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# Hints On Dry Land Gardening

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EXPERIMENTAL STATION, MORDEN, MANITOBA



Spruce tree shelter combines well with paper protectors to provide desirable growing conditions for vegetable plants



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# Hints On Dry Land Gardening

A good vegetable garden is an asset to every farm home. Well tended and under favorable conditions, a half acre in garden will produce more food for human use than the same area planted to any other kind of crop. Home-grown vegetables of high quality, available throughout the year, help to sustain good health, promote greater individual efficiency, and assist in reducing the family food bill.

Gardening can be successful in the Prairie Provinces in spite of sustained periods of dry weather. Failures are often the result of a lack of soil moisture conservation or adequate plant protection, and poor weed control. The following hints on dry land gardening have been accumulated in the past twenty-five years when severe droughts occurred in the Prairie Provinces.

## Conserving Moisture

Much winter precipitation is lost because the snow from unprotected fields often drifts along fence lines and in coulees and tree thickets. If winter barriers are placed across the path of prevailing winds to hold snow in the garden area, this source of soil moisture can be a valuable asset.

### Shelterbelts

Well-established hedges of caragana and non-suckering Villosa lilac trap much drifting snow. Both shrubs are easily grown from seed. Poplars, willows, boxelders, and green ash also are useful but the shallow root systems of some may adversely affect a crop planted near them. Therefore, the crop should be kept back from the trees a distance of at least  $1\frac{1}{2}$  feet for every foot of tree height. Spruce trees are especially good for shelterbelts because they provide year-round protection. In the absence of trees or hedges, temporary barriers such as snow fences and straw bales will trap snow effectively on the garden. These should be placed on the windward side and 20 to 25 feet back from the garden. Corn and sunflower stalks are good for stopping drifting snow and should be left standing if planted around the garden area.

During the growing season shelterbelts are valuable in breaking the force of strong, drying winds. They also restrict soil drifting, and enclose the garden in a warm atmosphere desirable for early plant growth. While treebelts are being established snow fences or several rows of corn or sunflowers around the garden provide fairly good summer protection.

### Dikes

In most years all prairie districts have some water from melting snow. Much of this is lost through run-off when the ground is frozen. Temporary dikes made in the fall are useful for ponding this water on the garden until the frost is out of the ground. An effective dike is a ridge of soil 10 to 12 inches high placed along the sides and lower end of the garden. Ridges of strawy

manure or closely laid straw bales sealed on the water side with soil or snow also make excellent water barriers. On sharply sloping land, several dikes thrown across the garden slope may be required to hold water satisfactorily.

### Soil Preparation and Use of Fertilizers

#### Summerfallow

The dry land garden should be planted on summerfallow, since higher yields and better quality vegetables are produced on summerfallow than on land cropped continuously. The garden should therefore be large enough to permit one half to be in vegetables while the other half is summerfallowed.

#### Fall Tillage

A well-worked soil promotes good vegetable growth. Fall plowing contributes to desirable tillage especially on heavy land. However, large clods turned up by the plow may dry hard and may be difficult to work down. Although winter frosts mellow these clods considerably, harrowing immediately after plowing, particularly in districts of limited snowfall, is desirable.

Light sandy soil should be worked in the spring. Packing soon after plowing is essential to save soil moisture. If it is necessary to plow in the fall precautions must be taken to prevent soil drifting. A covering of clean sweet clover hay will protect the soil adequately and also hold snow.



One half of this garden at Boissevain, Manitoba, is summerfallowed while the other half is cropped. Note snowfence for protection.

## Seedbed

A finely worked, firm seedbed is desirable for small-seeded vegetables. This ensures rapid germination and strong seedling growth. If harrowing does not pulverize the soil lumps satisfactorily, a plank drag is effective.

The farm tractor has been the usual source of power in preparing the garden for planting, but the tractor wheels often compact the soil so much that vegetables do not grow well. It is advisable therefore to run the tractor across the garden as little as possible or, better still, to use the lighter-weight, small garden tractor for harrowing and levelling.

## Fertilizers

Partially decomposed manure or barnyard litter is excellent garden fertilizer and may be used in generous quantities. Applications of 20 to 30 tons per acre every two years are best. Plowing the garden, applying the manure and then harrowing to mix the manure into the top soil is a good practice. This helps to hold surface soil moisture and tends to maintain the soil in mellow condition during the season. If fresh manure is used it should be worked into that part of the garden being summerfallowed. This not only allows weed seeds present to germinate and be destroyed by cultivation but also helps to reduce the caustic effect of the decomposing manure.



The planted half of the same Boissevain garden.  
Note freedom from weeds.

Two methods of applying commercial fertilizer in the garden can be used. One is to scatter the fertilizer over the manure that has been spread on the plowed land before harrowing. Ammonium phosphate, either 11-48-0 or 16-20-0 at 300 pounds per acre, is satisfactory. The second method is to place the fertilizer in two bands, one on each side of, and two inches from, the seeded row and slightly below the level of the seed. A half cupful of fertilizer for each side of a 20-foot row is satisfactory. A garden seeder is useful for band-fertilizing long vegetable rows. Fertilizer should be applied soon after seeding.

## **Planting Plan, Varieties, Planting Dates**

### **Planting Plan**

A planting plan drawn to scale is an aid in ensuring adequate supplies of vegetables. In a garden with sloping land, the rows should be planted at right angles to the slope. For most vegetables the rows should be spaced  $3\frac{1}{2}$  feet apart but greater distances are required for some kinds as follows: 4 feet for corn and potato, 6 feet for melon and cucumber, and 8 feet for squash and pumpkin. The plant size of the mature vegetables must be considered also. Corn and vining types such as cucumber, melon, squash, and pumpkin should be planted to the side of the garden where they will not interfere with the smaller vegetables.

### **Adapted Varieties**

Many varieties of vegetables are available to the gardener but all are not adapted to the dry conditions in the Prairie Provinces. A list of recommended varieties may be had free by writing to the nearest experimental station.

### **Seeding Time**

It is a mistake to plant the different kinds of vegetables all at one time because they vary in hardiness, soil temperature requirements, and length of growing season. The hardy kinds such as onion, parsnip, pea, spinach, radish, and lettuce should be seeded as soon as the soil is dry and can be levelled with a garden rake. A second seeding of radish and lettuce in early May will prolong the season for these vegetables. Swiss chard, beet, carrot, and cabbage should be sown at the same time. Sweet corn and potato may be planted about the middle of May and although the plants may be frozen by late spring frosts, they will grow again and produce a crop. Beans and the frost-tender vine vegetables, cucumber, melon, squash, and pumpkin should not be seeded before May 26, or later in some districts. The seedlings should not be emerging until after the threat of frost is over. Warm soil is important for germination of tender vegetables.

### **Vegetables for Winter Use**

Vegetables for home storage should be seeded later than those for summer use. The last week in May is a good time to sow carrot, beet, and rutabaga. Parsnip should be sown in late April or early May. Cabbage can be sown in

the garden May 10, and Copenhagen Market is recommended. Danish Ballhead is a better storage variety but must be started under glass about April 15 and transplanted to the garden May 20.

### Starting Plants Indoors

Tomato, pepper, eggplant, and celery must be grown under glass for six to eight weeks before they are transplanted to the garden. Rural electrification has simplified this requirement by providing a good source of heat. A board or plank frame, fitted with two or three storm windows and two 200-watt clear glass Mazda lamps, or two heat lamps used for poultry brooders, provides a clean and effective enclosure for growing seedlings. If the frame is placed on the south side of a building it will have added protection against cold winds. Details for setting up a frame of this type are available at the Experimental Station, Morden, Man.

Pepper, eggplant, and celery seeds germinate slowly and therefore must be sown early, about March 25. However, tomato, cabbage, and cauliflower seeds germinate quickly and the seedlings grow rapidly so that their planting should be delayed until April 15.



Long, widely spaced rows permit easy cultivation with a small, row-crop tractor.

## **Transplanting**

All vegetable transplants should be thoroughly watered before they are lifted. A second soaking after the plants are set in their permanent position in the garden is advantageous. As a rule, transplants should be set at the same level as, or slightly deeper than, they grew in the frame. Tomatoes are not so sensitive as some vegetables and for that reason may be set deeply if the top soil is dry or if the plants are tall and leggy.

Transplanting usually subjects vegetables to severe plant shock. This can be alleviated somewhat by providing protection against wind and hot sun during and after transplanting. Shingles, and large cans and apple boxes with open ends are good protectors. These must be removed by mid-June. Paper protectors such as Hotkaps and Hotents have been used successfully at Morden. These are not removed but are torn open at the top in mid-June so that the plants may grow through. When using paper protectors it is very important, especially in warm weather, to cut a two-inch opening in the leeward side to provide ventilation.

## **Hints for Watering**

Gallon tins, with holes punched in the bottoms, plunged into the soil near transplants and filled with water once a week are an excellent source of extra soil moisture. A perforated rubber or heavy canvas hose buried alongside the vegetable row and attached to a barrel of water is also satisfactory. Celery and asparagus, which require more water than most vegetables for best results, respond favorably to extra soil moisture.

## **Seeding and Planting Methods**

### **Seeding**

Vegetable seed must be planted in moist soil to ensure germination. A good practice is to draw away the dry top soil with a rake and sow in the moist soil below. In dry weather the seed should be planted as soon as the furrow is opened and then quickly covered again. A light skiff of soil should then be drawn over the row to prevent evaporation from the exposed moist soil. Finally, the soil over the row should be firmed by tramping.

To ensure quick and even germination the soil of the seed furrows should be wetted thoroughly before planting the seed. Covering the seeded rows with weighted or pegged burlap strips or with snow fencing will hold the soil moisture close to the surface. This is important for germination of shallow-sown seeds. After the first seven days following planting the rows must be inspected every day and the coverings removed as soon as the seedlings appear.

A practice followed in dry land areas to ensure a crop of potatoes is to plow up a dry slough. Part of the crop is planted in the slough and the remainder on adjacent land. Wet or dry, a crop is assured.



### Thinning Seedlings

Vegetable rows that have been seeded too thickly should be thinned to avoid competition for soil nutrients and moisture, and also to promote normal plant development. Thin when the plants are approximately 2 inches tall and when the soil is moist.



Drawing the dry top soil aside and sowing the seed in the moist soil below ensures even and rapid germination.

### Weed Control

Few of the chemicals recommended for weed control in vegetable fields can be used in the home garden. A chemical that is safe for one vegetable may injure or destroy another kind in an adjacent row. Selective weedicides are practical only where large acreages of vegetables are grown.

Shallow or surface cultivation is most effective for weed control in the small garden. The flat, push-type hoe, the wheel hoe and garden tractor fitted with a weeding bar are useful for shallow cultivation. Deep cultivation can be harmful in the dry land garden because it tends to dry out the soil, destroys a valuable part of the feeding root system, and disturbs the activity of beneficial soil micro-organisms.

### Harvesting

Vegetables intended for storage must be harvested carefully. Rough handling, which often seriously bruises vegetables, should be avoided. A cool, cloudy, dry day is best for digging carrot, beet, and parsnip. Onion bulbs

should be pulled about August 26 and dried in the sun before storing. A good method is to braid the green onion tops with the bulbs still attached into solid ropes 4 or 5 feet long. Heavy baling twine should be used in braiding to strengthen the ropes for handling. These may be hung on the sunny side of a building to cure and dry. Covering is necessary in frosty weather.

### Storing

Open bin storage is best for potato and rutabaga. Carrot, beet, and parsnip roots will keep well if packed in sawdust or fine moss in suitable containers such as apple boxes. A layer of sawdust or moss 2 inches deep should first be placed in the bottom of the box, then a layer of roots about 2 inches deep, followed by another layer of sawdust. This is continued until the box is filled. Cabbage stores well with the root and stem cut close to the head and placed on a shelf or with the stem left on and suspended with twine from the basement ceiling. Celery will keep several months if replanted in moist sand on the cellar floor. One third of the leaves should be trimmed off. The storage temperature should be kept near 38 degrees F. Onion, pumpkin, and squash require dry, cool storage. A house attic kept at a fairly constant temperature of 45 to 50 degrees F. is satisfactory.



Vegetables trimmed ready for storage.

### Insect Pests

Several kinds of insects are destructive in the garden but under dry land conditions where plants are often smaller, damage may be more severe. The flea beetle is usually present as soon as the vegetable seedlings emerge.



This insect is pinhead in size, black, shiny, very active and therefore not readily noticed. It riddles the leaves and if present in large numbers may destroy young seedlings of radish, cabbage, cauliflower, beet, turnip, Swiss chard, potato, and tomato. Other serious pests are the potato beetle and leaf hopper. Dusting or spraying with DDT or chlordane controls these insects. To control cabbage worm it is advisable to use a derris compound non-poisonous to humans, when cabbage begins to form a head.

Wrapping the stems of transplants loosely with pieces of newspaper will reduce cutworm damage. Aldrin dusted on the ground around the plants will kill cutworms by contact. Granular toxaphene scattered in the furrow when onions are seeded has been effective in maggot control. Most of the poisons mentioned here are dangerous to humans and therefore the utmost care is required in handling them or when leaving them where children have access to them. Detailed information on insect control may be obtained from the Entomology Laboratory, Brandon, Man., or Lethbridge, Alta.

### **Diseases**

Many common garden diseases such as early blight of tomatoes and aster yellows of carrots and onions may winter over in untidy gardens or weedy borders. Therefore, all places containing such litter should be cleaned up and the refuse burned in the fall. Spraying diseased plants with bordeaux mixture or Tricop fungicide may help to keep some diseases in check. Information about disease control or the identification of plant diseases may be obtained from the Plant Pathology Laboratory, Winnipeg, Man.; Saskatoon, Sask., or Lethbridge, Alta.

