your selection of early summer vegetables, Kohlrabi should be your choice. This vegetable is not widely known but is enjoyed by many home gardeners.

Kohlrabi is grown for the turniplike enlargement of the stem above ground. To be at its best it must be harvested before it becomes tough and stringy. For good quality the growth should be rapid and without check. Harvesting should occur when the swollen stem is between two and three inches in diameter.

The plant may be started in the greenhouse or hotbed like other members of the cabbage family, or it may be seeded directly in the garden.

The seed is generally sown in rows 18 inches apart but this can be varied to accommodate your garden cultivation equipment. Plants should be thinned to allow four to six inches between seedlings. Planting at intervals of two to three weeks will provide a continuous supply of tender Kohlrabi throughout the season.

To provide rapid growth Kohlrabi needs a rich garden soil. If your soil is not too productive a liberal dressing of manure is desirable. Commercial fertilizer may be used as a substitute.

The most popular variety is White Triumph (White Vienna).

Once again for Kohlrabi to be at its best it must be harvested at the two to three inch stage.

A Tribute to a Northern Horticulturalist and Pioneer — Mrs. Mary Machan

In 1928 when Mrs. Mary Machan arrived in Flin Flon with her four small daughters she met her greatest challenge in life when she decided to have a flower garden.

She was the first to introduce flowers to this northern town, and encouraged others to take up the challenge of growing flowers giving them seeds which she had climatized to the area.

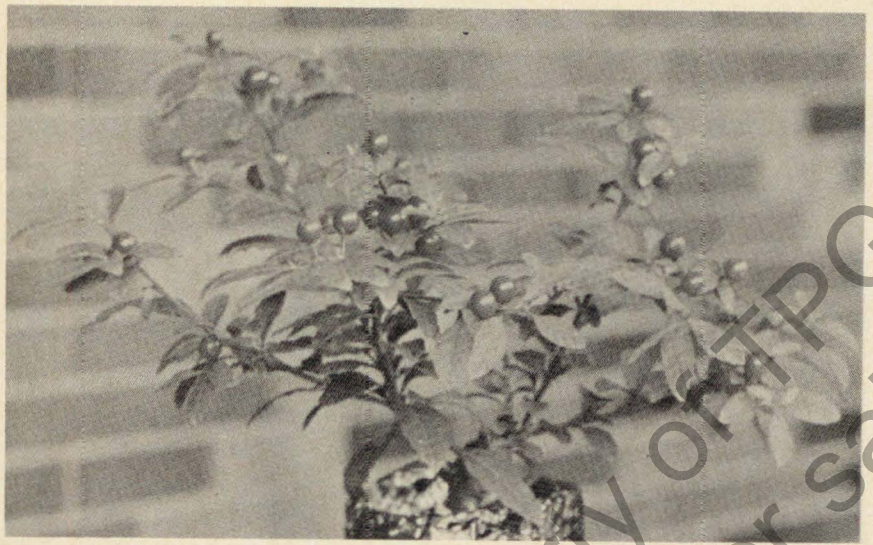
Soon after her arrival she obtained a small plot in the Flin Flon area and set about to push back the stumps and rocks. For many years she carried on by herself, wresting a living for herself and her daughters, and creating a beauty spot admired by all.

In 1951, '52 and '53 Mrs. Machan was the proud winner of the Grand Aggregate award, over a thousand entries, at the International Flower Show. Her home and garden became one of the most photographed spots in the north, and everyone marvelled at the flowers growing right under the nose of the smoke stacks and the large slag pour!

Mrs. Machan died in July 1974 at the age of 80, and her daughter, Mrs. Margaret Volden, now lives in her mother's vine covered home surrounded by her flowers — which remain a living tribute to a hard-working, beauty conscious pioneer of the north.

WHY NOT
(with apologies to International Women's Year)

M. E. PARKIN



WHY NOT grow Iceland poppies throughout the prairie region from farm to town? Easy to grow from seed, easy to cultivate as they will overwinter well. Why go to Banff to see their beautiful display when you can enjoy them in your own garden?

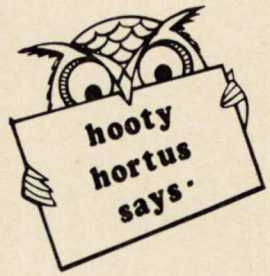
WHY NOT take advantage of the fact that many wild flowers grow on the prairies, and garden varieties developed from them will do well in our gardens? Try some of these: penstemon, goldenrod, asters, coneflower, black-eyed Susan, monarda, shrubby roses and potentilla.

WHY NOT grow more hardy mums, varieties which originated in the prairies, often bred by professional horticulturists who produced many varieties working in their leisure time? They deserve credit for lengthening the period in which we can have flowers in our gardens and we can show our appreciation by growing varieties such as Akimina, Sutherland Pink, Buffalo, Cree, Morden Cameo, Gault and Jocelyn Brandon. These are just a few examples of the many that we have available.

WHY NOT make a regular practice of looking at public parks for ideas which can be adapted to our gardens? Seen recently were Amur Maple planted with Russian Olive and, for a larger garden, spruce planted near poplar (not too close) to give contrasting fall color. Or brilliant Red Emperor tulips planted under dwarf juniper or lilies planted between the taller juniper, again to give a contrast of color.

WHY NOT try using cherry tomatoes in pots around a patio, or having a cutting flower garden, so flowers are always available for the house without spoiling the display area or, if short of room, use vegetables with attractive foliage amongst the flowers such as dwarf carrots, as a ferny green edging?

WHY NOT TRY SOMETHING DIFFERENT THIS YEAR?



MEANINGS?

The Latin names of most plants have direct significance. For example:

Colors: alba, white; azureus, blue; auranticus, orange; aureus, golden; carneus, flesh-colored; luteus, yellow; viridis, green.

Blooming Period: praecox, very early; majalis, May-blooming; astivus, summer; vernalis, spring.

Leaf Shape: brevifolius, short-leaved; angustifolius, narrow-leaved; latifolius, broad-leaved; laxiflorus, loose; pyrifolius, pear-leaved.

Blooms: flore-pleno, double-flowered; formosus, handsome; grandiflorus, large-flowered; admirabilis, noteworthy; ornatus, ornate, adorned, odoratus, scented.

Size of plant: altus (also excelsus and elatus), tall; nana, small; pumilio, dwarf; altissimus, very tall.

"God Almighty first planted a garden. And, indeed, it is the purest form of human pleasures."

—Francis Bacon.

Avocado (Persea)

W. J. EMERSON

The avocado plant is a small evergreen tree, the fruit of which is used in salads. It is also becoming very popular as a house plant as it lends itself to the modern decor and is easy to grow from seed.

SOIL
Avocados are not critical in their soil requirements. Any well drained good potting soil mixture will do.

LIGHT
They will grow satisfactorily indoors in sun or good light without direct sun but will not do well in poorly lighted areas.

WATERING
Water well and drain, but do not allow to dry out as leaves will turn brown. They will not tolerate a flooded soil even for a short time, but should always be moderately moist.

FERTILIZER
A weak solution of soluble fertilizer at intervals can be given plants when growing freely.

POTTING
Potting is best done in spring but can be done anytime the plant becomes potbound or if the drainage hole should become plugged. The size of the pot will depend on the size of the plant but, as with all house plants, do not place in too large a pot.

PESTS
Pests are usually not a problem, but if insects do appear check Manitoba Department of Agriculture publication No. 350-2, for insect control.

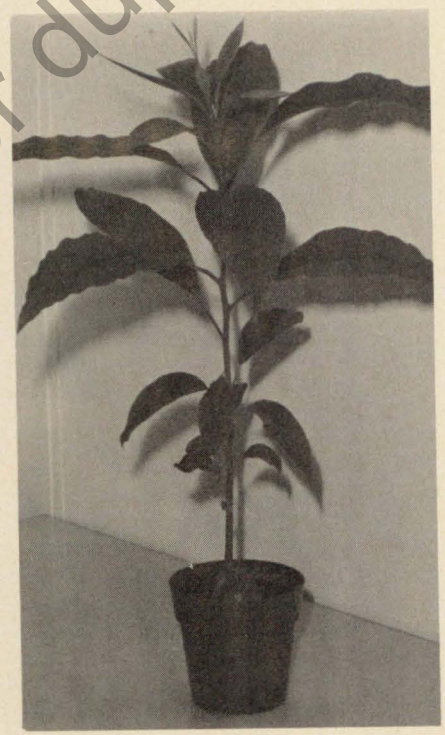
PROPAGATION
Propagation is by seed. Select a large plump seed from a well ripened fruit. Insert three well placed toothpicks near the base of the seed (the base is the broad flat end). Fill a glass with water. Place seed with toothpicks on top of the water with the base of the seed just touching the water in the glass and the toothpicks resting on top of the glass. Another method is to place seed on top of damp perlite, but the base of the seed should be pressed down and the perlite kept moist at all times.

When roots appear, pot seed in a 5 inch or 6 inch pot with the pointed end up just at or near soil level. Do not allow soil to dry out at any time. As the pot becomes filled with roots it can be moved into a larger pot.

TROUBLES
After a number of years the leaves may become blotched and spotted and the plant does not look well. If this condition occurs it is best to discard the plant and start a new one.

The likelihood of fruit developing is rare. The plant may flower but the male and female plant parts do not ripen at the same time. If flowers do develop some pollen from the stigmas may be saved and applied with a small artist's paint brush. Fruit may result if this pollen is deposited on the style of the ovary.

A temperature well above 10 degrees Celsius (50°F) should be maintained. The plants are very easily effected by a lower temperature.



Raspberry Cane Dieback

Failure of raspberry canes to leaf out may be due to one or a combination of the following fungal diseases: anthracnose, spur blight and cane blight. The bark of disease infected canes will appear discoloured, chocolate brown, dark blue or grey, often in bands. The bark usually cracks and flakes off. Leaves developing on infected canes may show a leaf spot type of injury or young leaves may appear yellowish. Control at this time of year consists of pruning out dead and heavily diseased canes. Spray the plants with Captan 50 WP at the rate of 1 tbsp/gallon of water. Include 1 tsp of liquid detergent in the spray solution for better spray retention on the leaf. Repeat this application in 10 days. Fertilize the plants to stimulate new and vigorous growth.

Root Crops for the Home Garden

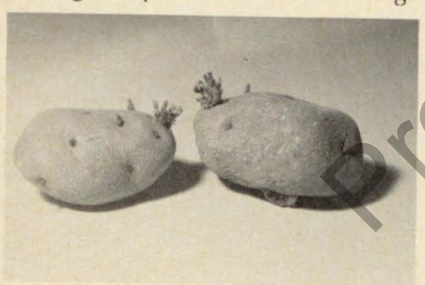
STANLEY J. WESTAWAY

Edible roots have been a food item in man's diet even before it was discovered that a fire-sharpened stick could be used as a digging tool. Root crops are now a major feature of commerce and our diet.

Potatoes

Potatoes were introduced from the Americas to Europe just a few centuries ago and came to be, and still, are a mainstay in the diet.

For the home gardener, space limits the growing of a main crop of potatoes. A few hills planted with pre-sprouted tubers can give new potatoes which are a real treat in early July, and may be enjoyed along with fresh green peas and roast duckling.



Norland
— green sprouting

Place uncut potatoes in a shallow tray or flat during March or early April and keep in a well-lighted area at room temperature. Short dark green shoots will develop, unlike the long white sprouts that develop in dark storage. Plant these sprouted tubers whole when the ground is workable and warm, and the early growth may be mounded over or protected by hot-caps if there is danger of frost. A dozen hills of Warba, Early Ohio or Norland are suitable varieties to use, and will prove quite satisfactory.

Carrots

The carrot is a most satisfying crop in the home garden. An early sowing of the Nantes variety, or the novelty types now available, will give an early crop appreciated by the cook or, as a treat, eaten raw — by small boys particularly. Sowing a few rows at intervals of ten days or so will give a succession of tender roots. For a main crop, Chantenay or the smooth shaped packaging types are best sown from the middle to the end of May, as there is a tendency for the roots to become overgrown and split, particularly if the ground is rich and the crop left in the ground late in the season. Cool storage in peat moss or perforated poly bags are best.

Beets

Grow beets for pickles or storage. An early sowing will give greens for early use as well. Leaves and small beets can be cooked together. Beets develop rather rapidly and the roots can become oversized and stringy. Again, a row or two sown at intervals will give a succession of tender roots which may be eaten after boiling or pickled whole when small. The roots store well if kept in a cool location and covered with slightly moist peat moss or enclosed within poly bags.

Turnips

The word turnips is a bit of a misnomer if one is botanically minded. We are more acquainted with the Swede or rutabaga. The turnip grown as an early vegetable in Europe is not popular here, as it is best grown under cool climatic conditions. The Swede is widely grown for table use and stores well for winter keeping. Seed sown rather late, from mid-May to mid-June, will produce tender, not oversized roots for winter storage. The plants will stand considerable frost in the Fall, and this seems conducive to counteracting the strong flavor often experienced. Flea-beetles which attack the emerging seedlings, and root maggots which attack the roots are the main problems. Follow the recommended procedures for control.

Parsnips

For some particular reason, parsnips are not appreciated by everyone, yet relished by many who have been conditioned to their use, and it is a nutritious vegetable readily grown, and stores well. Sow early when the ground is cool and moisture available for early germination. Being deep rooted, the parsnip is difficult to dig so the half-long types are preferred. In a contest between two gardeners of my acquaintance as to who would grow the longest parsnip, the winner produced one 11 feet long! A hole was dug with a bar and filled with sand and fertilizer, a seed sown, and hence the result. Some roots may be left in the ground over winter to supply an early vegetable as soon as the ground is thawed out. Use before the seed stalk develops as they become pulpy. They are **not poisonous** when so treated as I am still alive and have been following this practice for years!

Storage is a main problem for the home gardener in the modern home. A second fridge in the basement provides good if limited storage. Used fridges are often available for a low price.

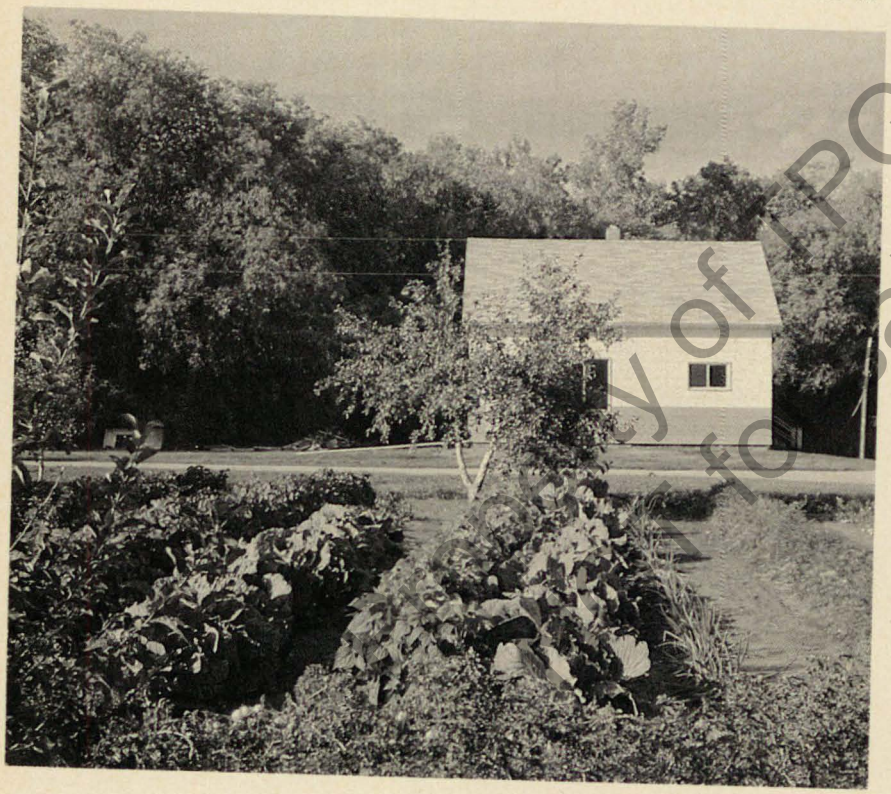
A 4 ft x 8 ft storage area in a corner of the basement using four sheets of 4 x 8 ft ten-test or strawboard can be easily constructed. One sheet for the ceiling, two for the sides and one for the end. The only cutting required is for the door. The outside walls keep the area cool, and the area is insulated from the warmer basement.

There are various bulletins available from the Provincial Departments of Agriculture and Information Services, Canada Department of Agriculture, Ottawa, which are helpful to the home gardener. Also refer to The Prairie Gardener by H. F. Harp, for information relating to growing your garden.

The Collet Apple

ALBERT COLLET

In 1907 my father, Victor Collet, emigrated from France and bought a farm three miles east and three miles north of Notre Dame de Lourdes, where my family and I live today. My father loved to grow apples, his main line of work in France having being orcharding and he brought his experience and love of growing things to Canada, and transmitted his interest to my sister Alice and I.



As youngsters, in 1934, we wrote to the Morden Experimental Farm and asked for the free apple seed they were then distributing. They sent us a package of some 300 seeds and we planted these in our garden. Many of the seeds came up the following spring, others died outright, and some lasted for awhile then withered, but about 75 of the little trees survived to be transplanted. Of these, 35 withstood the severe climate and the attacks of insects and disease.

How we watched those trees! Time seemed to drag before they bloomed. Our parents, my sister and I were overjoyed when the trees finally blossomed, and then when the little apples began to form. About half of the 35 trees had fruit the size or nearly the size of standard apples. When the apples matured we anxiously tasted them. They were good! Pies were baked and applesauce made. Three or four of the trees had fruit that could be eaten out of hand, and we were very pleased with the results.

Then came the winter of 1943 — one of those severe test winters. The trees at first seemed to have survived, they bloomed, but then, alas, they died. That is, all but one! This one appeared to be winter hardy and luckily it was a good size, a good red color, and of very good eating quality. We treasured the apples it bore.

We acquainted the Experimental Farm with our results following the test winter and of our one good seedling tree. The seedling apple appeared to be a variety somewhere between Fameuse and McIntosh in quality. The Morden Station tested it for some 13 years, and then named it Collet in our honor.

My family and I were only too pleased to be fortunate enough to give Manitoba and Western Canada an apple of good quality and sufficient hardiness to overwinter. Areas of the States and also some parts of France have seen this apple tested and we are pleased that it seems very promising in these other areas as well.

The Apple

The Collet Apple is almost completely bright red in color when mature. It is from two to three and a half inches in size and is a medium late variety. The flesh is almost snow white, crisp and juicy, with an excellent flavor. The apple stores fairly well in an ordinary refrigerator up to Christmas, and under controlled storage conditions it has a much longer life.

The Tree

The tree has wide angled branches, dark green foliage, and has a fairly hardy bark not too subject to sun scald. The trees are about medium height as apple trees go. The bearing habit appears to be annual as compared to many other apple varieties.

On our farm at present we have some 25 Collet apple trees and we never have enough fruit for the demand. Perhaps if other growers would try these trees it could be a comercially feasible project. The trees need a well-drained and protected east or north facing slope of the Pembina Hills. At present the tree is planted in many house orchards and gardens and we hope that many a home owner will also be able to experience the joy of picking a good Collet apple in his or her own backyard.

We do not sell trees but many Manitoba nurserymen may be able to supply trees for planting.

Spanish Onions

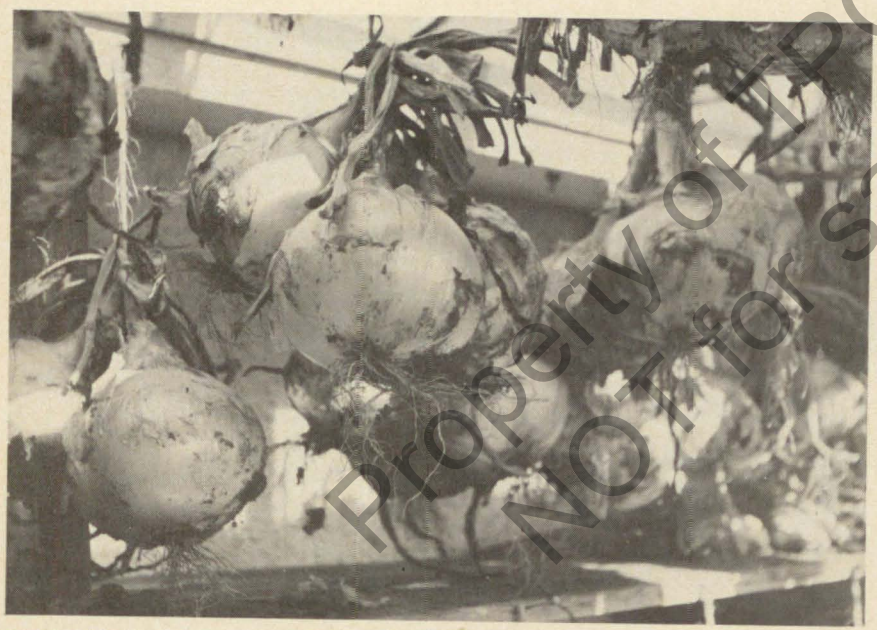
J. R. ALMEY

To grow the big ones, anyone really interested will find few difficulties. Four main practices must be closely adhered to:

1) the right variety (cultivar)
2) seed sown at the right time
3) garden location
4) proper planting

I have grown a strain of the variety Ailsa Craig, and I cannot find a variety that will grow larger. One may have to go outside of Canada, however, to purchase this seed. Sutton's Seeds Limited, Reading, England, sell a good strain.

Large Spanish onions need a longer growing season than is normally available on the prairies. One should have plants grown from seed, which must be sown in early January, ready when conditions are suitable for planting in the garden (early May). A commercial plant grower, for a small charge, will start your seed, and you can take the seedlings when ready for transplanting, and grow them in flats until planted in the garden. A small greenhouse, or space with fluorescent lighting in the basement, can be used to good advantage.



Bunched to hang from the greenhouse sash for drying before storage.

Spanish onions: Ailsa Craig

The garden plot where the crop is to be grown must be free of any shade. They require sun, and its heat, in unlimited quantities. Planting must be shallow and to ensure this, the soil must be firm. The base of the young plants should be no more than one inch below the surface of the soil. Distance between plants should be nine to 12 inches.

I rigidly follow the above four conditions and I know of no substitute for them. Add to these four recommendations sound normal garden practices, such as a little watering until plants become established.

Treatment for onion maggot with Diazinon is recommended, also shallow cultivation.

A light addition (one handful to one yard) of a complete fertilizer, 6-12-6, well mixed into the surface soil, will add to the plant food supply. Apply in the fall, or a spring application before planting.

Some of the large onions have "thick necks", a problem to overcome when ripening them for storage. In the garden, as the end of the growing season approaches, bend the tops over, not severly enough to break them, but every few days put a little more pressure on them. When harvesting them, tie them in bunches of three or four with a loop of string and hang them in a well ventilated room, outhouse or basement. For best results the small greenhouse can be used. In two or three weeks the tops can be removed, and the onions are ready for storage in the basement vegetable room. Temperature around 40°F will carry them in good condition throughout the winter.

Brussels Sprouts

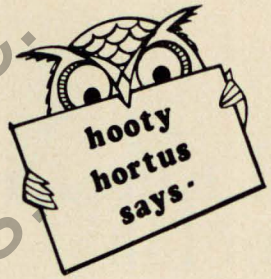
J. R. ALMEY

The October harvesting near. Some leaves removed for photography.

In recent years, probably due to the introduction of a hybrid variety, brussels sprouts have become more commonly grown on the prairies. Anyone who has grown cabbage plants can successfully grow this hybrid. The varieties most common in the past needed a longer growing season than the prairie garden normally experienced.

The hybrid referred to is Jade Cross, a Japanese production. Seed is expensive, and in some cases the seed crop was reported a failure for the year. Another hybrid was offered — Jade Cross E. It has not matured the sprouts as quickly as Jade Cross, therefore, may not succeed on the prairies as easily. Whereas Jade Cross formed large sprouts at the base of the stalk and tapered to much smaller ones towards the tip, Jade Cross E grew taller, and the size of the sprouts was more uniform. A picture of the latter variety shows the maturity in mid-September.

The seed for this crop was sown under glass on April 14th, transplanted to flats on April 23rd, and planted to the garden on May 26th. For root maggot control Diazinon was used. For cabbage butterfly worm control Sevin was used. Throughout the growing season the care one would give to a crop of cabbage is all that is necessary. Three weeks, or slightly more, before the usual time for main crop harvesting, cut out the tip of the stalks so that they will not continue to produce sprouts that do not have time to mature, and size can then be increased on the sprouts remaining. The main part of the crop was harvested on October 15th. The leaves along the stalks were removed for photographing only.



Transplant Shock

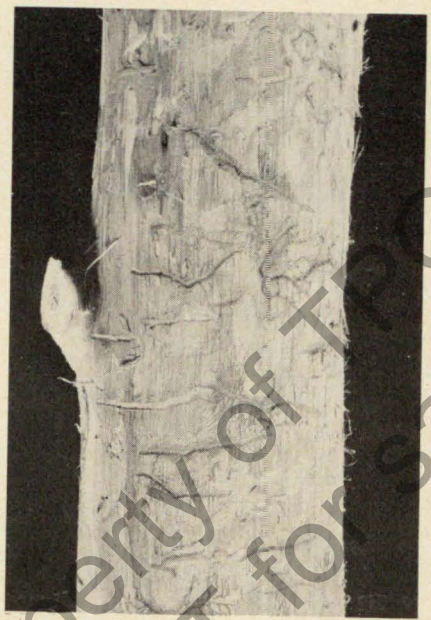
Many people these days are starting vegetable and flower seedlings indoors under fluorescent lights for later transplanting into the garden. When moving plants from their indoor environment into the garden, provide protection for several days after transplanting or place plants in a partially shaded area or cold frame. This treatment will allow the plants to harden off. If transplants grown indoors are placed directly into the garden without protection, the foliage may blacken and leaves wither due to exposure to sun and wind. As long as the growing point has not been severely injured, the plants will usually recover from this setback. Transplants bought commercially have usually been hardened off in a cold frame and will be able to withstand transplanting directly into the garden. However, even these plants should be given some protection against the direct sun until they have had a chance to become established in the garden.

Hoe, Hoe, Hoe
The easiest way to enjoy a productive garden is to live next door to one and cultivate your neighbour.

Dutch Elm Disease in Manitoba

V. HILDAHL and G. PLATFORD

The Dutch elm disease, caused by the fungus **ceratocystis ulmi** (Buism) C. Moreau, is a fatal disease of native and planted American elm. When introduced into living elms, the fungus grows in the water-conducting vessels which soon become clogged and lose their normal function. The time required for the disease to kill a tree varies with the age and growing conditions of the tree. Young, vigorous growing trees may succumb within a few weeks or months, while old slow-growing grees may survive the initial attack two or more years, or may even recover (at least temporarily) from a very light infection.



Egg galleries of the native elm bark beetle on surface of wood.

Current Status in Manitoba

Dutch elm disease was recorded for the first time in Manitoba in July 1975 when the causal fungus was isolated from American elms at three locations; namely on South Drive in Winnipeg, in the City and Manitoba Hydro parks and golf course at Selkirk, and in Curran Park at Brandon. The Winnipeg infection was discovered during regular detection surveys conducted by the Canadian Forestry Service. The outbreak involved several infected trees scattered over some five to ten acres immediately adjacent to the Red River.

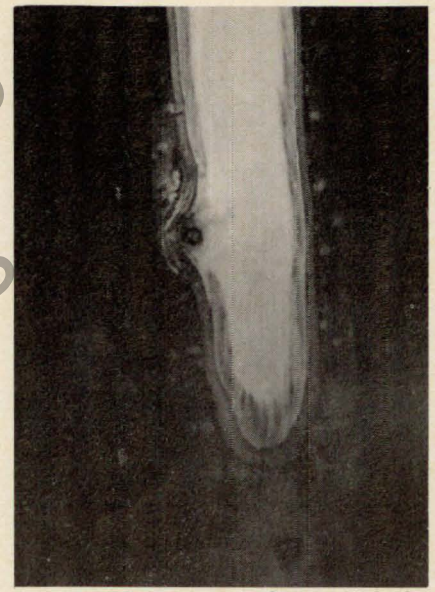
The Selkirk and Brandon outbreaks were discovered following reports that several trees were dying. These areas are subjected to annual spring flooding from the Red and Assiniboine Rivers respectively, and as a result support many large dead elms creating an ideal situation for the development of large bark beetle populations.

Symptoms and Vectors of the Disease

The first external symptoms are usually evident by late June, but are more pronounced in July and August. Initially, leaves on one or more branches wilt suddenly, turn dull green or yellow, dry out and fall, or they may turn brown, shrivel and remain attached to the twigs for several weeks. Ultimately, the disease spreads throughout the crown until the whole tree is affected . The internal symptoms of the disease are long, discontinuous brown streaks visible in the outer sapwood when the bark is removed from infected branches or, in transverse section, the stain appears as a discontinuous ring in the sapwood. Because other fungi are known which cause diseases with similar symptoms, accurate diagnosis of Dutch elm disease requires laboratory examination to identify the causal organism.

Method of Spreading

Studies carried out by research scientists have shown that the fungus is spread from diseased to healthy trees primarily by two species of bark beetles; the native elm bark beetle **(Hylurgopinus rutipes)** and the European elm bark beetle **(Scolytus multistriatus).** The native species is found throughout most of the range of natural and planted elms in Canada while the distribution of the European species is restricted to southern Ontario and Quebec. Both species of beetles cut galleries between the bark and wood of dead or dying elm mater-



Longitudinal section of diseased elm branch showing discontinuous brown streak.

Cross section of diseased elm branch showing partial to complete ring.

ial in which the eggs are laid and the larvae feed and develop. When full grown, the beetles emerge and fly to healthy elms to feed. It is at this time that beetles emerging from diseased trees carry the fungus spores on their bodies and introduce them into the feeding wounds on healthy trees.

A less common, but perhaps important mechanism of spread ,is the ability of the fungus to move from diseased to healthy trees by means of root grafts. The importance of this mechanism with reference to street or boulevard trees is obvious.

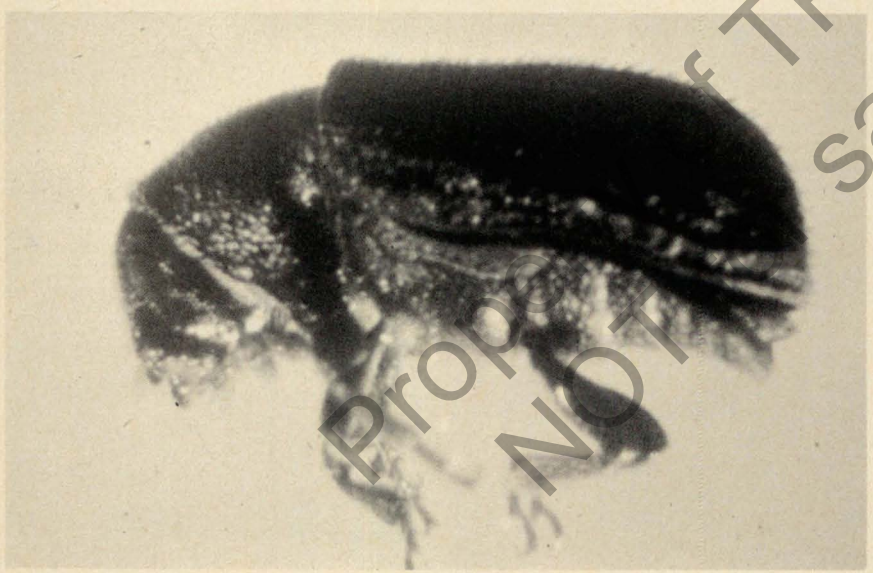
Prevention and Protection

An important step in a preventative control program is good sanitation practices — the elimination of all elm material that is diseased, or is suitable as breeding sites for the beetles. Accordingly, the Manitoba government implemented programs aimed at the removal and total destruction (by burning) of diseased, dying and dead elm trees in the Winnipeg, Selkirk and Brandon outbreak areas immediately following discovery of the pathogen.

Other equally important control procedures (and which are part of an effective prevention and protection program) are: 1) injecting elm trees with a fungicide to prevent and arrest infections; 2) severing root grafts by trenching around trees or by applying chemicals in the soil; 3) spraying elm trees with insecticides to reduce beetle populations; 4) quarantine regulation prohibiting the movement of elm trees or elm wood products between infected and disease-free areas; and 5) planting resistant elm varieties or alternate tree species.

Citizen's Help

Now that Dutch elm disease is present in Manitoba, the possible destruction of American elm is a concern of all residents. Early detection will be essential in reducing the impact of the disease. Citizens can contribute significantly to an overall control program by reporting immediately the location of suspect trees, by removing weakened, dying and dead elm trees on their property, by keeping remaining elms in as healthy a condition as possible through proper pruning, trimming, fertilizing and insect spraying methods, and by avoiding transporting elms and elm wood products (especially firewood) from other areas into Manitoba or within the province. It is only through constant effort that elm losses from Dutch elm disease can be kept to a minimum.



Native elm bark beetle.

Internal staining of water conducting tissue in infected elm branch.

"Now and then a wearied king, or a tormented slave, found out where the true kingdoms of the world were, and possessed himself in a furrow or two of garden ground, a truly infinite dominion".

A Scenic Sewage System?

(Use the Arctic Willow!)

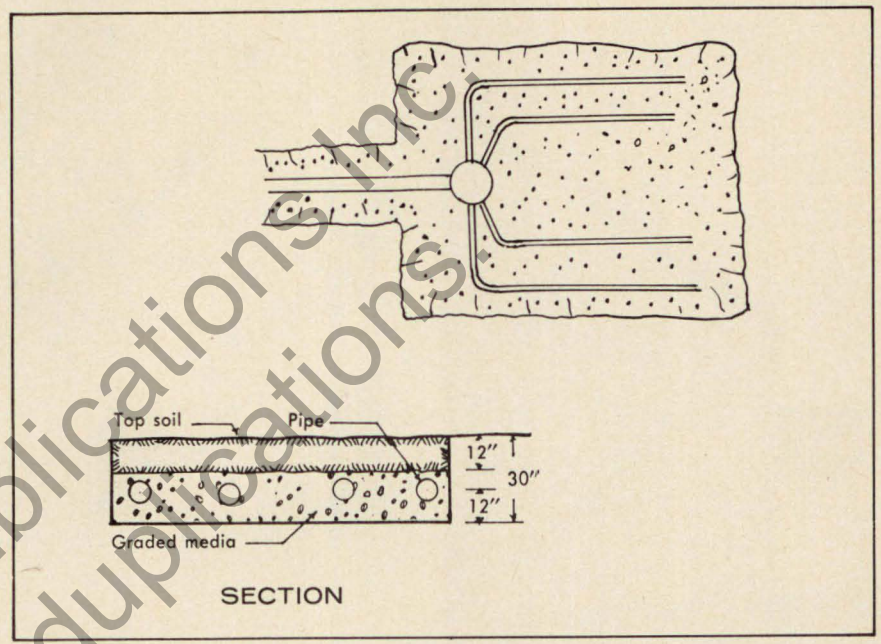
DIETER H. SCHWANKE

Throughout much of Manitoba, municipal waterworks and sewage systems are non-existent, not only because of monetary considerations, but because it would simply be totally impractical for farms or other far-flung localities. On the other hand, the good old outhouse also has its drawbacks (as well as drafts). As a result, private sewage systems are often installed to serve one family or household.

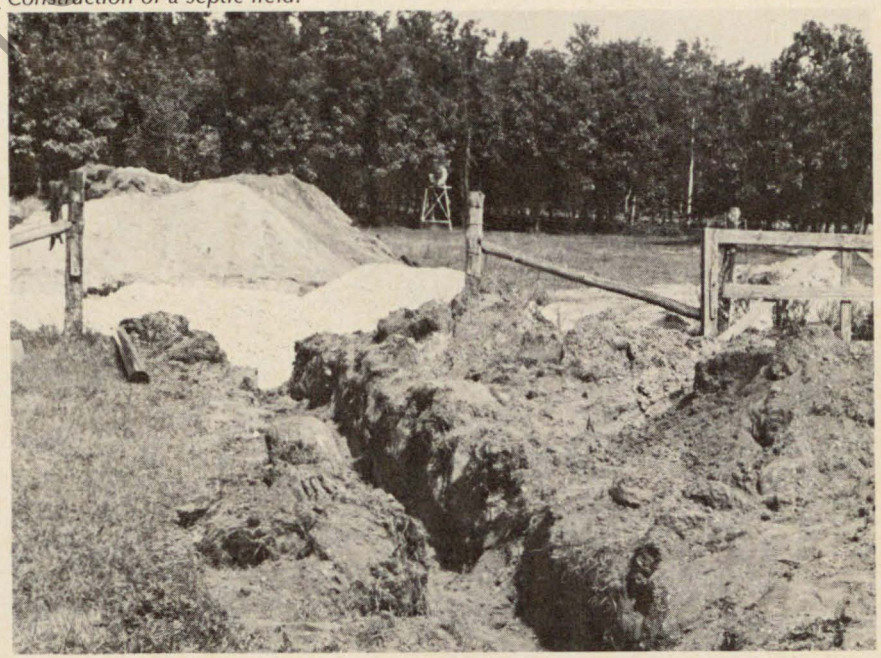
These systems consist mainly of two parts: a septic tank and a disposal area which usually is a sub-surface field in which disposal of the effluent takes place. Instead of going into the practical aspects of the business, let us consider the implications of these installations from an aesthetic point of view. (Anyone interested in the inner workings of the systems may obtain a detailed booklet from the Environmental Management Division of the Manitoba Government.)

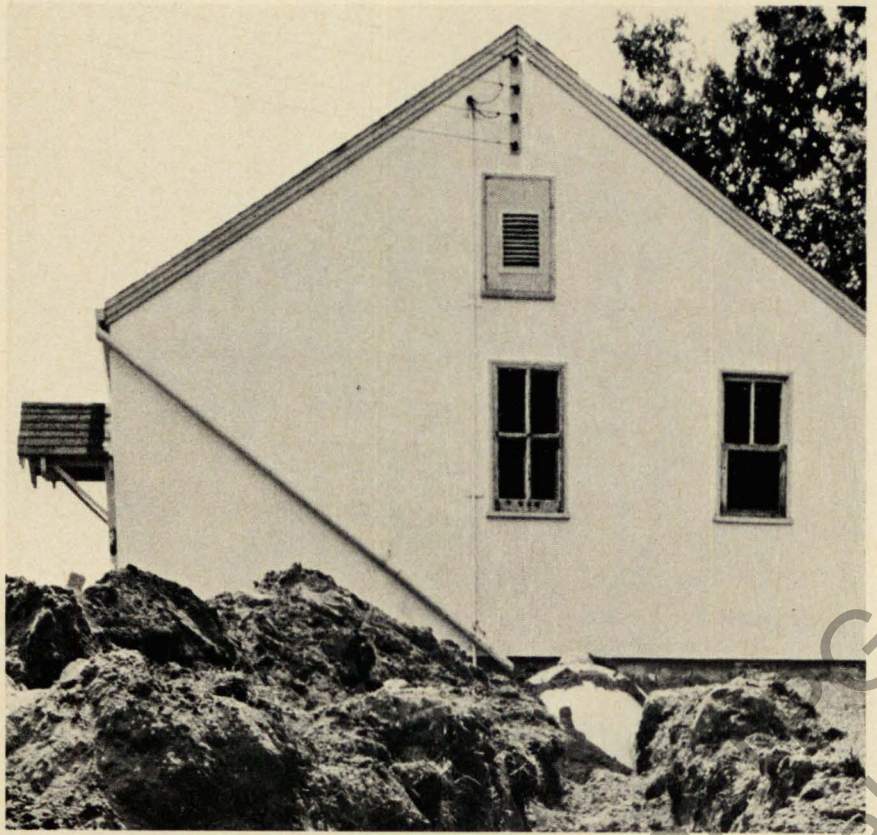
During construction of a sewage system you have first of all a ghastly mess: A great big hole right near your house where eventually the septic tank will be interred, a little farther out — perhaps fifty metres or less, another monstrous cavity is excavated for the field — the aforementioned disposal area. Then the tank itself is buried; crushed rock fills the crater of the septic field on top of which go various pipes which, in the end, are also buried. The net result of all this beaverish activity is a mound of earth beside the house, and a level, bare patch of ground some distance removed.

These scars upon the landscape could conceivably be left alone to heal themselves with vegetation were it not for the bane of all living things: freezing temperatures. Living things? Yes. Bacteria of one sort or another (aerobic or anaerobic) are the mighty mites that work away digesting raw sewage, leaving it behind in fluid form, ready to evaporate once it is dispersed into the field. To protect the system from freezing, straw and/or branches are usually put on top of both the mound beneath which rests the septic tank, and also on the field. This traps the snow and sufficient insulation is thus normally provided to keep the system working throughout Manitoba's long and cold winter season. In spring the straw is removed and burned, or burned right on location, the latter practice having



Construction of a septic field.





Interment of a septic tank.

quite often the result of a damaged or completely destroyed house. During summer, vegetation is again allowed to cover the scars, this time left from burning. All in all, a messy business at its best.

For many years now I have lived with a rural sewage system without either using straw or any other foreign matter for insulation purposes, nor did I have the slightest problems of freezing or malfunction. Besides, I have, at least to my personal satisfaction, created beauty and use from what I formerly described as scars with suitable plantings.

The mound of earth that covers all or part of the septic tank is a very tricky place to grow anything at all, because of the alternating freezing and thawing of the ground, depending on the temperature in the ambient air. However, I have found one plant that does not seem to be bothered by this at all, and has the added benefit of being a tremendous catcher of falling autumn leaves and snow.

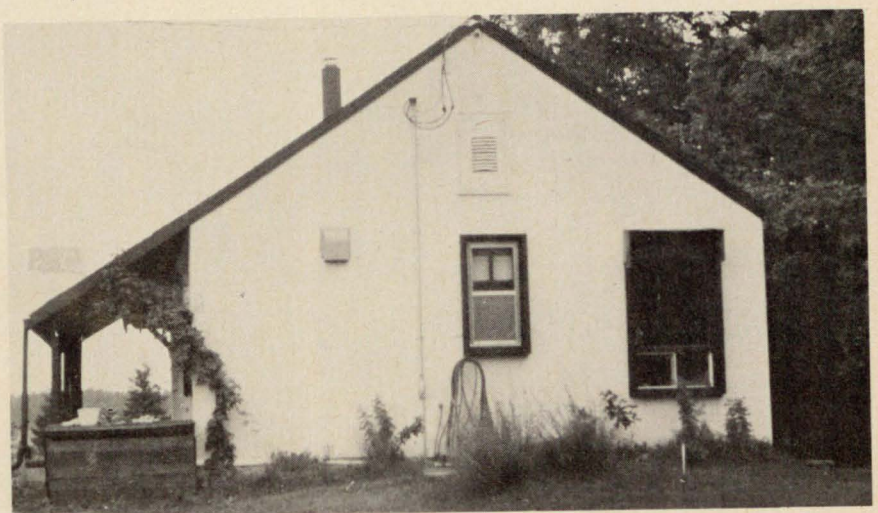
The Arctic Willow, **Salix purpurea** "Nana" or "Gracilis" is a plant that thrives in sun or semi-shade (that's what the sages say in various books,

although I grow mine on the north without any sun whatever) and reaches a height of four, five feet. Its leaves are slender and quite bluish. As this is not a native here it often suffers from winter kill at its extremeties, something I find rather useful as in the following season it branches out even better.

For added interest and variety, I have also planted our very own wild Rose, **Rosa acicularis** and some other natives such as the High Bush Cranberry, **Viburnum trilobum.**

Let's remember that we are talking about the septic tank which has no holes for roots to creep in and gum up the machinery. The exception here being the one big hole on top for clean-out, which can be hidden under the planted bushes, and its cover removed and replaced without any trouble whatsoever.

A different kettle of fish altogether is the septic field. As the accompanying drawing shows, it has a hefty top soil layer, and what with the regular discharge of waste water, this makes an ideal bed for your summer vegetable garden. If you do a good job of cultivating this in spring and autumn (don't use a heavy tractor-drawn implement, however, or you will either compact the lower groundlevel too much or crush the pipes, or both) the soil will be aerated enough to form a healthy layer of insulation all by itself. If you leave some corn stalks in it over winter you will catch more snow and insulate it even better. But most important: don't let anyone walk over any layer of snow that has accumulated on this field! A raspberry hedge planted around the perimeter of the field will make a nifty fence, catch snow, and benefit from all the other accoutrements of this environment. An important point to remember here is that the pipes below the soil have lots and lots of little holes, and roots can grow right into them, impeding the proper flow of discharge. This isn't too serious if the roots are small or die in winter; but larger, tree-type roots can be expensive.



Not quite two years later . . . things begin to grow.

Arctic willows around septic tank.

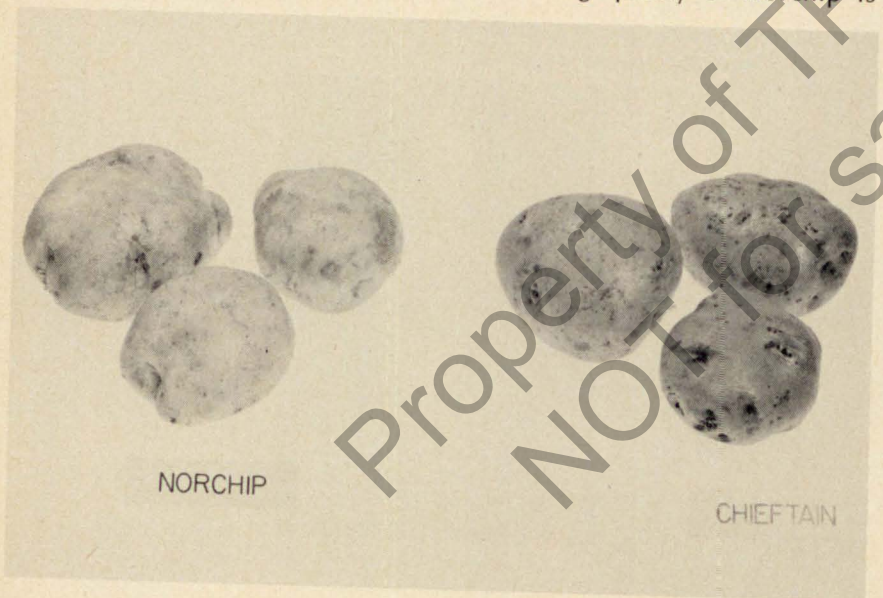
Two Recently Licenced Varieties of Potatoes

G. E. STONE

Researchers are continually evaluating seedling potatoes to find varieties that are more suited than those now being used to produce potatoes. In the spring of 1973, two recently tested seedlings received full licence status in Canada.

Norchip, a white skinned variety was released by North Dakota State University at Fargo. Tuber characteristics, in addition to the white skin, include a round to oblong tuber shape with medium, shallow eyes. Tuber set is quite numerous which, when moisture and fertility are adequate, results in a high yield of uniform, medium sized tubers. The variety is earlier maturing than Kennebec and similar to the old favorite — Irish Cobbler. It is a little later maturing than Norland but equal in yield.

Cooking quality of Norchip is



superior to Norland in both boiling and baking trials. It was rated below Netted Gem in similar evaluations. Norchip has a high "solids" content. Commercially, the variety is extensively used for chipping in Manitoba.

The other seedling which was named recently was Chieftain. It was released in the United States by the Iowa Agricultural and Home Economics Station in co-operation with the United States Department of Agriculture. The original cross was made in 1957.

Chieftain is a brightly colored red skinned potato with wide spread adaptability. Tubers are shallow eyed and are produced under vigorous vine growth. Maturity is mid-season and a good skin set can be achieved only by allowing the tubers to stay in the ground at least 14-20 days after the tops are killed. Tuber set can be quite heavy and adequate rainfall or irrigation is needed to size the heavy set.

Cooking quality is better than Norland with after-cooking discoloration less of a problem. Specific gravity or "solids" of Chieftain are higher than Norland. Chieftain has a longer dormancy period than Norland, therefore, shrivelling due to sprouting is not as serious a problem in this variety.

Potato growers who have grown Chieftain successfully have been able to deliver a highly acceptable product to the fresh market in June and July following a winter of storage.

In almost every garden there is a "potato patch". It may be a few hills to be eaten early in the season when the tubers are immature and have that very special flavour, or the planting may be large enough to yield a supply for at least part of the family's winter needs. Whatever is the case in your garden, plant only healthy vigorous seed. Potatoes will only yield well if seed used is of top quality. Contact a seed potato grower in your district or ask your garden supply centre to obtain seed potatoes for you. Another important aspect of growing potatoes is to use good sized seed pieces. A tuber weighing one half pound should not be cut into more than four pieces. If pieces are planted in moist, fertile, warm soil, they will emerge quickly and establish a vigorous, health productive plant.

Don't forget potatoes are a very nutritious food. They are a major source of Vitamin C and Iron in our daily diet. Calorie conscious people need not stay away from spuds. Learn the facts about potatoes — "something good that's good for you".

Try Peppers and Eggplant

A. L. FEHR and E. D. P. WHELAN

When you're grocery shopping and buy either peppers or eggplant fruit, have you ever wondered whether you could produce them yourself in your own garden? They both are warm season vegetables which require a long growing season but, if you know how, they can be grown successfully on the prairies.

Start Peppers Indoors

To get around our relatively short growing season, pepper plants should be started indoors eight to ten weeks before you plan to plant them in the garden. Both peppers and eggplant are very susceptible to frost so, for most of us, this means starting the plants the last week of March. Choose the type of pepper you want to grow and treat the seed with a fungicide such as Captan if it has not already been treated. A sterile soil mixture can probably be obtained from your local florist or department store, or you can mix your own. A mixture of two parts of loam and one part each of peat and sand works well. Sow the seed in a pot and just cover it with soil so that it is only about ⅛ inch below the surface. If possible, place the pot where the temperature is 80 to 85°F. This will give the best germination. Pepper seed is very slow to germinate so don't worry if it takes 10 to 15 days before seedlings emerge from the soil. When they do, move the pot to a well lit area such as a south window or under fluorescent lights. For best growth, try to maintain a uniform temperature. When the first true leaves are half an inch long, plant the individual seedlings in two to three inch peat pots, setting the small plant down almost to the cotyledons in the soil.

Transplanting

Plants should be hardened off before transplanting into the garden. This can be done by placing them outdoors when the weather is warm and covering them up, or bringing them inside for the night. A week of this treatment at 55 to 60°F will help reduce the shock of transplanting. When the danger of frost is past, early June for most areas of the prairies, choose a sheltered, hot area of the garden for growing the pepper plants and space them 15 to 18 inches apart within the row. When transplanting, either carefully peel back the peat pot and remove it, or make very sure it is well covered with soil. If the top of the peat pot is exposed it will dry out and prevent proper penetration of moisture to the roots. Water the plants in with a starter solution of soluble fertilizer to reduce the shock of transplanting. If you can get "hot caps", use them; it will mean you're picking fruit that much sooner.

When it comes time to pick the fruits, don't pull them off as this is likely to injure the plants. Instead, cut them off with a knife or secateurs, but with only a short piece of stem, to avoid poking holes in other fruits.

Types

Peppers are of two main types and have a variety of uses. The sweet pepper is usually picked while still green and can be used in salads, cooked or pickled. If left to ripen, fruit will turn either red or yellow. The red pepper tends to have a smaller fruit which usually is hot. It is used to make pepper sauces of various kinds or is dried and ground up for food flavoring.

Eggplants

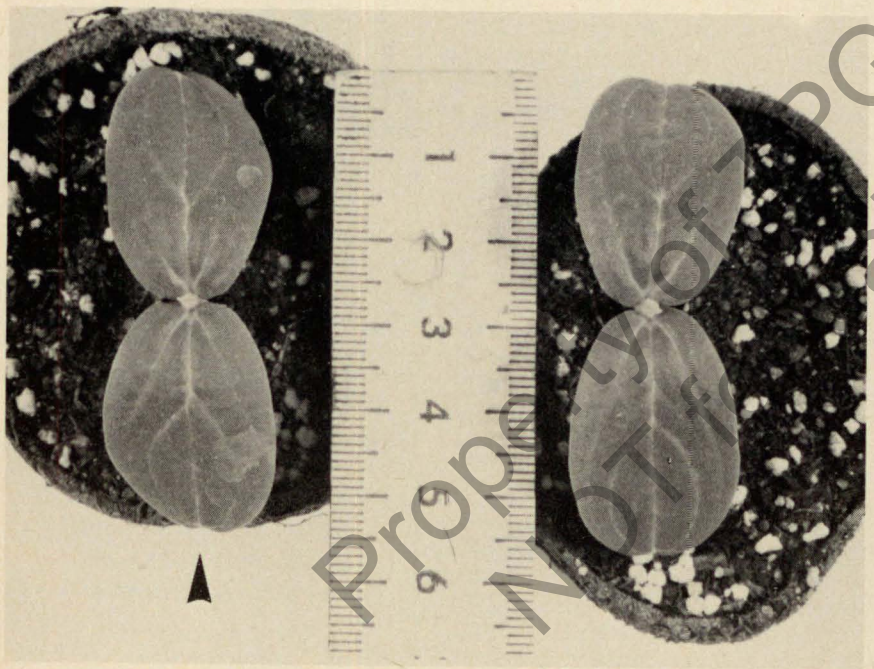
Eggplants have very similar cultural requirements to peppers. They do well in rich, well drained warm sandy loam. Because growth is seriously checked by cool weather, it is very important to harden off the seedlings before transplanting. When doing this, try to maintain a temperature of 65 to 70°F. Transplant into a warm spot in the garden, placing the plants two to three feet apart within the rows.

Fruits are ready for harvesting when they become uniform in color, usually purplish, and the pulp is white and tender. A fading color on the outside and brownish seed indicate that the fruit is over-mature. Harvest the fruit as suggested for peppers. Eggplants are usually baked or broiled and can be scalloped. When cut, an eggplant discolors very rapidly. If possible, cut them with a stainless steel knife, work quickly, and dip the pieces as soon as possible into the liquid or fat called for in the recipe. When using eggplant shells, cover them as soon as cut with cold water. Shortly before filling, drain and dry them.

Cucumbers — Starting Indoors and Transplanting

E. D. P. WHELAN

Cucumbers are a warm season crop and the seed will not germinate in soil which is less than 15°C (60°F). At this temperature the seedlings will take about two weeks to emerge from the soil. As the soil warms up, seedling emergence becomes much more rapid, so that at 20°C (68°F) only six to eight days are required for emergence. Not only do the seedlings emerge more quickly at higher soil temperatures, but fewer seeds are lost from seed rots or "damping off".



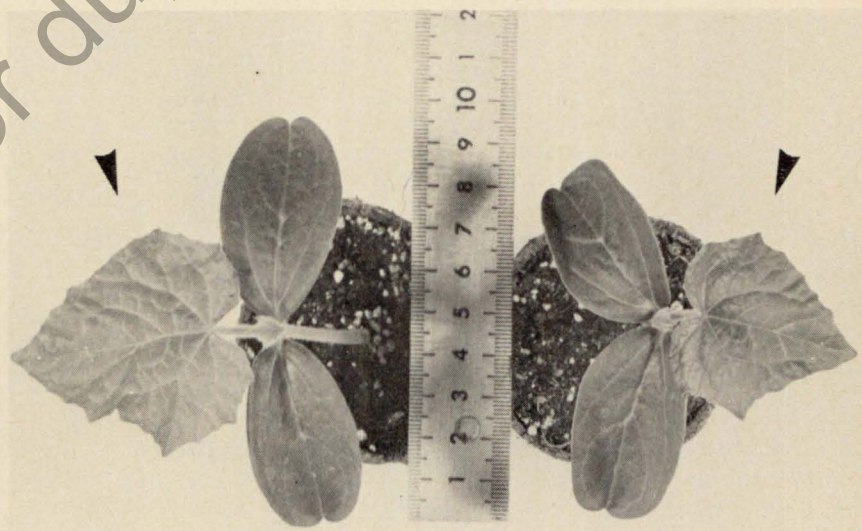
Cucumber seedlings 4 days after emergence. The two cotyledons (arrow) are fully expanded.

Starting Indoors

In many parts of the prairies, soil temperatures in the garden are not high enough for seeding cucumbers until the second or third week in June. This means that the fruit won't be ready for picking until well into August. A good way to avoid this delay is by starting the seedlings indoors and then transplanting into the garden. Don't forget that cucumbers, like tomatoes, are very susceptible to frost so the seedlings should not be transplanted into the garden until danger of frost is past. This should be kept in mind when starting your transplants.

Variety

When choosing the variety you are going to grow, be sure to consider the new gynoecious or "all female" hybrids. Even though the seed is more expensive than the older varieties such as National Pickling or SMR-18, you will get many more fruits from the gynoecious hybrids. This is because every blossom is a potential fruit, while in the older varieties many of the blossoms are male and produce pollen for fertilization but don't produce fruit. Female blossoms can be identified by the small cucumber immediately behind the petals. If you feel like experimenting with some of the long, slicing cucumbers, commonly grown in Europe or the greenhouse, don't hesitate to give them a try. I have grown them success-



Cucumber seedlings 10 days after emergence. The size of first true leaf (arrow), which is at a right angle to the cotyledons, indicates that the seedlings are ready for transplanting.

fully in the garden for the last five years and they make a delicious addition to a salad.

Transplants

After you have decided on the hybrid you want to grow, the next question is how to start the transplants. An important consideration is to use a sterilized, disease-free soil mixture. You can either buy a ready mixed soil mixture from a department store or, if you want to, you can mix your own. A good soil mixture is two parts good loam and one part each of sharp sand and peat moss. To sterilize this mixture, the soil should be moistened and placed in a covered container in the oven at about 82°C (180°F) for 30 to 45 minutes.

In general, the less plants are disturbed by transplanting the better, so I like to seed directly into two or three-inch peat pots. These should be filled with the sterilized soil and one or two seeds sown one-half inch deep in each pot. If you put the seed deeper than this you will delay seedling emergence and also increase the likelihood of seed rots. Most seed is already treated with a fungicide, but if you are in doubt, dust the seed with a fungicide such as captan.

Another seeding method you can also try, and one that I frequently use, is to pregerminate the seed before planting. Place the seed between two paper towels on a plate or dish and moisten it. Add enough water so that the towel and seed is moist but avoid having the seeds lying in excess free water. Now place the dish in a warm place, even up to 30°C (86°F) is not too warm. At this temperature you will see signs of the initial root emerging from the seed in about 24 hours. Plant the germinated seed in the peat pots when the root is only about half an inch long. If you are going to try this method, be sure not to let the paper towel and seeds dry out.

Seedlings

After you have planted the seed, whether pregerminated or not, choose a warm spot for the pots until seedling emergence. Once the seedlings are up, a temperature of 18° to 21°C (65° to 70°F) is enough and your most important consideration is giving the seedlings lots of light. If they don't have enough light, the seedlings will produce weak and spindly growth and be more susceptible to seedling diseases. They also will be more difficult to transplant when you want to put them in the garden. The first "leaves" to emerge actually are the two cotyledons which usually are opposite to each other on the developing stem. The first true leaf doesn't appear for several days and develops above, and usually at right angles to the cotyledons. When this first true leaf is about one and a half to two inches in diameter, it is time to transplant the seedlings into the garden. However, it is a good idea to harden off the plants before transplanting, as they are used to only indoor temperatures. To prepare them for outdoor conditions, take the pots outside for two to three days, bringing them in again or covering them up at night if there is any chance of frost.

Transplanting into Garden

When transplanting into the garden, place the plants 12 to 15 inches apart within the row. If you have more than one row, the rows should be four to six feet apart. When planting, you can either gently remove the peat pot, as I prefer to do, or leave it in place. If you leave it, be sure that the top of the pot is below the soil surface or the peat will dry out and prevent proper moisture penetration to the plant roots. No matter which you do, plant the seedlings so that the soil is almost up to the cotyledons. This is particularly important if the seedlings are spindly as it will help prevent wind damage. To get the transplants off to a good start, water them in with a starter solution of soluble fertilizer.

Soil Moisture

One important thing to remember when growing transplants is soil moisture. Right from seeding to transplanting, the soil should be kept moist but not wet. If the soil is too wet, you are much more likely to have problems with seed rots, root rot or damping off. If you do run into these problems, using a fungicide such as captan with your next watering will help. However, prevention by seed treatment and maintaining correct soil moisture is always the best control.

"I like to see a man proud of the place in which he lives. I like to see a man live so that his place will be proud of him".

—Abraham Lincoln.

Peat Moss or Moss Peat

J. P. SPROULE, C.E.T.

Homeowners and "Turf people" speak of V.D. — varietal dilemma — when attempting a match between available grass varieties and environmental conditions. In a like manner we now have a wide choice of ready mixes, peat mixtures and peats, but the challenge is to turn this situation into an asset for the homeowner and greenhouse operator.

The problem is that one really cannot be sure whether the next shipment of "peat" will be moss peat or a mixture of sedge and moss peat. (Table I). Adding to this uncertainty is the variability in the physical and chemical properties likely from one shipment to the next. Ten years ago we had little concern: the bale of "Peat Moss" was sphagnum moss peat with a consistently low pH and a very low salt level, and it was ready to use with minimum handling.

In addition, we now feel quite differently about organic materials than formerly when the emphasis was on manures and other such readily decomposable materials. It was felt that through decomposition they improved the soil structure and hence porosity. Now, however, we are stressing the organic materials which are high in fibre, which do not decompose readily, and which stay in the soil and are effective over a long period of time. These are the attributes of moss peats.

TABLE 1 **Description and Criteria for evaluating peat, adapted from THE OLDS AGRICULTURAL COLLEGE SYSTEM FOR EVALUATING PEAT MOSS**

Type	Origin	Fibre Content	Maximum Water Holding Capacity	Soil Reaction pH	Salts E.C. x 10^3	Rating for Greenhouse Use
Sphagum, Moss Peat	Mosses	Very high > 90%	Very high ≥ 10 times own weight	Very Low around 4	Very Low 0.20 to 0.40	High
Sedge	Sedge, rushes (grasslike plants)	Very Low	Relatively Low < 4.5 times own weight	Not consistent Varies from 5 to 8.5	Varies from 0.50 to 2.50	Low

We now have reasons enough for listing specifications when placing an order, be it for formulating mixtures for golf course greens, or for artificial soil mixtures for chrysanthemums. Too often we find that inferior grades of peat take the same bite out of our budget as do premium grades of peat.

While the homeowner or operator cannot perform all the physical tests at home to evaluate "peats" before making the purchase, he can follow a simple but effective guide (table 2). For instance, as a rule of thumb, if the sample of peat rates high for both the rub test and the squeeze test then the sample will generally meet the physical and chemical specifications for a highly rated greenhouse moss peat.

TABLE 2 **Evaluation: Hand Method**

FIBRE TEST

High Fibre: wet peat rolls, balls up between thumb and forefinger when rolled, does not cause staining.

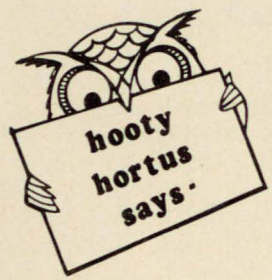
Low Fibre: wet peat does not roll very well between fingers; some staining.

No Fibre: wet material does not ball up, but smears and stains fingers.

SQUEEZE TEST

High Fibre: a handful of wet peat is squeezed to remove moisture; upon releasing, the color is much lighter than when wet — a very light golden color.

Low Fibre: a handful of wet sample is squeezed to remove moisture and upon releasing no color change is noted; sample is black and mucky, it is sedge or muck type.



Blackening of Willows

Willow blackening is a common problem in spring and early summer in Manitoba. Willow trees will leaf out and then, quite suddenly, the leaves will dry up and wither. Some of the leaves will turn yellow and fail to fully develop. The leaders of affected willows turn a blackish colour.

The main cause of willow blackening is dessication. The warm weather in early spring causes the foliage, buds and leaders to lose moisture and when they break dormancy in late spring, if not supplied with an adequate supply of moisture, will exhibit the above mentioned symptoms.

Willow blackening can be prevented by thoroughly watering willows in the late fall, especially after they have gone into dormancy, and then again in early spring. Willows are a plant which require plenty of moisture. The leaders which do become blackened should be pruned out since these dead and discoloured branches will harbour disease organisms.

Tomato Diseases

LORNA POFF

Can you imagine a garden without tomatoes! Everyone, young and old has experienced growing this popular fruit. Regardless of whether a large acreage is involved or simply a small plot or flower bed, the gardener will undoubtedly experience a few disease problems with his tomatoes. Damping-off, leaf spotting and blossom end rot are the three main diseases which the tomato grower must contend with in order to produce a healthy crop.

Damping-off

The first disease problem usually encountered during the growing season is damping-off. This fungal disease attacks young seedlings before or after they emerge. In the former, germination is reduced and in the latter, plants wilt, fall over and die. To reduce the amount of damping-off two steps should be taken. First, start seedlings indoors in sterilized soil and, secondly, drench the soil with Captan 50% WP at the rate of two tblsp/gal of water after seeding. For added protection, repeat the drenching treatment in 10 days.

Leaf Spots

Septoria leaf spot and early blight

Septoria

are two common diseases that the grower may expect to encounter during July and August. Both diseases are similar in that they produce leaf spotting, but the lesions are distinctive for each disease. In combination, these diseases cause the majority of defoliation of field tomatoes.

Septoria leaf spot is characterized by numerous, small circular lesions appearing on the leaves, stems and petioles. These spots appear greyish in colour encircled with a black halo. The disease begins on the lower leaves and progresses upwards causing leaves to yellow, wither and die.

Early blight, on the other hand attacks leaves, petioles, stems and fruit. These lesions can be differentiated

from those of Septoria leaf spot in that they appear dark brown to black and vary in size. The distinguishing characteristic of early blight lesions are the concentric rings or zonation appearing within the leaf lesions. On the stalks, branches and fruit pedicels, early blight appears as black lesions which soon enlarge and elongate. Large, black leathery lesions are produced on the fruit.

A single control program exists for both diseases. Since the organisms responsible for these diseases overwinter on dead plants, it is wise to clean up all plant refuse as soon as harvesting is complete. Spray plants every 7 to 10 days, starting mid-July with Maneb WP at the rate of two tblsp/gal. Frequent showers promote the spread and development of both diseases, therefore, spray more frequently during periods of wet weather.

Blossom End Rot

Blossom end rot, a fourth common problem with tomatoes is not considered to be a disease but rather a physiological disorder. It is confined to the blossom end of the fruit and appears as a brownish, sunken dead area. The rot is usually dry and firm, however, secondary organisms may invade the tissues producing a soft rot.

Early blight

In the field, the disease usually occurs with fluctuating levels of soil moisture. In Manitoba, the disease appears during July and August following a drought period or highly fluctuating conditions of soil moisture. Excessive moisture preceding the drought will enhance this disease.

Control of blossom end rot can be achieved by regulating a constant supply of moisture to the plants. The land should be well drained, have proper aeration and plenty of humus available to retain moisture during dry periods. Incorporating peat moss into the soil will increase the moisture holding capacity of the soil and reduce incidence of blossom end rot. Hardening off the tomato plants just prior to summer dry periods will also help reduce the incidence of this disease.

Control Program

To ensure a crop of healthy tomatoes, the following control program should be followed:

1. Start tomato plants in sterilized soil and drench with Captan.
2. If leaf spotting occurs, spray with Maneb.
3. Ensure a constant moisture supply, especially during summer, dry periods.

Blossom end rot

Control of Apple and Plum Tree Diseases

G. PLATFORD

There is an increasing interest in the culture of fruit trees. Apple and plum trees are the most suitable fruit trees for the prairies. The main disease problems encountered with apples and crabapples are fireblight and apple scab.

FIRE BLIGHT

The fireblight disease can be kept under check through the use of an agricultural antibiotic called Agristrep. This chemical should be applied at early blossom and then at four to seven day intervals throughout the blossom period. Use more frequent applications if weather conditions are humid with frequent periods of rain. The spray should not be applied if the temperature is below 18°C or above 29°C. The most favorable conditions for disease development are relative humidity over 60% and temperatures between 18° and 29°C. Apply the spray during the evening for best results. To protect the tree against the twig blight phase of fireblight, continue application of Agristrep at seven day intervals until mid-July. Prune off all diseased branches as evident by discoloured leaves and blackened bark at least eight inches below last evidence of discoloured bark. A more detailed discussion of fireblight is included in the 1975 Prairie Garden, Pages 108 and 109.

APPLE SCAB

Apple scab can be a cause of fruit blemishes and premature leaf fall. The conspicuous symptom of the disease is an olive green irregular shaped spot on leaves and fruit. The disease develops most rapidly when the weather conditions are such that there are prolonged rainy periods and temperatures between 15° and 24°C. When these conditions persist for a period of several days the apple leaves and developing fruit should be sprayed with Benlate 50 WP fungicide. Captan 50 WP fungicide can also be used as a protective treatment against apple scab. If disease symptoms are evident Benlate 50 WP should be applied as an eradicant. A post harvest application of Benlate made before the leaves fall will reduce apple scab the following year by preventing production of scab spores on infected leaves the following spring.

PLUM TREES

Plum pocked.

The two most common plum tree diseases are plum pocket and black knot. Native plums are very susceptible to a disease called plum pocket, whereas the European plum varieties are resistant to it. The disease is evident as inflated bladder-like fruit which are without a pit. These are at first green and later turn black and shrivel up. All of these infected fruit should be picked off the tree and destroyed. The best control for the disease is a fungicide application at the dormant pre-bud break stage in the early spring. The most effective fungicide is Bordeaux mixture, however, ferbam, maneb, or captan will also give control.

Another common disease of plums is a disease called black knot. This disease is evident as elongate black swellings on the branches. Branches infected with these black growths should be pruned off at least eight inches below evidence of the black knot. The pruning shear should be sterilized with methyl hydrate between cuts. Spring application of a fixed copper fungicide is effective in preventing new infections.

There are other less common diseases encountered with fruit trees. Assistance in diagnosing these diseases and control recommendations can be obtained from the Provincial Department of Agriculture.

Insect Pests of Vegetable Gardens and Small Fruits

A. J. KOLACH

There are many different species of insect pests affecting vegetables and small fruits in home gardens, and only a few of the more common and severe pests will be dealt with here.

Cutworms — The red backed cutworm is the most common species of cutworm in gardens, and is the pest stage of the ordinary "miller" moth. The cutworm is nearly always a night feeder and usually its presence is detected by the characteristic surface feeding on seedling plant stems, causing them to wilt, fall over and die. There is no doubt that the cutworm can cause serious losses in the home garden, and should be controlled as early as possible.

Protection — Ideally, it would be advantageous to destroy the eggs which are laid in soil, but there is not a suitable method of doing this yet. For transplants the ideal method of protection is to place metal, wood or waxed cardboard collars around the plants and inserted below ground to a depth of about two inches. This is a very practical and useful method, but does not work for all garden vegetables. A soil treatment of chlordane or diazinon will give ample protection for vegetables, and the trick is to incorporate the insecticide into the soil around the base of plants in the row.

Flea beetle — Flea beetles often go unnoticed in gardens because of their very small size and quick movement. However, they are very destructive pests especially to seedling radish, turnip and related plants. Plants can be stunted from their feeding and will not yield as well, in fact, where flea beetles are abundant they can completely kill out plants by their persistent feeding. Flea beetles overwinter in or near gardens as adult beetles and become active very early in spring.

Protection — When flea beetles become a problem it is best to apply an insecticide such as diazinon, malathion or rotenone. A second or third application of one of these insecticides may on occasion be necessary if migrating flea beetles keep moving in from nearby areas.

Cabbage worm — The cabbage worms are very common on cabbage and will be a problem on other related plants such as turnip and cauliflower. The adult white cabbage butterfly can be seen throughout most of the summer laying its eggs on the

plants. It is almost essential to use an insecticide regularly to control cabbage worms and two of the better ones for home gardens are diazinon and rotenone.

Maggots — Several species of maggots are injurious to cruciferae plants such as radish, turnip, cabbage and cauliflower. The onion maggot is also a serious pest of onions. Fortunately there are effective and useful controls for these pests, however, the gardener must apply them properly.

Protection — To protect seedling or transplants it is wise to invest in a preventive treatment practice of using a maggot killer product in the row with the seed or transplant. Most of the maggot killer products contain the insecticide diazinon which is an excellent one for the home garden. This application will give early protection to plants, but it will be necessary to apply a diazinon drench to the plants several times during the growing season. This is where most gardeners fail to control this pest, that is, not placing enough importance to using a drench treatment to control the maggots throughout the entire growing season.

Aphids — Many species of aphids are pests on garden plants, particularly during very hot summers. These pests are relatively easy to control with insecticides such as diazinon, dimethoate or malathion but occasionally several applications may be necessary if favorable weather prolongs an aphid infestation and migration continues from nearby areas.

Slugs — The garden slug thrives in lush, moist gardens and is destructive to many garden plants. Slugs can be difficult to control when they stay within the growth area of plants, and it becomes difficult to attract them to slug baits. If slug baits containing metaldehyde are applied early in the summer some benefit can be achieved. There have been reports of gardeners setting out pans of beer with excellent results. Slugs apparently are attracted to beer and will drown themselves in the pans. Some gardeners report that this methods kills great numbers of slugs, and no doubt may be a helpful aid in keep slug numbers down to a minimum. Trapping them under boards is another method which might be useful to some gardeners in coping with slugs.

Spider mites — Because of their small size mites are most difficult to detect, and it is only when large numbers are present that they become readily noticeable. At this stage however, a good deal of irrepairable damage has occurred. Mites can be especially injurious to raspberry and strawberry plantings causing reduced vigour and poor yields. An occasional spray of kelthane when necessary will keep mites in check.

There are many other insect pests associated with vegetable and fruit gardens, and most can be kept in check using insecticides or other means, or a combination of both. Where gardens are properly managed and plants are vigourous, insect pests seldom become very serious. It is important to keep plants growing in a vigourous and healthy state and, where required, the proper insecticide will be a valuable aid in protection of plants.

Suggested references for up to date recommendations on control of insects are publications 266 and 179 entitled "Insect Control on Fruit Plants" and "Insect Control on Vegetables", available from the Manitoba Department of Agriculture, or through your Horticultural Society.

"Succession Harvesting of Peas, Beans and Corn"

C. SCHAUPMEYER

The harvest season for peas, beans and corn can be extended by using one or more simple cultural methods. These methods can result in harvesting vegetables for fresh use for a period of up to two months.

A common gardening mistake is to plant everything at once and to use only one variety of each type of vegetable. Harvesting subsequently takes place with a great flourish of activity. After some of the crop has been canned or frozen, the rest often goes to waste because a family cannot consume the short term surplus. With proper planning and planting a gardener can harvest small amounts of early vegetables for fresh consumption, then harvest a main crop for canning or freezing, and finish off the year with small amounts for fresh consumption.

As already suggested, two main ways to spread out the harvest of peas, beans and corn is to use varieties that mature on different dates, or to plant the same variety on different dates.

Following is a brief discussion of the methods that are suited to each crop. Varieties recommended in Alberta are listed at the end of each discussion. Most seed catalogues list "days to maturity". These days are not always meaningful to prairie conditions, however they do give a fair idea of relative maturity. Some catalogues list varieties as early, mid-season, or late. Dates of seeding and harvest that are mentioned in the discussion are general and will vary from region to region.

PEAS

Peas are an early maturing vegetable. Depending on variety and season they will reach first pick stage about 55-70 days from seeding. They are well adapted to cool temperatures early in the growing season and will withstand light frosts later in the year. Because of these two factors, they are extremely well suited to successive planting. Early varieties such as Laxton's Progress, Little Marvel and Progress No. 9 can be planted as early as possible in the spring (April 20 or later) and every ten days up until the end of June or early July. If such a planting schedule is followed, peas can be harvested from early July until mid-September.

Many varieties of garden peas are available. They all have different dates of maturity and are generally classified as early, mid and late season. A home gardener can use these differences to his advantage by planting different varieties on or about the same date. For example, a combination of Little Marvel, Lincoln and Dark Skin Perfection will give a fairly uniform yield of peas over about a 3-4 week period. This period can be extended by planting Little Marvel early and the other two varieties, respectively, over a period of about two weeks.

Pea seed that is planted early into cold soils should be treated with a mild fungicide such as captan. Captan helps prevent the seed from rotting before it germinates.

If peas are being grown only for fresh consumption, then equal amounts can be seeded on various dates or of different varieties. If a large quantity is required for canning or freezing, then more seed should be planted on one of the dates. However, it should be noted that peas seeded after May 15 will probably be lower yielding than those seeded before May 15, because the later seeded crops sometimes lose blossoms in mid-summer heat. For this reason the main crop for home canning or freezing should be seeded before May 15 if possible.

As a guide for garden planning, early seeded peas yield about ⅓ lb of shelled peas per foot of row when picked diligently.

Following are the home garden varieties of peas listed in the Alberta Horticultural Guide:

Early — Jade, Laxton's Progress, Little Marvel, Progress No. 9.
Mid — Lincoln (Homesteader), Small Sieve Freezer.
Late — Dark Skin Perfection, Telephone.

BEANS

Beans do not offer quite as much flexibility in harvesting as peas. They normally require more days to mature, cannot be seeded as early and the varieties available do not vary in maturity quite as much as peas. However, with careful planning fresh beans should normally be available for five to seven weeks.

Unlike peas, that will germinate at temperatures above 4°C (40°F), beans require soil temperatures of over 15°C (60°F) to germinate rapidly. So unlike peas they should not be planted earlier than about May 15. If the seed is planted sooner, it can rot before it has a chance to germinate. Beans planted on May 20 will be as far advanced as those planted on May 5. The stand and vigor of the plants will also likely be better and the plants will not run the risk of being killed by a late frost.

Most common garden varieties of beans will mature in about 70-75 days in the southern prairies. Beans planted on three dates (May 20, June 1, and June 10) should provide fresh beans from about the last week in July until a mid-September frost. Most garden bean varieties are quite productive for about a three week period so harvest dates of the three plantings will likely overlap sufficiently to give a fairly uniform supply. Extra beans planted for canning or freezing should be planted on the first or second date. In a cool year, beans planted on a later date may not give sufficient yields for canning or freezing before an early frost has killed the vines.

As a guide for garden planning green beans will yield about ½ - 1 lb of fresh beans per foot of row.

Following are the home garden varieties of green and wax beans listed in

the Alberta Horticultural Guide:

Green — Bush Blue Lake (various strains), Executive, Greenpod, Tendercrop, Topcrop.

Wax — Eastern Butter Wax, Midas, Puregold, Top Notch Golden Wax.

CORN

Because corn requires approximately 90-100 days to mature, the use of successive seeding dates is quite limited. Fortunately, again there are many varieties available to the home gardener and by selecting two or three of these a gardener should be able to harvest corn for about four to six weeks from early mid-August through mid-September.

Although corn is a true warm season crop, early seeding (May 1-15) is recommended. Because the growing tip of corn remains below the soil surface for about two weeks after emergence it is able to withstand a late spring frost. Corn makes good advantage of this early start by developing an extensive root system early in the season which helps its development later on in the year.

To spread the harvest season, gardeners are recommended to make use of early, mid and late season varieties. As an example, a gardener planting a combination of Polar Vee, Butter Vee, Golden Beauty and a late variety such as Queen Anne could expect to harvest corn from about August 10 to past mid-September.

A late variety such as Queen Anne will not mature in many parts of the prairies. In order to be able to harvest fresh corn up to frost a second planting of an early variety can follow the main crop planting by about 10 days.

As a guide for garden planning a 100 foot row of sweet corn will yield approximately 10-12 dozen cobs weighing 90-100 pounds.

Following are the home garden varieties of sweet corn listed in the Alberta Horticultural Guide:

Very early — Polar Vee.

Early — Butter Vee, Seneca Explorer, Seneca 60, Sunny Vee

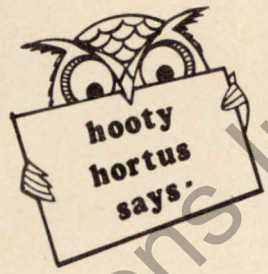
Mid-season — Golden Beauty, Market Beauty, Seneca Golden, Sunchief A.

Late — Queen Anne, Mellowgold.

OTHER CROPS

As for peas, beans and corn, the harvest season of many other crops can be extended by the same and other methods. Crops like radish, lettuce, green onions, carrots and beats can be seeded over a period of two to eight weeks. An early crop of radish can be planted and harvested in the space scheduled for a late seeding of peas or beans. Different varieties of cabbage can be used to give an early, mid and late season harvest. Transplants can also be used to give earlier crops of cabbage and lettuce. Warm season crops such as tomatoes and peppers which always require transplanting can have their harvest season moved up by one to two weeks when paper or plastic protectors like "Hotkaps" and "Titan Tents" are used.

A home vegetable garden can become much more productive when a little planning is used. The fresh harvest season will be longer, yields greater and there will be less waste. Planting peas, beans, corn, and other vegetables on different seeding dates and using different varieties are examples of good garden planning.



Do you know what lime-induced chlorosis is? Look at the accompanying photograph. The leaves have turned yellow with the leaf veins still showing some green coloring. This lack of green chlorophyl in the leaf is commonly a symptom of iron deficiency and is called lime-induced chlorosis, not because of a lack of iron in the soil but because the soil's high lime content ties up the iron in the soil into a form unavailable to many plants.

Lime induced chlorosis is not uncommon in prairie soils. Some plants are more seriously affected than others, while some spots, even in one's small garden area, are more prone to bring on this condition than others. If left uncorrected it can seriously reduce growth and in extreme cases cause the death of the plants affected.

Correction of this lime-induced chlorosis in plants can sometimes be made by applying a dry form of iron sulphate in a trench around a plant or in small holes bored in the ground around a tree and then watered into the soil. A more effective means is by using a plant soluble form of iron known as iron chelates — the most common trade name is Sequestrene 330. It is applied in the same manner as iron sulphate. This product is expensive, but if it is a valuable tree or shrub you wish to save it may well be worth the price.

Perennial Vegetables are Valuable

C. W. CARLBERG,

Perennial vegetables fresh from the garden provide a number of nutritious treats at a time when little else is available from this source. Some work and considerable patience are needed to grow perennial vegetables successfully in a location which can be left undisturbed, yet easily managed, for a number of years. Rhubarb is grown in many prairie gardens, asparagus is less common, while chives, horse-radish and perennial onions are grown by those who fancy the flavors they possess. Asparagus, rhubarb and horse-radish preserve well to add variety to winter diets.

The above mentioned perennial vegetables will do well in most prairie soils which have been enriched by the addition of well rotted barnyard manure spaded or otherwise worked to a depth of twelve inches or more. The site should be well drained.

Asparagus.

Two-year old plants, obtainable from a number of nurseries, are recommended for establishing a row of asparagus. Propagation by seed is also possible but this method will require an extra year or two to bring the planting into production. Varieties recommended are Washington and Viking. Early spring is the time to plant asparagus. A trench six inches deep and wide enough to accommodate the roots is prepared. Plants are spaced eighteen inches apart on mounds of soil in the bottom of the trench. The crowns of the plants will then be four to five inches below ground level. The trench is then partially backfilled and watered. Additional soil is added as the shoots grow. At no time during the planting operation should the roots be allowed to dry out. In dry weather keep them in moist soil or peat moss until planted.

The next two years in the life of the asparagus are devoted to developing healthy, vigorous plants. No harvesting is permitted until the third season, at which time cutting may take place during a period of no more than two weeks. Full production begins in the fourth year. During the harvest period, which begins between late May and June 1, all shoots are cut as they reach about six inches in length. Cutting should cease by July 1 or earlier if shoots begin to appear

weakened. During the balance of the summer top growth is required to manufacture food for a strong crown and root system which, in turn, will produce vigorous shoots the following spring.

Weeds and grasses should not be allowed to develop in the row. In late fall or early spring the top growth is cut at ground level and burned, and a light application of well rotted manure worked into the upper layer of soil. A high nitrogen chemical fertilizer is applied in early spring; having an analysis of 26-13-0 used at the rate of one pound per hundred feet of row is recommended.

A healthy row of asparagus should last for thirty years, keeping in mind the need for weed control, upkeep of soil fertility and the benefit of irrigation in dry seasons.

Rhubarb.

The variety McDonald makes a delightful pale red dessert and is widely recommended and grown. Other good varieties are Canada Red, Valentine and Ruby. Named varieties are produced by divisions which may be obtained from nurseries for planting in early spring. Divisions from your own or neighbor's healthy but oversized plants are quite acceptable for planting. Each division should consist of at least one or two buds and a section of the root system. Plants should be spaced four to six feet apart and set so that buds are not more than one inch below the soil surface.

Harvesting begins in the third season. Using stalks in the first and second year will weaken and slow the development of vigorous, productive plants. When harvesting begins, a fair number of plants and stalks should be left on each plant at all times, and

harvesting should cease by August 1. Stalks should be pulled from the plant rather than cut.

Care of rhubarb consists mainly of controlling weeds and appropriate action to maintain soil fertility. Well rotted manure worked into the soil about the plants along with an early spring application of chemical fertilizer is recommended. The chemical fertilizer may have an analysis of 26-13-0 or 33.5-0-0 used at the rate of up to ¼ cup per plant placed in a shallow trench about each plant. All digging and trenching should be shallow to avoid damaging the rhubarb roots.

A condition known as "Red Leaf Disease" frequently destroys rhubarb plants. Affected plants develop blotchy red leaves followed by wilting and death. On examination roots will be found to be decayed. The condition is not well understood so no certain controls can be recommended. However, affected plants should be removed as soon as noticed and the same location should not be replanted to rhubarb for at least three years. Shallow planting is thought to discourage red leaf disease.

Insect pests are not a common problem in rhubarb growing. Occasionally dark colored aphids infest the underside of leaves late in summer, a time when rhubarb should not be pulled and when fall frosts are not far in the future. Killing frosts make chemical control unnecessary and, furthermore, it is a difficult task to spray the underside of rhubarb leaves.

Chives.

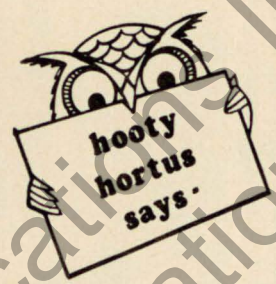
Appear as small grasslike onions growing in clumps. The tops are used for seasoning. They are usually started from seed but once established should be divided every few years to prevent overcrowding. The culture of chives is similar to that of onions.

Horse-Radish.

This vegetable generates more questions on its eradication as a weed than are asked regarding its culture. However, the rampant habit of horse-radish is easily controlled by growing it as an annual. As such, the roots are dug each fall using most for relish but saving a number of side roots for planting the following spring. Roots for replanting should be one-quarter of an inch thick and from four to six inches in length. Winter storage is best accomplished by burying the cuttings a few inches deep, outdoors in the garden. They are planted early the following spring by placing the cuttings in an upright position with the thickest end upward.

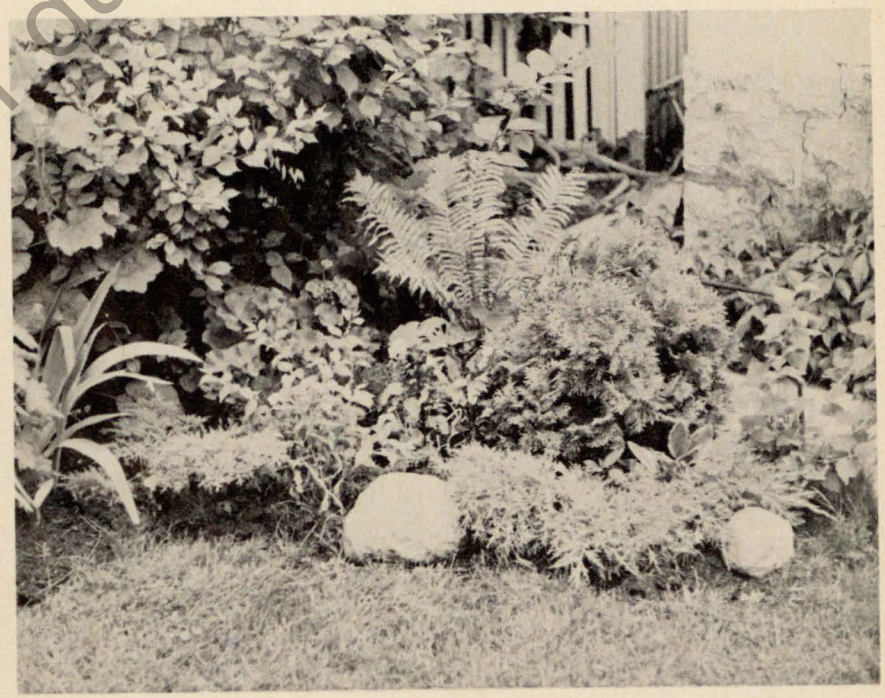
"If our farm and kitchen garden plants did not make solid food out of thin air, sunshine and water, we would not be here to appreciate the incidental beauty of their flowers and the flavor of their fruits".

—H.O. James (English Garden)



Just an idea that may be of value! This small corner of my lawn area was once just a "cross-over" on the way from the front to the rear of my house. In fact, when my son was a youngster it was his direct run to a bicycle stand I had affixed for this purpose on the fence shown in the background.

Today this area is all filled in as shown, and we stay on the sidewalk and go around. Plantings consist largely of a bracken fern, a dwarf cedar, a small mugho pine, yet to come into prominence, and a border of golden Pfitzer junipers interspersed with several small boulders.



Fruit Varieties For Saskatchewan

S. H. NELSON

To pick out two varieties of each type of fruit for a province as large as Saskatchewan is really putting oneself out on a limb. Because of climatic zones, varietal performance varies greatly and the following should be construed as personal preference rather than a recommendation. For further details on the permance in the various regions, the Hort-Facts publication 123A entitled "Fruit Varieties 1976-77" should be consulted.

Apple

For Saskatchewan generally, the variety **Patterson** has no doubt the best quality. This University of Saskatchewan introduction is a yellow apple with some orange blush; approximately 2½ inches; white, fine, juicy flesh; sub-acid flavour; and excellent quality. It will keep until the end of November. The tree appears sufficiently hardy for zones 3B, 4 and 4A. **Rescue,** really classified as an apple-crab, would be the second choice. Introduced by the Experimental Farm, Scott, Saskatchewan, it has proved very hardy showing only a trace of injury in Zones 5 and 6A in most seasons. This 1½ — 1¾ inch apple is well washed with red, and has white, crisp, juicy flesh; sub-acid flavour; and excellent quality.

Pears

This type of fruit must be considered primarily as a novelty. None of the varieties are currently recommended in the Guide to Farm Practice in Saskatchewan. The winter hardiness performance of the University introductions has been erratic, but on a trial basis in well-protected locations the varieties **John** and **Peter** could be tested. Both have good quality when picked slightly green and ripened off the tree. John grows up to 3 inches while Peter is smaller at 2¼ inches.

Plums

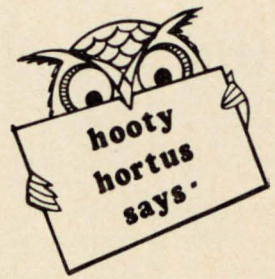
Unfortunately the early blooming habit of plums is subject to unfavourable climatic conditions in early spring and often results in low fruit set. Assuming that pollinators, such as Assiniboine and Dandy are present, the varietal choice would be **Prairie** and **Pembina. Prairie** is one of the better quality University of Saskatchewan introductions and it is also one of the hardiest, although not recommended above Zone 4. This plum is 1¾ inches, red in color, thick, tough, slightly astringent skin; yellow, juicy, mellow flesh; sweet, pleasant flavour; and good quality. **Pembina** is an older introduction from the Experimental Station, Brookings, South Dakota. It is possibly a little larger, but lacks somewhat in headiness and must be planted in more protected locations than **Prairie.** The fruits are fairly similar but **Pembina** does not have as much astringency in the skin.

Mention should be made of other plums that have more hardiness, but lack size.

Parkside is a small red plum with extreme hardiness and the **Ptitsin selections** are small high quality plums that can be grown in some parts of Zone 5.

Cherry-Plum Hybrids

Although there have been a number of varieties introduced in this class of fruit, there is little to choose between many of them. The older varieties, such as **Dura, Manor** and **Opata** are still recommended. The University of Saskatchewan selections (**Beta** and **Gamma** having best quality), although lower growing and more spreading than the older varieties, have not shown that this lower growing habit has made them more winter hardy.



CARROT. *A light loam soil produces the straightest carrot roots. Land for carrot production should be manured 1 year before the crop is grown. Freshly manured soil often produces forked and rough roots. Charles Walkof.*

Growing Vegetables in the North

JIM PORTREE

Growing vegetables in the north for the novice can be frustrating. However, with some understanding of the climate and soils, bountiful harvests can easily be achieved. The format I have used is one of defining the problems associated with northern gardeners and then listing some measures to overcome the environmental handicaps.

Two factors that northern gardeners must overcome to achieve good yeilds are: (a) short frost-free periods with 60 frost-free days — not uncommon in many northern Manitoba communities, and (b) cool soils that are usually low in nutrition.

Walk-in Tunnels

Recent developments throughout the world in growing vegetables under plastics are being applied to northern climates with promising results. A plastic-covered greenhouse design, termed the "tunnel", varies in size from the row crop model to the larger walk-in design. Both designs are simple in construction and materials and, therefore, are relatively inexpensive. Both units, with the limited use of supplementary heat, can extend the growing season from seven weeks to five months for locations between the 53rd and 58th parallels of latitude. The supplementary heat source will vary in size depending on the length of the tunnel and how early the unit is started up in the spring. Small car warmers and soil heating cables can provide sufficient heat in the long spring months for a row tunnel, 1.5 ft x 2 ft x 25 ft long. A 1500 watt room heater with a built-in fan is adequate for a 20 ft x 12 ft x 6.5 ft tunnel started up in early spring.

The use of supplementary heat is only to maintain an evening temperature of 4.5°C. The number of evenings the heater is in use will vary from 7 days to 60 days, depending on how early the unit is started and how late it is used in the fall. Trials in Thompson, Manitoba have demonstrated that no supplementary heat is necessary when the units are started up in June and cropped through early September, providing the ventilating flaps or doors are closed late in the afternoon. This is to trap solar energy so that an evening temperature of 4.5°C. can be maintained.

The combination of long hours of sunshine plus protection from the wind and cold allow plants grown in the tunnel to develop extremely fast, despite their late start. The tunnels are ideally suited to frost-sensitive crops such as cucumber, tomato, muskmelon, peppers, and beans, as well as early radish, lettuce, and onions. In order to utilize the space most efficiently, crops such as tomatoes and cucumbers are trained vertically. Taller growing plants are usually planted to the outside of the walkway with the smaller growing crops close to the walkway.

Keys to Tunnel Gardening

The keys to tunnel gardening are pruning, frequent watering, and periodic fertilizing. Before planting, it is important to modify the soil physically and chemically. Along the upper Nelson River Basin, which includes Thompson and Waboden, the soil consists of heavy clays. These clays should be worked up to a 6 to 8-inch depth and sand and peat moss should be incorporated to produce a workable gardening medium. Secondly, an all-purpose fertilizer such as 10-30-10 at 10 lbs per square foot should be worked into the ground. In those gardens which are largely composed of peat, it is very important to lower the acidity of the soil by adding 5 to 10 pounds of ground limestone per 100 square feet. Failure to increase the pH will result in leafy crops with poor underdeveloped root structures.

Row Tunnels

For gardeners who do not want to select such elaborate gardening aids as the walk-in tunnels, there are alternatives that require less time and care. Row tunnels are one of these alternatives. These units come in ready made kits of varying shapes and sizes. They can also be put together using heavy gauge wire formed into croquet-like hoops and 4 mil poly. The beauty of these units is that once they have served their purpose in developing home-grown bedding plants, they can be re-used for crops like tomatoes, peppers, beans, cucumbers and other frost-sensitive crops throughout the remaining part of the season.

Cold Frame

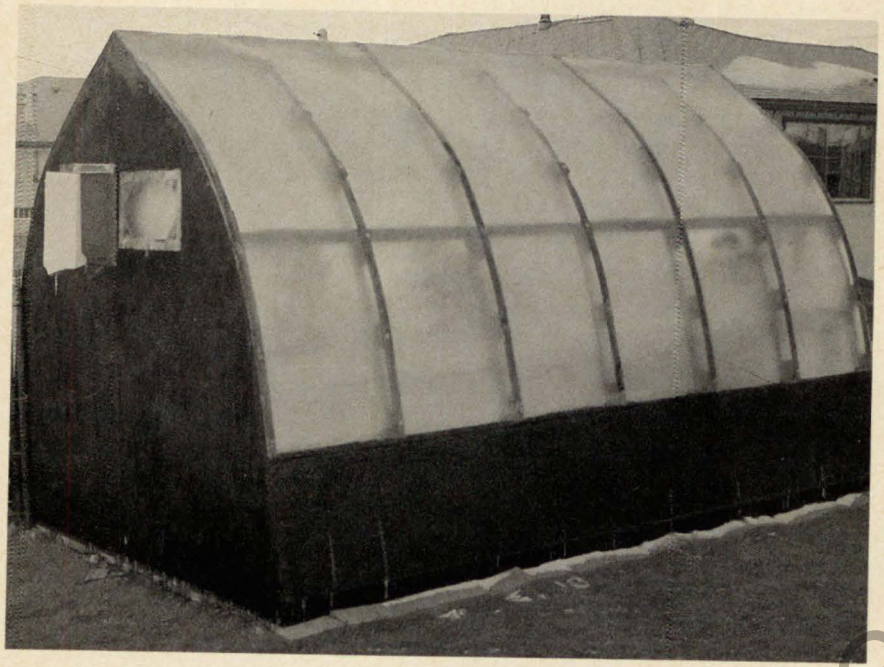
Another low investment greenhouse unit is the cold frame. These are ideal units for the novice gardener who is considering a small greenhouse or tunnel as the next step in his gardening adventures. If you are fortunate to have a basement window facing south or west, then the structure can be connected to the window for its heat source.

Hot Cap

The least sophisticated of the mini-greenhouses is the Hot Cap. Sizes vary from half square foot to about three square feet. This unit offers increased soil temperature, wind protection and increased air temperature during the day. However, unlike the walk-in tunnel and the mini-tunnel, the Hot Caps lack the controlled evening temperatures, but they are ideally suited for starting all outdoor vegetables from the frost-sensitive to the frost-hardy.

Hobby Greenhouses

Many northern novice gardeners who experiment with controlled environmental structures for growing vegetables usually graduate to more permanent structures such as a small hobby greenhouse. There are a number of hobby greenhouse plans available. These units are easy to build and provide the serious gardener with hours of enjoyment and



relaxation. Two popular designs are the A-frame and the Gothic arch. The key to remember is that, whatever design you choose, select one with the lowest possible ceiling that is comfortable to work in. This will help reduce the heating cost, especially in the north. Also, insulating the first two to three feet from the ground level with styrofoam will reduce heat loss. The amount of light lost by doing this is minimal. A double layer of polyethylene separated by a two to four-inch air space will reduce heating costs by as much as 40-50 percent. It is important when selecting your covering material to choose between the reinforced plastics (woven) or the rigid fiberglass materials. These are the only covering materials able to withstand the northern climate. Another important feature of your greenhouse should be the inclusion of a Dutch door or stable door for early spring ventilations.

Crops

In the north, I have seen some of the fastest-maturing and highest-yielding outdoor gardens produced anywhere in Manitoba. The advantage of the northern summer is one of the secrets of this type of development. Long hours of daylight peaking at 19 hours during mid-summer and cool evening temperatures allow crops such as the cabbage family and many of the root crops such as potato, turnip, and carrot, to thrive under these conditions. However, because of the short frost-free season, crops such as beans, peppers, cucumbers, and tomatoes are a 'hit or miss' endeavour without the use of some protection.

When to Plant

One of the most common errors of the novice northern gardener is to plant gardens at the first available opportunity in the spring. The error is perpetuated by southern Manitoba planting schedules and the deceiving northern springs. It all boils down to the fact that the soils are still too cool for late May plantings and spring winds are usually cool and abrasive, weakening the transplants and limiting the germination of the seed crops.

There are several approaches one can take. Each fall the garden should be well dug-over to permit increased soil temperature as soon as possible in the spring. Clear 2 mil plastic can be put over rows that have been seeded. The system speeds up germination by increasing soil temperature and retaining soil moisture in the fast-drying surface layer of peat moss. The three-foot wide plastic is anchored by soil. The opening for germinating the seedlings is made by slitting the plastic in eight-inch lengths alternated with an inch gap where the plastic is left uncut. This alternate pattern of cut-no-cut will prevent the plastic from being ripped apart during high winds.

With the exception of carrots, turnips, peas, radish, and lettuce, most plants are started indoors under fluorescent lights or in a sunny window sill. Plants started indoors and then moved to protected structures outdoors have a good head start and sufficient time has passed to allow the soils to warm up.

Starting Seeds

Giving seeds a head start by presprouting has proven successful for some northern gardeners. It is important to ensure that the seeds are not too far advanced when seeded. The use of warm water for watering your plants also aids plant development. Many successful gardeners have installed hot and cold taps in an outside outlet adjacent to their gardens. Bi-weekly additions of a soluable complete fertilizer such as RX 15 or 20-20-20 at the rate of one tablespoon per gallon of water simplifies the guess work of feeding the low nutrient base soils of the north.

Conclusion

If one approaches northern gardening with an attitude slightly different from that of a gardener in the south, the rewards can be unlimited. Consciousness of soil temperature, frost, and microenvironment is imperative. Preconceived ideas of northern gardening appear to be the only limiting factor in achieving a bountiful harvest of fresh vegetables. As one long-time northern resident put it — "When I moved up here from southern Ontario, I sold all my gardening equipment, believing that gardening was futile in the north — the next year, I promptly went out and purchased a new set of gardening tools."

SKIMMINGS

captured by W.R.L., during the passing days through the many happy years:

—"The gardener's work is one of worth, He's partner with the sky and earth, He's partner with the sun and rain, — And no man loses by his gain".

—Ruskin wrote:

"The first farmer was the first man, and all historic nobility rests on possession and use of land".

—Emerson.

Fruits for Northern Regions

D. R. ROBINSON,

The following relates primarily to tree and bush fruits grown in northern Saskatchewan. This region covers a considerable area and it is reasonable to assume that the varieties mentioned and the comments offered should be generally applicable to the northerly communities of the three prairie provinces.

At the outset we might well ask the question, "Where is the boundary between the northern and southern regions"? For the sake of simplicity let's suggest that a line be drawn on the map from Winnipeg to Saskatoon, and from there to Edmonton and onward to the western boundary of Alberta. The territory lying north of this line would constitute the "northern regions". Two qualifications must be made at this time. (1) We have very little information for those communities lying to the north of the agricultural settlements; (2) Fruit zonation maps have been prepared for each province. These maps provide quite a lot of detailed information, and are available from District Agriculturists, Agricultural Representatives, provincial Horticulturists and other sources.

APPLES

For Saskatchewan three varieties of standard apples are on the recommended list for the more northerly regions. These are **Heyer 12, Heyer 20** and **Patterson.** All three appear to have moderate resistance to fire blight disease. These are 2½ inch apples which rate good to excellent for cooking purposes. In the writer's opinion two other varieties, **Adanac** and **Exeter**, show considerable merit for northern orchards. These two Saskatchewan originations possess considerable hardiness and are productive.

APPLECRABS

In the grouping known as applecrabs the varieties, **Kerr** and **Rescue** appear to be popular in all three provinces.

With reference to crabapples the variety, **Dolgo,** appears on all three provincial lists. From the standpoint of hardiness and blight resistance **Columbia** may still merit a place in northern gardens. Two new varieties, **Redheart** and **Trailman,** should be given careful consideration. Redheart originated in township 47, west of Prince Albert, and Trailman is an introduction from the Beaverlodge research Station in the Peace River district of Alberta. Both varieties are believed to possess a high degree of quality and hardiness.

PLUMS

With reference to plums it is probably correct to say that the older varieties are not as well suited to the northern regions as were crabapples. These early introductions were mainly selections of the Manitoba plum and when they were moved north they were more or less at their northern limit with respect to hardiness. Likewise, the early flowering habit of these plums and occasional late spring frosts resulted in low productivity. Of the several varieties that have been introduced, **Bounty, Dandy** and **Norther** are on two or more of the lists of recommended varieties. With the introduction some years ago, of the **Manchurian** plums, a hardy strain of P. **salicina,** the outlook is now greatly improved. Broadly speaking, the Manchurian plums are more hardy than the native selections, and some of the Manchurian introductions are of good quality both for dessert and cooking. **Ivanovka** and **Ptitsin No. 5** are two of the more promising varieties for northern areas. **Mandarin and Ptitsin No. 12,** along with **Fofonoff,** a recent introduction from eastern Saskatchewan, should be of value in the northern regions.

Wessex is a small fruited plum, of excellent quality when canned. It is a hybrid involving three species and was originated in township 49 near Carrot River. In appearance it relates more closely to the sandcherry x plum hybrids, but is is upright to nine feet in height and is much hardier than those hybrids. Two new varieties should be available in 1977. These two are complex hybrids originating in northern Saskatchewan. They, like Wessex, are upright in habit and of good quality when canned. It seems entirely probable that these three new introductions will find a place in northern gardens.

CHERRIES

There is very little in the way of news concerning the sandcherry x plum hybrids. **Opata, Dura** and **Manor** are on one or more of the varietal lists. Their lack of hardiness makes them of doubtful value in the north. Likewise, their sprawling habit of growth makes cultivation difficult. These fruits probably will be replaced by the hardier, upright hybrids and the Manchurian plums.

The **Mongolian cherry, P. fruticosa,** is a hardy species of sour cherry. Selected seedlings of this cherry might well prove suitable for certain areas of the northland.

PEARS

Some 15 years ago several varieties of fair quality pears were introduced by the University of Saskatchewan. The suitability of these pears for northern districts has not been determined. However, for the fruit grower who is willing to experiment, **David** and **John** might be worth trying. It is worth noting that the pear variety, **Jubilee,** originated near Melfort in north eastern Saskatchewan. This variety might well be planted on a trial basis in northern communities.

RASPBERRY

There is little doubt that the red raspberry is one of the hardiest and most dependable fruits grown in the northern farming communities. The

quality of the home grown fruit is equal or superior to that of imported varieties. **Honeyking** and **Chief** are two of the most dependable varieties for the north. **Boyne,** a more recent introduction, is rated as satisfactory in the northern districts of Saskatchewan.

CURRANTS, GOOSEBERRIES

Currants and gooseberries have declined in popularity during recent decades. This situation is largely due to trouble caused by the currant fruit fly, however, if treatment is given at the right time this pest can be controlled. Information relating to insecticides and control measures are available from agriculturalists and horticulturists as mentioned at the beginning of this article.

With reference to red currants, **Stephens** and **Red Lake** appear to be the most popular varieties. **Prince Albert** and **Viking** are listed by some authorities.

Regarding black currants there have been few changes in the lists of varieties in recent times. **Willoughby,** a recent introduction, appears on two provincial lists. This currant has some resistance to mildew. **Crandall** is listed by Alberta and Manitoba. Additional varieties include **Magnus** and **Naples.**

In white currants the **White Grape** seems to be the most popular. **White Imperial** appears on one list.

Pixwell and **Thoreson** (Pembina Pride) are the only gooseberry varieties recommended for a major part of the area under consideration.

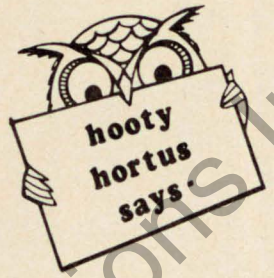
STRAWBERRY

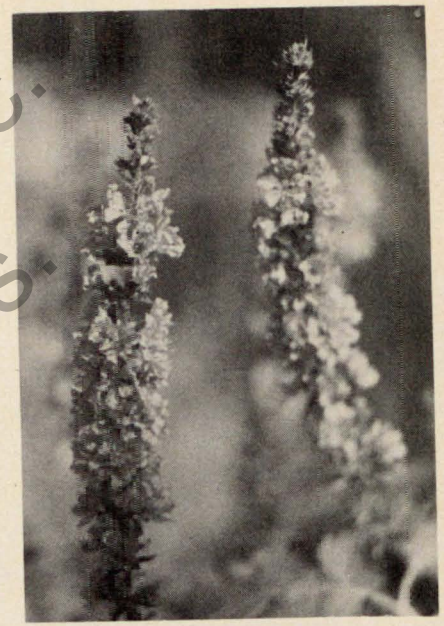
Because of better than average moisture conditions and a good snow cover most winters, the strawberry is a popular fruit across the near north. In the opinion of some people, the everbearing varieties are to be preferred over the June bearing varieties in northern regions. Information on varietal performance is not abundant and recommendations vary from one province to another. **Gem, Jubilee, Ogalalla** and **Parkland** are some of the better everbearing varieties for northern regions. Likewise, **Porter's Pride, Protem** and **Senator Dunlap** are some of the June bearing varieties recommended for the north.

The foregoing comments are intended to relate to the home fruit grower and not to commercial production. The home gardener should learn the art of top working or top grafting. There are several good quality standard apples, of borderline hardiness, which could be grown with moderate success if they were top worked on a hardy intermediate stock or even onto hardy crabapple varieties. Favorable small orchard sites, with good air drainage, should be given greater emphasis. With the present cost of food it seems entirely probable that fruit growing in our area will now receive more consideration than it has in recent times.

What does he plant who plants a tree?
He plants the friend of sun and sky;
He plants the flag of breezes free;
The shaft of beauty towering high.

— H. C. Bunner





A few spikes of lythrum just to remind you that this hardy perennial, particularly since the introduction of 'Morden Pink', 'Morden Rose' and 'Morden Gleam', deserves a place in your garden. In their natural state lythrums are found in low-lying spots. The new cultivars, however, seem to tolerate almost any spot, either in full sun or partial shade.

The Jackmani Clematis is, I believe, the most strikingly beautiful flowering perennial vine that can be successfully grown on the prairies. It has masses of dark purple blooms (four inches across) from late June into fall. The flowers appear on the upper two-thirds of vigorous vines that grow each summer to ten feet or more in height.

Another lovely Clematis that does well on the prairies is Ville De Lyon with reddish blooms. Of these two, I consider the Jackmani the hardier and more vigorous.

The photograph is of my own Jackmani Clematis. It has flourished and bloomed up against the south wall of my house for over 20 years. It is truly an old and cherished friend.

Set the plants close to a house foundation, a location that radiates sufficient heat to temper the winter's cold, and give them a little top cover in the fall, largely to hold back early spring growth, and they will prosper for years and years.

Adventures in Grafting

JOHN A. VELIATH

I remember well the day I took a twig from a guava tree and scissored it securely between the split end of a mango branch. How bitter my chagrin the next day on finding the guava scion so thoroughly dead! But I was only nine then and hadn't heard of a word called 'incompatibility'.

Years have passed, and here I am in Canada and everything is so different. Yet somehow, deep down, nothing has really changed much. I still retain the fierce love for grafting I nurtured as a child in faraway India. Why grafting? I've often wondered about that. Perhaps its the aura of mystery that surrounds the bizarre and the different . . .

Potmatoes

In our junior year as horticultural students at the University of Guelph, each student was required to do a different project in our Plant Propagation course. I chose to investigate the 'Grafting of Tomatoes onto Potatoes with Special Emphasis on its Economic Potential'. Potato and tomato plants of roughly the same stem thickness were provided. I used two grafting techniques — the side and wedge grafts — and did 14 of each. Incisions were made with a new safety razor blade and the tomato scions were held in place with self-seal, elastic adhesive. Grafts were placed immediately in a humidity chamber where they remained for three weeks. Rarely have I experienced the surging thrill I felt in finding that 24 of the grafts had formed successful unions; only four of the side grafts had not 'taken'. The development of the grafts was followed daily for a period of three months.

One of the most intriguing discoveries I made was that, whereas the root system of the potato control was sparse and straggly, that of the grafted potato was exactly like that of the tomato control — dense and deep. Over these roots were distributed numerous marble-sized potatoes. Another interesting observation was that the tomato top dropped about half of its blossoms before they set fruit. However, the fruits that did set developed normally and tasted exactly like tomatoes. I have reserved for the last an observation that has literally revolutionized my life: One day I happened to take my girlfriend to visit the grafted plants, and lo! she's now my wife. And even though my findings do not augur well for the economic potential of such a crop, there will always be a patch of potmatoes in our back yard.

Virus Infection — Strawberries

During my final year at Guelph, I was again fortunate in being able to choose a project that involved grafting. This time it was the indexing of strawberry cultivars for virus infection. Strawberry varieties are subject to attack by many types of virus, resulting in drastic decreases in yield. Many of these viruses do not produce any visible symptoms, aside from reduced vigour, and are said to be latent. Hence, growers cannot be sure if their plants are infected or not. However, there is a wild strawberry that does produce symptoms. This is the species **Fragaria vesca** and it, therefore, is used as an indicator plant.

In order to determine whether a plant has a latent virus infestation, a leaflet from the test plant is grafted onto an indicator plant. If the test plant is infected, the virus is transmitted to the indicator plant and symptoms appear. This is called indexing, and is precisely what I did to 12 of the professor's choicest cultivars. Imagine my unbridled joy when all sorts of weird-looking symptoms began appearing on all the indicator plants. During a seminar at the end of the course, I proudly announced to the class that most of the prized cultivars in the department's breeding stock were infected with every known latent virus strain, and perhaps a few unheard of ones to boot. I noted from the corner of my eye that the professor did not share my enthusiasm.

Apple Tree Grafting

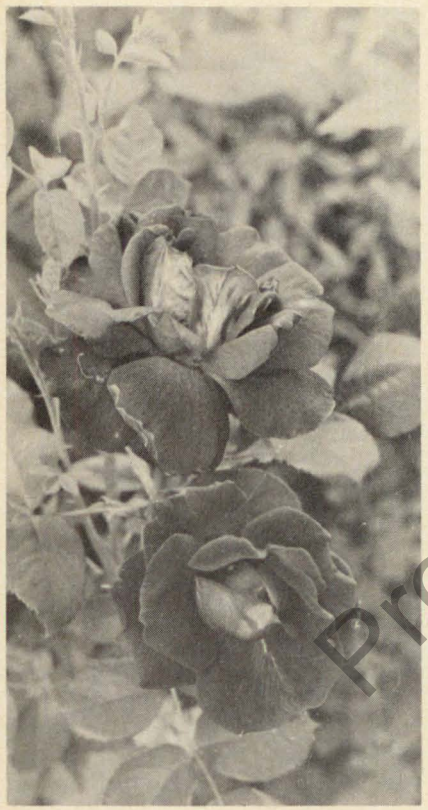
In 1972, two momentous things happened: Our first child was born and I started to graft an apple tree. Our landlady, at the time had an eight year old crabapple whose fruit was not even suitable for making jellies. So when I told her I would transform it into an object of wonder with three or four varieties growing on the same tree, she readily agreed to allow me to try.

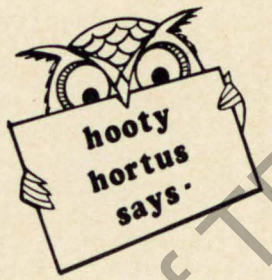
That fall, I collected scion wood from 'Rescue' and 'Breakey' and stored them at 40°F. The next year, early in May, I selected five branches one to two inches in diameter and sawed them off cleanly six inches from the trunk. These stumps were the bark and cleft grafted. Scions were held tightly with rubber bands and all cut surfaces were painted with hot grafting wax. As an experiment, I also whip-grafted the tips of another branch with three 'Rescue' scions. The results were more than I had expected. All the bark and whip grafts had taken, even though only one cleft graft was successful. Late the following summer I budded 'Heyer Bill', 'Collect' and 'Goodland' onto three more branches and all the buds took. Since 1972, I have been gradually removing the ungrafted branches. Only one remains. So now there's a genuine apple chimera in my landlady's backyard with five varieties growing on the same plant. The grafted branches have grown fast and the tree has filled out beautifully. And guess what? Last summer, the 'Rescue' branches that were whip-grafted bore a delectable load of dulcet apples. Honey of Hymettus!

Another happy grafting story involves Mr. Friessen of the Botany Department at the U of M. This ardent horticulturist has several acres of land on which he grows woody plants of all

types. Among his collection were a hundred or so young apple trees of doubtful origin. I once visited his private arboretum and T-budded just one apple plant. He took over from there and went wild, and I believe he now has over 50 good quality budded trees.

Exuberant over my success with apples, I informed anyone who cared to listen about my grafting prowess. One such person was Mr. Benson, the Overseas Student Advisor at the U of M and a keen gardener. On a spring day in 1974, grafting gear in hand, I walked into his back yard. This man had done me a lot of favours and I dearly wished to show my appreciation. So I hacked off most of the branches from all his apple trees and began sticking scions onto the stumps with reckless abandon. Mr. Benson and his wife were more than abashed by the sight of their decapitated trees and my frenetic zeal, but I reassured them that the future looked rosy. Time passed. Two months later, I visited Mr. Benson and asked him how the grafts were doing. He replied without a smile that only one had taken. A month later, I found out that even that had withered and died . . . Well, if you're looking for me, you won't find me within a good half-mile radius of Mr. Benson's office.



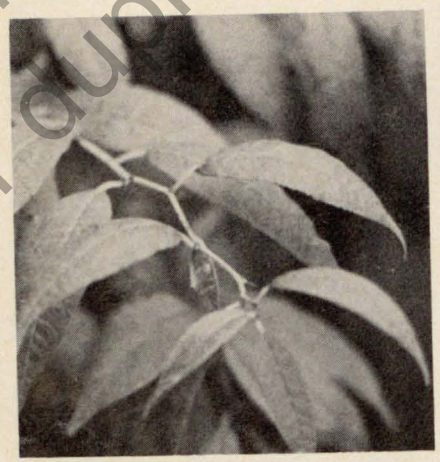


Cuthbert Grant and Adelaide Hoodless are two new completely hard, almost continuous blooming roses that should be in every prairie rose garden. They have all the hardiness of one of their parents, R. arkansana, the common wild rose of the prairies, and much of the shape and beauty of the tea and florabunda roses that also make up a large part of their blood line.

These two roses are just another example of the continuous successful plant breeding conducted by Dr. Henry Marshall, horticulturist at the Canada Research Station in Morden, Manitoba.

Cuthbert Grant (see photograph) is an upright bush growing to some three feet in height with dark red flowers each with 15 or more firm petals, borne in clusters of three to six blooms on the current year's growth. Any winter tip killing is inconsequential as growth is so vigorous that bushes, in any event, need to be pruned back a bit each spring.

Adelaide Hoodless is a vigorous upright, open growing bush with reddish-brown almost spineless canes. The flowers are medium red in color, 2½ inches in diameter, semi-double and borne in clusters of up to 25 blooms. The flowers are faintly fragrant and long lasting.



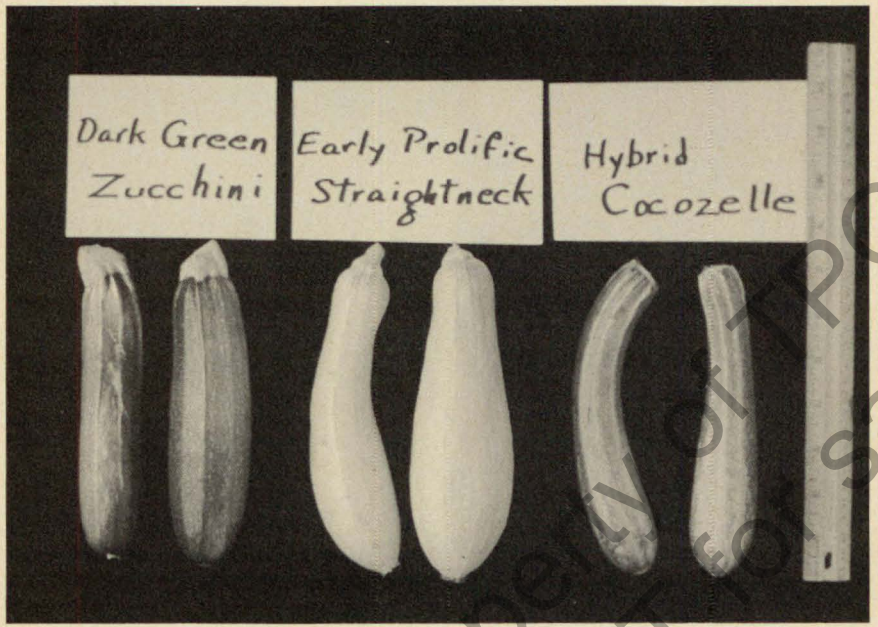
This photo is a visual guide to help you recognize this hardy ornamental shrub, the Cherry Prinsepia sinensis. It can grow to ten feet in height but can easily be kept within bounds. It has bright green leaves, inconspicuous yellow flowers and small reddish fruit. It makes a good thick hedge while numerous small sharp spines along its branches deter trespassers. It is also an excellent border shrub.

Assiniboine is not only a superb ornamental shrub but also a lovely hardy rose bush growing to about five feet in height with well formed, moderately large, reddish-purple flowers borne above its dense foliage. The blooms, when open, display attractive yellow stamens. It gives a colorful display of flowers in July, always with some bloom on the bush until frost. The accompanying photograph was taken in my garden last October.

This lovely shrub rose is the result of Dr. Henry Marshall's work at the Canada Research Station, Morden, Manitoba, crossing R. arkansana (the common wild rose of the prairies) with Helen Prior (a florabunda rose), and was one step forward in the development of the Cuthbert Grant rose.

Summer Squash

GEORGE LUTHER



It you haven't grown summer squash before, I suggest you try some next year. It requires only a small area in your garden, as three or four plants will provide all you should need.

MAIN TYPES

There are four main types of summer squash: Zucchini, Cocozelle, Yellow Crookneck or Straightneck and Scallop. The Zucchini and Cocozelle appear to be the most popular and are available on the produce stands of supermarkets all months of the year. Both have straight, cylindrical fruit with fairly square ends; the Zucchini fruit is either solid dark green or green speckled with yellow, whereas the Cocozelle has light and dark green stripes running lengthwise. The Straightneck and Crookneck have distinctly tapered bright yellow fruit and the Scallop is disc or shallow dish shaped with scalloped edges.

Varieties:

Zucchini — President, Diplomat, Stirr's Green

Cocozelle — Striato, Cocozelle Stripé

Yellow — Goldbar, Goldneck and Goldzini

Scallop — Patty Pan, Bush Scallop.

All of the above varieties produce bush type plants that grow to about three feet in height and have a spread of about the same.

SEEDING

Seeding is done in late May or as soon as the soil is warm and after there is little danger of frost. Fruit should be ready for harvest in 55 to 60 days after seeding and production will continue until frost if the fruit is harvested regularly when still young.

HARVESTING

The Zucchini, Cocozelle and Yellow types are in their prime when the fruit is about 1½ to two inches in diameter at the thickest point and the Scallop when it is four to six inches in diameter and creamy white in colour. At this time, the flesh will be crisp, the rind very tender and seeds poorly developed and soft. It is very important that all of the fruit be harvested while still small even though they may not be used, because if allowed to enlarge further, production of the plant will be inhibited. Fruits develop very rapidly during the warm days of July and August and plants should be checked almost daily.

Summer squash can be eaten raw in salads, boiled or fried, providing you with a low calorie food that is rich in vitamins.

CONSERVATION. *What is the balance in nature? Let's get back to the principles. We cannot turn back civilization's clock, nor do we want to. But there are steps we can take that will bring us into better harmony with our natural world, and put us in a position to enjoy our resources more wisely. This is the nub of conservation. G. S. Avery, in Plants and Gardens.*

Allotment Gardens

W.W. DANYLUK

During the past summer the Department of Tourism, Recreation and Cultural Affairs initiated a program of leasing allotment garden plots. This program was aimed at those who wished to try their hand at vegetable and flower gardening but lacked the space and/or the opportunity to follow this hobby at their place of residence.

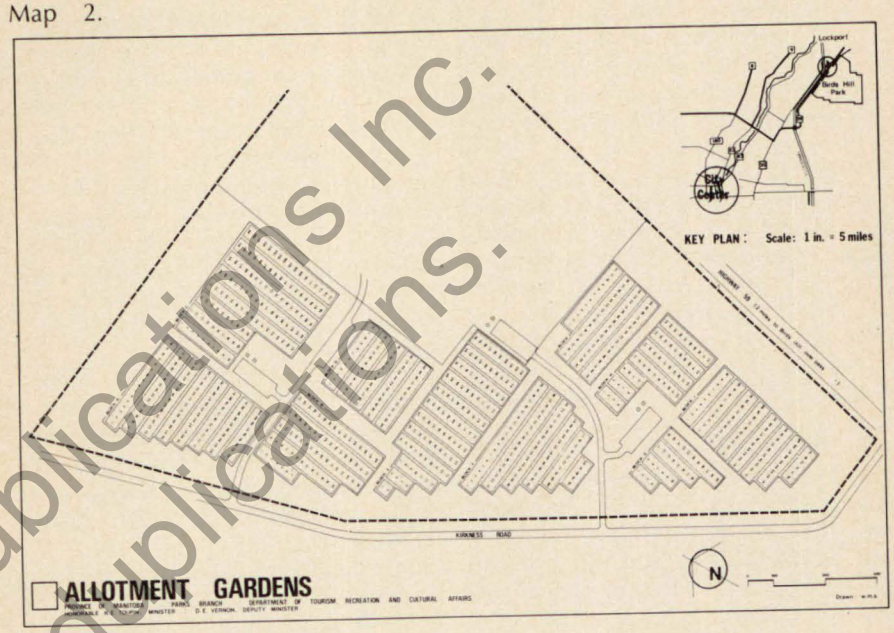
The idea is not a new one in Winnipeg. The Parks and Protection Division of the City of Winnipeg, the Winnipeg Hydro, Manitoba Hydro and the St. James Horticultural Society have, over the years, made various properties available for this purpose.

The Department of Tourism became interested in this program as a means of providing new recreational opportunities to city residents. Gardening has many recreational benefits beyond the production of fruit, flowers and vegetables. As a hobby, it offers the individual improvement in health and well-being — a way to relieve the tensions of modern living. For children, the garden is an introduction to the wonders of nature; for the elderly, gardening is a healthful means of doing something meaningful. For everyone, it is one answer to the problem of using increasing amounts of free time in a pleasant and useful way. As society becomes more urbanized, the small garden for many people provides that important tie to the open countryside — a tie that cannot be found within the city's scope or even in the often crowded city parks.

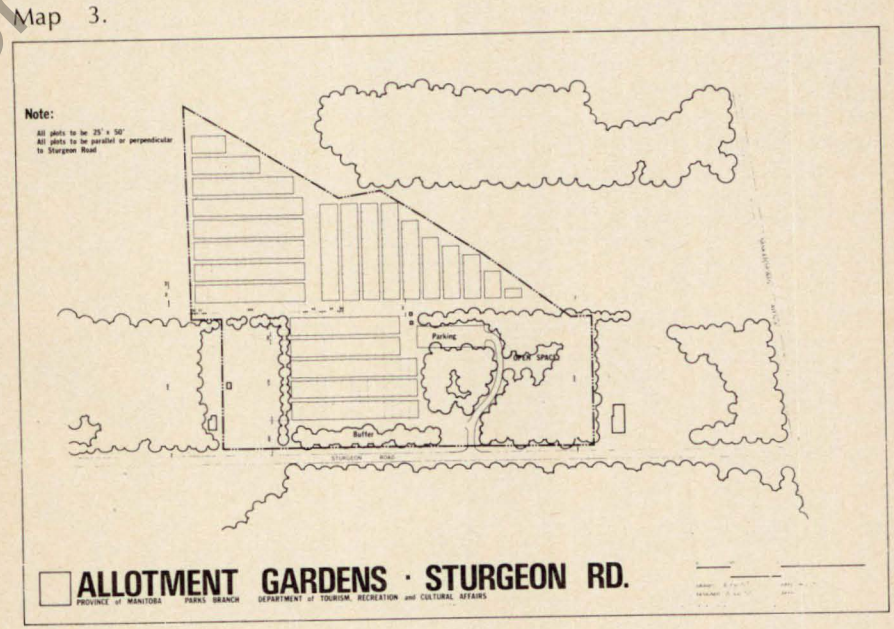
As our model for last summer's program we used ideas on location and design which had been found successful in European countries.

— locations should be near residential areas.
— they should take advantage of the natural features to subdivide the plot blocks and act as buffers against adjacent uses.
— sufficient space should be provided for a minimum number of plots — no fewer than 50 — to develop a community spirit and competition among gardeners.
— individual plots should be large enough to allow for a variety of plantings.
— provision must be made for children's play space, for casual sports and picnicking with the entire site being designed as a small park.

Map 2.



Map 3.



— irrigation is a must.
— the gardener must have reasonable assurance of tenure so that he will be encouraged to devote his efforts to soil and planting improvement.

With this criteria in mind, landscape architects of the Parks Branch located and designed three allotment garden sites on the city's outskirts.

Map 1. St. Mary's Road at the Floodway — 270 sites.
Map 2. Kirkness Road at PTH 59 — 744 sites.
Map 3. Sturgeon at Saskatchewan — 235 sites.

As the program was initiated in March, much work had to be done in ploughing, cultivating, and draining the land. Access, parking, sanitary and locker facilities and water wells had to be provided in time for spring planting.

Of the foregoing total number of sites, some 700 were available for use by late May. And of this number, 214 were allotted. Owing to the late start, little publicity had been given to the program. Nevertheless the response was better than we had expected .

Individual plots are 25 x 50 feet, renting at $15 per year. Lockers are available for an additional $5 per year. The garden plot permit is renewable annually. If conditions allow, up to three plots may be held by the individual applicant. The rental rates have been established to return capital and operational expenses over a fifteen year period. Few restrictions are placed on gardeners beyond the common horticultural practices, but herbicides, insecticides and fertilizers must have prior approval from the Parks Branch before use.

Young families made up the major proportion of last summer's gardeners — many of whom came out two or three times weekly. Family groups generally made an outing of each visit although some approached their gardening projects with a planned program that would do justice to any market gardener.

The Department looks forward to increasing interest in this program and for the spring of 1976 we will have all 1,249 plots well cultivated and ready for use. All applicants are welcomed.

Please write to Allotment Garden Program, Parks Branch, 200 Vaughan Street, for further information.

"No occupation is so delightful to me as the culture of the earth, and no culture comparable to that of the garden"

—Thomas Jefferson.

Birds in the Garden

JOHN and ISABEL REICHERT

In our hurried pace of life, so much is missed along the way because we do not take time to notice some of the wondrous things of God's creation, including the beauty of the birds. They are sufficiently numerous, varied and elusive to challenge our ability to identify or photograph them. Their songs, colors, graceful movements, intriguing habits, individual personalities and mysterious migrations add up to one of the most satisfying and rewarding of hobbies — bird watching and bird photography.

Since coming to town, we have been amazed at the number and variety of birds who visit our small garden in the course of a year; robins, catbirds, orioles, brown thrashers, waxwings, doves, siskins, nuthatches, chickadees, crossbills, redpolls, flickers, woodpeckers, grosbeaks, bluejays, juncos, gold finches, purple finches, warblers, wrens, hummingbirds, sparrows, including the lovely Harris and fox-sparrows, grackles, starlings and on occasion, a Northern shrike. Needless to say, the last three are not welcomed with enthusiasm.

Having trees nearby is an asset of course if you wish to attract birds; say a leafy old maple or an evergreen for nesting sites and a mountain ash, a crabapple or a cherry tree for food treats. A good supply of clean, fresh water should be available at all times and as soon as the cold weather sets in, food should be on hand for the winter visitors. Sunflower seeds, cracked grain and suet seem to satisfy most birds. However, there's no accounting for tastes, and we once had a catbird who developed a fondness for oatmeal porridge!

Feeders

There are different types of feeders on the market but the birds are not particular and will come to a simple home-made wooden tray. It should be set up on a metal pole, high enough to be out of the reach of cats and in full view from within the house. A snug little house for the wrens is needed and in true Lombardo fashion they'll return the favor by serenading you every morning with some of the sweetest music this side of heaven.

Making Friends

Getting to know the birds and making friends with them requires time and patience. Go about your outdoor chores as usual until they become

Baltimore Oriole.

used to seeing you nearby. Then, gradually, get closer to the tray when they are busy feeding. Try offering seeds from your hand, especially on a day when you have neglected to fill the feeder. Eventually, one bird, a little braver or hungrier than the rest, will come to you and before long you will have them eating from your outstretched hand; in fact, you'll have them all over you! Can you imagine trying to get a photograph with one bird on your head, one on your shoulder and another sitting on the camera lens? One winter, all we had to do was open the door, hold out some sunflower seeds, and the crossbills and redpolls would fly in to feed from our hands.

The crossbills are expert seed crackers but the little redpolls haven't the proper beak for it. Not to be outdone, they crowd in and wait for a crossbill to drop a seed or part of one. We have even watched them snatch a seed right of a crossbill's mouth. This never seemed to bother the crossbills, but a sparrow dare not try the same trick.

We found these two birds and the little black-capped chickadees the easiest to tame. A beautiful brown thrasher nesting in our hedge included our next-door neighbor in her circle of friends. She not only surprised, but delighted him by sitting on the rolled-down car window for a chat one day as he was about to leave for work. Poor mother bird! Her babies fell prey to some marauder before they ever left the nest.

The usually haughty-looking flicker can be a real clown on occasions. We had an amorous one who fell in love with his own reflection in the glass door. Day after day, he came back to strut back and forth across the top step. He primped and preened with wings and tail outspread, chuckling and squawking as he admired himself. Sometimes he would flop over as if he were dead, with his head twisted

Pine Siskin.

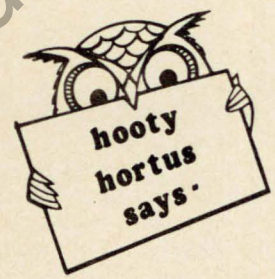
Black Capped Chickadee.

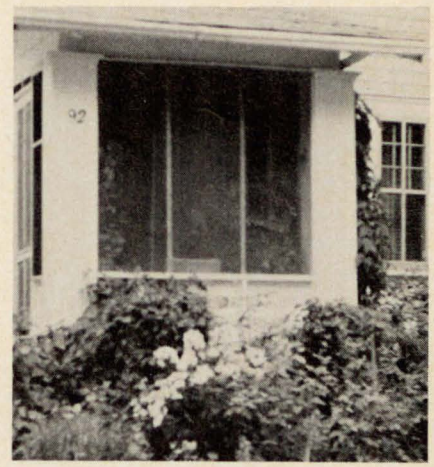
around at an almost unbelievable angle. Then away he'd go, quite unaware that his performance was watched by an unseen audience.

If making friends with the birds requires time and patience, then photographing them requires infinitely more of both. Birds are notoriously fickle models and are more than likely to take flight just as your are about to release the shutter. Once in awhile, however, your efforts will be well rewarded with another photo to add to your treasured collection of bird pictures.

Fall Days

The garden is quiet today and just a little sad under a cool, grey October sky. A plump, old flicker is searching the lawn for a tasty hidden morsel; two young doves are cuddled together, half asleep, in the shelter of a spruce tree and a solitary robin is perched on the edge of the bird-bath, sipping daintily as she meditates. Now she has stepped out into deeper water without even testing the temperature with her toes and is splashing away merrily. Enjoy yourselves, dear friends, for soon you will be leaving us for a warmer clime. May you have good weather for flying as you wing your way southward, and we will be looking forward to your return when spring comes again to the prairies.





The principle purpose of foundation plantings around the house is to blend in its sharp features with the lawn and its surroundings, and make it look more like a home. The accompanying photograph shows how I have attempted to do this.

The plantings in front consist of a pagoda dogwood, several mock orange, a spirea and an Assiniboine rose, a compact shrub with quality blooms. Bordered in front of these are a number of tender roses, several lilies, a clump of white phlox and some flowering annuals. The deep corner to the right is filled in with dogwoods and cotoneasters and, at the lot line, a spruce flanked by a cedar frames out a side entrance and wall of the neighboring house.

Cross Pollination is Important for Tree Fruits

S. H. NELSON

In early years when "Johnny Appleseed" was scattering his apple seeds around the U.S.A., or even later on the prairies when many seedlings of tree fruits were being grown, the need for cross-pollination was not so apparent. As improved varieties were selected, however, and they were propagated by asexual means (grafts or cuttings), problems of fruit set became apparent.

To explain this problem it should be first understood that the seed in tree fruits are the result of the union of two parents and that there is segregation so that each member of a population is a different individual. In other words, they do not come true-to-variety. As the better types in these seedling populations were selected, usually named, and propagated asexually, we started to perpetuate a large number of identical plants of a few select groups. This is where our pollination problems began to occur.

Pollination

Tree fruits require pollination and subsequent fertilization for seeds to develop and this, in turn, stimulates the development of the fleshy part of the fruit. Pollination is only the transfer of the pollen from the anther of a flower to the stigma of a flower. If the flowers happen to be from the same tree or trees of the same variety, it is known as self-pollination, while if the pollen comes from flowers of another variety, whether grafted to the same tree or from other trees, it is known as cross-pollination.

The use of the term pollination, as it is used horticulturally, is really a misnomer because pollination, which is a passive function resulting from insect activity, can occur without fertilization. That is, even though some pollens are transferred, the pollen grain may not germinate or the pollen tube may rupture before it can grow down through the maternal tissue to bring about fertilization. Accordingly, terms such as self-fruitful and self-compatible or self-unfruitful or self-incompatible may be more appropriate.

Even with self-fruitful varieties, pollen from another variety usually has an advantage as the pollen tube usually grows faster in "unlike" tissue. Thus, even though a variety is self-fruitful or capable of being self-pollinated, a lot of cross-pollination or cross-fertilization will occur. Many plants have mechanisms to encourage and

give an advantage to self-pollination, but these do not exist in the tree fruits.

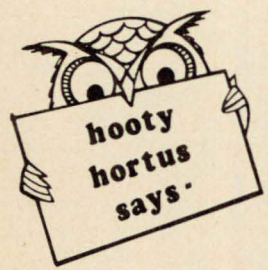
Tree Fruit Pollination

With tree fruits, cross-pollination and cross-fertilization is essential to yield an acceptable crop of fruit. Accordingly, one of the main criterion is to have more than one variety of a given type of fruit growing in close proximity, usually considered within 100 feet. Other criteria that must be considered is that at least two of the varieties have functional pollen, that they are compatible, that they have sufficient blossom period overlap, that there are sufficient insect pollinators, and that, hopefully, each variety is of acceptable quality.

To be specific on pollination requirements on tree fruits is difficult. With highly valuable commercial varieties, intense and laborous controlled pollination studies have been carried out, but in Western Canada most of the information has been based on observations.

It is generally accepted that practically all crabapples, apple-crabs and apples are sufficiently cross-fertile to yield a plentiful crop as long as there are sufficient insects and sufficient blossom overlap, and no particular problem has been encountered with pears.

Plums grown on the prairies have been more of a problem. Many of the varieties are closely related and these hybrids are generally not only self-unfruitful but possess non-viable pollen. Cropping is often further reduced by abortive maternal tissue. Accordingly, it has been generally accepted that selected native varieties, such as Assiniboine, Dandy or Norther, must be used as pollinators. Only recently, after years of observation, has it been decided that Norther is really ineffective as a pollinator. Little is known about the pollination requirements of the cherry-plum hybrids and the few tree cherries we can grow on the prairies. They would seem to be sufficiently cross-fruitful among their varieties even though abortive tissue has been reported in both the maternal and paternal varieties. Possibly the heavy flowering habit of plums and cherries counteract some of the effect of these problems.



Some **Definitions**

Aerate — referring to soil means loosening hard, compact soil by incorporating organic matter or sand to allow passage of air among the particles of the soil.

Deciduous — shedding their leaves in the fall as compared with the evergreens.

Humus — organic matter in the soil itself, in varying degrees of decomposition.

Weed — some plant you do not want.

Growing Fruit in The North

RUDOLF O. SCHLICK, The Pas

At The Pas at present I am growing a dwarf selection of the Siberian crabapple **Malus Baccata** "Nertchinsk". On the dwarf crabapple I am hoping to graft buds of the apples Breakey, Goodland, and Carroll. Apple varieties generally recommended for northern climates are Battleford, Oriole, Red Melba, Heyer 12 and 20, Prolific, Rutherford, Yellow Beauty and Patterson.

Applecrabs, the crosses resulting from apples crossed with crabapples, which will grow in the northern prairie provinces are Rescue and Dawn. I have had good success with Rescue at The Pas. Another gardener and I have both tried the applecrab, Kerr, without success. It has also been reported to me that Trail, a favoured applecrab in southern Manitoba is not hardy enough for as far north as The Pas.

Crabapples that have grown successfully north of the 53rd parallel are Osman, Quality and Dolgo. The first two I am growing at The Pas and they are useful for canning, while Dolgo is probably one of the best crabapples for making jelly. Other crabapple varieties mentioned for growing in the northern prairie provinces are Amur Red, Bedford, Redheart, Tasty, Robin and Olga.

Varieties of other fruit that should be tried in the northern margins of agriculture are:

PLUMS — varieties — Dandy, Elite, Northern Parkside, Ivanovka, Ptitsin No. 5, and Ptitsin No. 9. I am trying the plum-chokecherry crosses, Dura and Opata. Dura is not hardy above the snow in winter and as such the tree grows horizontally like an enlarging octopus covering the lawn about it. For this reason I would not recommend this variety. Opata has survived above the snow line for one year.

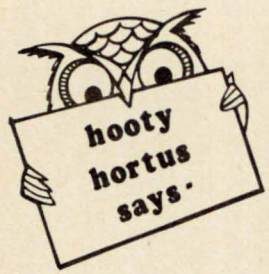
CURRANTS — black, white, and red varieties can be grown in the northern prairies. I grow two bushes of Stephens Red No. 9. Strangely, one bush always produces bigger fruit and has bigger leaves than the other bush. Horticulture judges generally tell me the berries are extraordinarily large, I wonder if this is a sport?

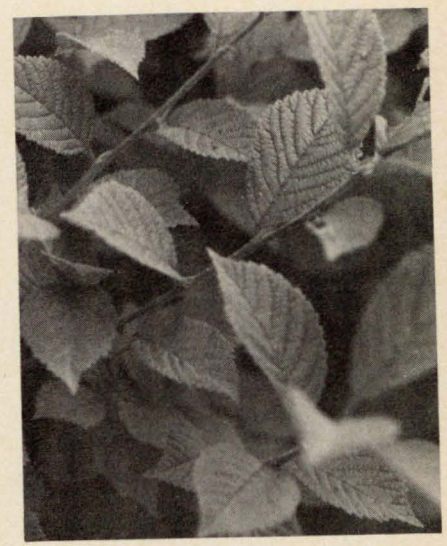
PEARS — varieties Andrew, David, John and Philp are worth a try.

RASPBERRIES — varieties — Chief, Boyne and Killarney are generally recommended. Boyne is more winter hardy than most varieties. Killarney is supposed to have better fruit than Boyne. In The Pas I grow Tahoma, and the stems do winter kill somewhat.

SASKATOONS — domesticated varieties developed at Beaverlodge, Alberta and, therefore, present no hardiness problems, are Forestburg, Pembina and Smoky. The latter two varieties taste better, the first variety has bigger berries, about ⅝ inch diameter.

STRAWBERRIES — while it is generally recommended that strawberries be given winter protection, people in The Pas growing strawberries do not give them a winter covering. Perhaps in the northern parts of the prairie provinces, despite colder temperatures, the snow does not blow about as much exposing the ground and, therefore, plants like strawberries may actually survive the winter better than in the southern parts of the provinces. Varieties recommended as not needing winter protection are Protem, a variety from Beaverlodge, Alberta, Senga Sengana — from Germany, and Veestar from Vineland, Ontario.





This photo is a recognition guide. It is a leaf close-up of the Nanking Cherry. Other ways of identifying this hardy, attractive ornamental shrub is its masses of small pinkish white blooms in early May before the leaves have opened, followed by myriads of bright red cherries about one-half inch in diameter all along the stems. This fruit is tart but edible and makes wonderful jelly. I leave the berries on my bushes for the birds — they love them.

Contributing Authors

J. R. ALMEY	Retired Provincial Horticulturist and Agricultural Agent for C.P.R.
ALAN BEAVEN	Manitoba Forestry Association Incorp.
DIANNE BEAVEN	Manitoba Forestry Association Incorp.
MRS. VERA CRAIG	Home plant grower, Winnipeg.
MARJORIE HUGHES-CALEY	Garden lover, Prince Albert, Sask.
C. W. CARLBERG	Head Gardener, Agriculture Canada Research Station, Swift Current, Sask.
ALBERT COLLET	Collet Orchard, Notre Dame de Lourdes, Manitoba.
W. W. DANYLUK	Manitoba Department of Tourism, Recreation and Cultural Affairs.
W. J. EMERSON	Government Greenhouse, Winnipeg.
A. L. FEHR	Research Branch, Canada Agriculture, Morden, Manitoba.
LORRY GANS	Director, Manitoba Horticulture Assoc.
V. HILDAHL	Liaison Officer, Canada Forestry Services, Winnipeg.
A. KOLACH	Entomologist, Manitoba Department of Agriculture, Winnipeg.
GEO. LUTHER	Dept. of Plant Science, University of Manitoba.
URSULA MUELLER	Riding Mountain National Park naturalist, Wasagaming, Manitoba.
S. H. NELSON	Department of Horticulture Science, University of Saskatchewan, Saskatoon.
G. NODEN	Electronics Department, Southern Alberta Institute of Technology, and rose grower.
M. E. PARKIN	Wascana Centre Authority, Regina, Saskatchewan.
GARY PLATFORD	Plant Pathologist, Manitoba Department of Agriculture, Winnipeg.
LORNA POFF	Technician, Manitoba Department of Agriculture, Winnipeg.
JIM PORTREE	Thompson Research Greenhouse, Thompson, Manitoba.

JOHN and ISABEL REICHARD	Bird lovers, Morden, Manitoba.
G. REYCRAFT	Garden columnist, Winnipeg Free Press. Also former editor of The Prairie Garden.
D. R. ROBINSON	Retired Extension Horticulturist in charge of Horticulture Societies in Saskatchewan.
T. A. SANDERCOCK	Vegetable Specialist, Manitoba Department of Agriculture, Winnipeg.
C. A. SCHAUPMEYER	Vegetable Specialist, Alberta Horticultural Research Centre, Brooks, Alberta.
RUDOLPH O. SCHLICK	Home gardener, The Pas and Winnipeg, Manitoba.
DIETER SCHWANKE	Information/Education Officer, Environmental Management, Department of Mines, Resources and Environmental Management, Winnipeg.
FRANCES SMITH	Member, Winnipeg Horticultural Society.
J. PAUL SPROULE	Olds College, Olds, Alberta.
ANNE STACEY	Begonia grower, Winnipeg, Manitoba.
GARTH STONE	Potato Specialist, Manitoba Department of Agriculture, Winnipeg.
R. M. TRIMMER	Horticulturist, Plant Industry Division, Alberta Agriculture.
JOHN A. VELIATH	Graduate student, University of Manitoba.
JOHN WALKER	Retired professor of Horticulture at the University of Manitoba; and Superintendent of the Forest Nursery Station at Indian Head, Saskatchewan. Latterly, Research Associate at the University of Manitoba.
ROBERT WALKER	Riding Mountain National Park naturalist, Wasagaming, Manitoba.
STAN WESTAWAY	Recently retired—T.V. gardener, University of Manitoba.
E. D. WHELAN	Research Branch, Canada Agriculture, Morden, Manitoba.
ISABELLE R. YOUNG F.R.H.S.	Writer and gardening columnist.

"The forest is a peculiar organism of unlimited kindness and benevolence that makes no demands for its sustenance and extends generously the products of its life activity; it provides protection to all beings, offering shade even to the axeman who destroyes it".

—Gautama Buddha — circa 525 B.C.

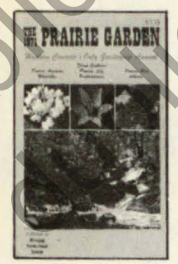
PHOTOGRAPHIC CREDITS — COLORED SECTION

G. Malaher
J. Portree
P. Peters
A. Reichert
T. A. Sandercock
G. Stone
J. Walker
F. Weir

Advertisers' Index

ORDER FORM




☐ 1976 Prairie Garden — $2.00 (Back issues will be sold at $1.25 each as long as they last.)

☐ 1975 ☐ 1971
☐ 1974 ☐ 1970
☐ 1973 ☐ 1969
☐ 1972

The Prairie Garden
P.O. Box 517
Winnipeg, Manitoba
R3C 2J3

Please send me the Prairie Gardens as indicated in the boxes above. My cheque in the amount of $ is made out to the Prairie Garden.

Name _____

Address _____

Code _____

NOW is the time to plan your exhibits for

The Twenty-First Winnipeg International Flower Show

August 26th and 27th, 1976

Polo Park Shopping Mall

Sponsored by

The Winnipeg Horticultural Society and
The Winnipeg Gladiolus Society

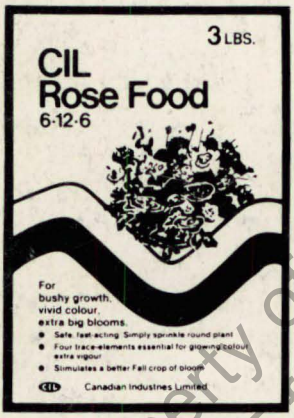
NOTE: Shipping charges to a maximum of $5.00 per shipment will be refunded to prize winners. All exhibits must be forwarded (prepaid) to arrive at the Polo Park Shopping Mall before midnight August 25th, 1976. United States exhibitors should advise by wire and mark packages "cut flowers for exhibition — no commercial value".

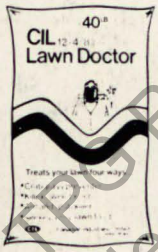
Mrs. Tannis Gordon (Secretary)
901 Norquay Building
Winnipeg, Manitoba R3C 0P8
946-7801

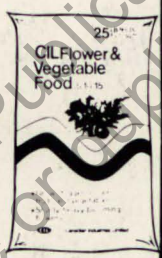
Printed in Canada.

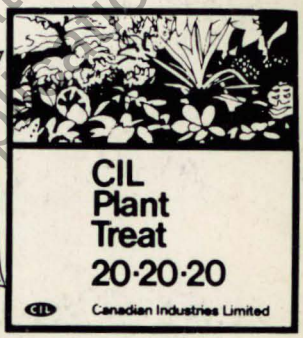
C·I·L

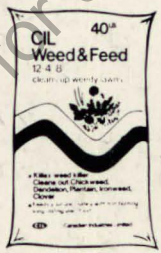
Lawn & Garden Products

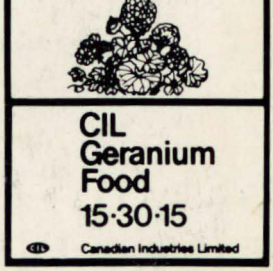












SOLD AND DISTRIBUTED BY

GSL *The Gardeners Sales Ltd.*

984 Powell Ave., Winnipeg, R3H 0H6

Phone 783-7187

ALSO SELLING

Seeds, Containers, Irrigation equipment, Fertilizer, Sprayers, Agricultural chemicals, Garden machinery, Greenhouse supplies.