SPECIAL PAMPHLET *No. 75*

THE WARTIME GARDEN

There is a greater need for home production of vegetables now than at any time during the war. Every available bit of land that is suitable should be put into a garden. Those with experience should help their neighbours who wish to start; but it is essential that production should be the goal. Just having a garden without carrying it through to a successful result, is a waste of materials and manpower. Seed, fertilizer, spray materials and tools are available but we cannot afford to waste them.

Size of garden—What to grow

The size of the garden will limit the vegetable crops that can be grown and the amount of each. Aim to grow the vegetables that have the highest nutritional value. Because of their vitamin A content, it is desirable to include spinach, squash, and carrots. Tomatoes are the chief Canadian source of vitamin C and should be grown both for use as fresh and canned.

Site

The best site is one which receives full sunlight. Shade from buildings and trees is objectionable. Soil filled with tree roots should be avoided, since these roots will absorb plant food and moisture from the soil at the expense of the vegetable crops. Plants will not grow well in low wet ground, yet they need a soil which is capable of holding sufficient moisture for normal growth. For convenience, the garden should be as near the house as possible.

Soil

Any average soil can be made to produce vegetable crops. As a rule, vegetables will thrive on land where weeds will grow well, but it is important that the weeds be kept in check. The best soils are sandy loam, gravelly loam and clay loam. The first two are easy to work and are classed as "early" soils as they warm up quickly in the spring, but they have the added disadvantage of losing moisture badly during dry weather. The clay loam soils are more difficult to work. Digging or ploughing must not be done while they are wet as it will cause lumpiness that makes the preparation of a fine seed-bed difficult. But with careful handling good crops of all kinds can be grown on clay loam soil.

Very open sandy soils and filled-in backyards are usually poor. In order to grow crops, they require large amounts of manure and fertilizer. Heavy clay soil is difficult to handle, since digging and cultivating must not be done when they are wet. Where clay soil must be used, its texture may be improved by digging a four-inch layer of sand or coal ashes into the top spade depth, along with well rotted manure, as mentioned later.

Backyard gardens

Small backyard gardens can produce a lot of useful salad crops for immediate summer use; crops for home canning and crops for cellar storage to be used in winter, such as the following:—

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Tomatoes (one dozen plants trained on stakes for use fresh during the summer months, to can and make into juice for winter use.)

Beans	Lettuce	Carrots	
Beets	Radish	Onions (from sets)	Spinach or Swiss Chard

City lot gardens

In larger gardens a very full assortment of crops can be grown. To those mentioned above may be added:

Pole beans	Corn	Rutabaga (or Swedes)
Cabbage	Peas (dwarf, medium and tall)	Kale
Cucumbers and other vine crops	Turnips (summer)	Potatoes, etc.

In such a garden one should plan on growing enough tomatoes for home canning and potatoes for winter use. Potatoes will require protection from attacks of the potato beetle.

Community gardens

Where a large area of suitable land can be obtained for the use of a number of families, the whole area should be given uniform treatment of preparation. After being fitted for garden work, it should be divided into plots of about one-quarter acre area or approximately 50 x 218 feet, extending across the full width of the area. This makes long narrow gardens. The plan could then be arranged so that the planting of potatoes, beans, cabbage, etc., could run across all the gardens. The time for planting would be the same and cultivation given at the same time under proper supervision. When insect and disease control was necessary this could be done to best advantage by giving the same treatment to the particular crop in all the garden plots at the same time. This would be most efficient and economical of materials.

PREPARING THE SOIL

Time to dig or plough

Fall digging or ploughing is advisable, but where this has not been done it is necessary to do this work as soon as the ground is dry enough to work properly in the early spring.

Manuring

Well rotted manure is an excellent source of the organic matter which is essential to plant growth. Where it is available, rotted manure should be applied at the rate of 100 pounds or more to 100 square feet of garden area. This should be spread over the surface before ploughing or digging. Where the soil contains a good amount of organic matter, less manure may be used and fertility may be increased by adding ready-mixed commercial fertilizer at the rate of 2 to 3 pounds per 100 square feet. On poor sandy land or the usual filled-in backyard soil, one should, however, make an extra effort to obtain a good amount of well rotted manure.

Digging or Ploughing

The garden should be worked to a depth of 8 to 10 inches, making sure that all manure is covered and thoroughly mixed with the soil, and existing sod is turned under and covered completely. If couch grass is present, use a digging fork to shake out the roots.

Fertilizer

Where manure is scarce one may increase fertility by the addition of ready-mixed commercial fertilizers. On light sandy land a 4-8-10 fertilizer may be used: *i.e.* 4% nitrogen, 8% phosphorus and 10% potash—on heavier land a 4-12-6 fertilizer will prove more useful. These may be obtained through any seed store or dealer in agricultural supplies. Scatter the fertilizer over the surface of the garden after digging, at the rate of 4 pounds per 100 square feet, and work it into the top soil with a harrow or rake. If it comes in direct contact with roots or tops, it will cause burning of the young plants. Also it is necessary to thoroughly pulverize and smooth the surface of the soil in order to obtain a uniform stand of plants from seeds or transplants.

Tools required

Only a few simple tools are needed for a small garden. One of each of the following will be sufficient:

Spade (or round nosed shovel); digging fork; rake; hoe (some prefer a Dutch push hoe or a toothed cultivator with a long handle); planting trowel; planting line.

A hand duster or sprayer, wheelbarrow and wheel hoe are all useful and necessary in a large garden, but may be used in common by a number of gardeners.

Arrangement

It is advisable to have the crops sown or planted in long rows. Consideration must be given to the amount of shade cast by taller growing plants. Tall plants such as corn, staked tomatoes and pole beans, should be planted to the north side of the garden.

Seeds

Good seed can be obtained from the local seedsman. In localities where there is no separate seed store there are usually pictorial packet display boxes in the local stores. These are perfectly satisfactory as they conform to established Government standards. Certified seed potatoes should be used for planting and can be obtained from the local seedsman.

Time to sow

Soil, season and locality will govern the date of seeding. The following suggestions may serve as a relative guide.

Time to Sow Seed or Set Out Plants

		British Columbia & Southern Ontario	Prairie Provinces	Ontario, Quebec	New Brunswick Nova Scotia & Prince Edward Island
Hotbed sown	cabbage, lettuce, onion, tomato	late February, March	late March, early April	late March early April	late March, early April
In the open	curly endive, lettuce, onion (sets and seed), peas (smooth), early sprouted potatoes, radish, spinach	early March to mid April	late April, May	late April, May	late April, mid to late May
In the open	beet, carrots, chard, parsnip, peas (wrinkled), main crop potatoes, late cabbage seed sown thinly	mid April to mid May	late April to May	early May, June	mid May to June
In the open	bean, beet, carrot, corn, cucumber, squash, plant out tomatoes	early to late May or early June	late May to mid June	late May, late June	late May, mid to late June
In the open	set out late cabbage, sow rutabaga seed	late June, early July	late June, early July	mid to late June	mid June
In the open	Chinese cabbage	mid July	mid July	mid July	mid July
For fall use	deep heart endive, radish, spinach	mid August	mid July	early August	mid July

Plants

The beginner will be well advised to buy plants of such crops as cabbage, cauliflower, tomato, etc. These may be had from commercial gardeners.

Sowing seed

Thick sowing wastes seed and increases the labour of thinning. Sow only enough seed to ensure a good stand of plants. Consult table for date of sowing, depth to plant, and spacing of rows. Stretch the garden line tightly to mark the row and open a drill by drawing the corner of the hoe along the line to the required depth. The drill should be of even depth so that uniform germination of the seed will be obtained.

Large seeds, such as beans, peas, etc., should be placed individually at the specified distances. Small seeds, such as carrots, lettuce, etc., can be sown by tearing off a corner of the envelope, holding the packet horizontally and gently tapping it with the finger as it is moved along the drill. Press the soil firmly over the drill after the seed has been sown. To mark rows of such seeds as carrots and beets, which germinate slowly, an occasional radish seed may be placed in the row to come up quickly and act as a marker.

To extend the season of such crops as beans, peas and corn, two or three sowings may be made at intervals of ten days. Successive crops of lettuce, carrots, beets, radish, and spinach may also be sown, or these may be planted after early crops of radish, lettuce, spinach or peas are harvested.

Thinning

When seedlings are well up thin plants to the distances recommended. This should be done on a dull day, or in the evening when the soil is moist. Corn, cucumber, squash and pumpkin should be thinned to three good plants in each hill.

The table over the page gives in concise form information on kinds and varieties of crops, planting distances, amount of seed required and probable yield.

The following table indicates the best kinds and varieties to grow of 50 feet and the probable

KINDS	VARIETIES	Distance apart of rows or hills in inches	Distance apart of plants in rows in inches or number of plants in hills	An oun
Bean (bush)	Round Pod Kidney Wax			
"	Pencil Pod Black Wax	24	2 to 4	
"	Stringless Green Pod			
"	Tendergreen			
" (pole)	Kentucky Wonder	36 x 36 hills	3 plants per hill	
Beet	Detroit Dark Red	18	1 to 2	
Cabbage (early)	Golden Acre, Copenhagen	30	18	¼
"	Ballhead (late)			
" (Chinese)	Wong Bok, Chihili	30	12	
Carrot	Nantes, Chantenay	18 to 24	1 to 2	
Chard	Lucullus	30	12	
Corn	Banting, Gem, Dorinny			
	Goldban, Golden Bantam	30	30	
Cucumbers	Early Fortune, Straight Eight	72 x 72	3 plants per hill	
Endive	Early Curled, Deep Heart	15	8	
Lettuce	Grand Rapids, Simpson, New York	15	6 to 8	
Onion	Yellow Globe Danvers	15	2	
	Southport Yellow Globe			
	Sets (yellow, white, red)	15	2 to 4	
Parsnip	Hollow Crown, Guernsey	30	4 to 6	
Pea	Alaska (smooth),	30 to 36	1½ to 2	
	Laxton Progress, Thos.			
	Laxton, Little Marvel, Director,			
	Telephone or Alderman			
Pumpkin (in hills)	Sweet or Sugar, Winter Luxury	108 x 108	3 plants per hill	
Radish	Saxa, Scarlet Globe, Scarlet	12	1	
	Turnip White Tip, Icicle			
Rutabaga	Laurentian, Canada Gem,	30	6 to 8	
	Westbury			
Spinach	Bloomsdale, King of Denmark,	15	4 to 6	
	Noble			
Squash (in hills)	Straight Neck (summer)			
	Green Hubbard, Golden	108 x 108	3 plants per hill	
	Hubbard, Kitchenette,			
	Acorn or Des Moines			
*Tomato	Abel, Earliana,	on the ground 48	36	½
	John Baer or Bonny Best	staked 48	24	½
Turnip	White Milan, Snowball	15	4	
	Purple Top Milan			
Turnip top greens of above	varieties			
Potatoes (certified seed)	Irish Cobbler			
	Green Mountain	30	14	
	Katahdin, Chippewa	Sets should contain	two or three eyes.	

* Grow plenty of tomatoes to use fresh and for canning both as a regular canned product and as juice. All of the kinds a
size limitations taken into consideration by each individual gardener. Don't crowd the

grow, the amount of seed or plants required for garden rows
able returns obtainable.

Amount of seed in ounces or number of plants	Depth to cover in inches	Average yield per 50 feet	HOW TO USE OR STORE
8 oz.	2	8 to 12 gal.	fresh
8 oz.	2	8 to 12 gal.	
1 oz.	½	75 lb.	fresh, pickled, cool cellar
¼ oz. or 25 plants	½	190 lb. 225 lb.	fresh, raw, kraut store in cellar
1 oz.	½	150 lb.	fresh, store in cellar
¼ oz.	½	75 lb.	fresh, raw, store in cellar
½ oz.	½		
4 oz.	2	8 doz. ears	fresh
½ oz.	½	100 fruits	fresh, pickled
⅛ oz.	¼	75 heads	fresh, stored in dark cool place
⅛ oz.	¼	75 to 100	fresh
¼ to ½ oz.	¾	50 to 75	store in dry, dark, cool place
1½ lb.	1	50 to 75	
½ oz.	½	75	store in sand, moss or leaves, leave some in ground over winter
12 oz.	2	8 gal.	fresh
1 oz.	1	30 to 50 fruits	fresh, dry storage
½ oz.	¼	100 bunches	fresh
½ oz.	¼	200	fresh, stored
¾ oz.	½	2 bu.	fresh
1 oz.	¾	30 to 50 fruits	fresh, store dry and warm
⅛ oz. or 16 plants ⅛ oz. or 24 plants	¼	140 125	fresh, canned whole and juice
½ oz.	¼	75	fresh
10 lb. Plant as soon after	4 cutting as possible.	90 to 100	store at temp. 34 to 36° F.

nds and varieties indicated above are the ones that are recommended for growing in this program, but with the garden
wd the garden with too many crops; light, air and moisture are necessary for success.

Transplanting

Like thinning, transplanting should be done during dull weather or when the soil is moist. Stocky, healthy plants should be secured which have a good root system and have not received a check in growth. Cabbages should have leaves from 4 to 6 inches long and a good root system. Tomato plants should be 8 to 10 inches high; if taller they should be planted in a shallow trench with 6 inches of the top above the ground level. After they have become established the earth can be pulled in around them. Where water is available it should be used to puddle the soil around the roots to exclude the air. When the plants are set, press the soil firmly around them, taking care to avoid injury to the stem at the ground level.

Cultivation

Hoeing should be started as soon as the rows of young seedlings appear, or immediately after young plants are set out. It is important to destroy the weeds when they are small, before they can use up plant food and moisture. Hoeing during bright sunshine will destroy the weeds completely, but large weeds should only be pulled from the crop rows when the soil is moist, otherwise the plant roots may be dried out.

Avoid working among such plants as cabbage and beans when they are wet as there is danger of spreading plant diseases. It is a good plan to cultivate the ground once or twice a week to a depth of 1 or 2 inches. As the plants increase in size and cover the earth, hoe less of the space between the rows and decrease the depth of cultivation so as not to injure the roots.

Hilling up

The soil should be hilled up around certain crops such as corn and potatoes. Hill up corn when the tassel begins to show above the leaves; and potatoes before they begin to bloom.

Diseases Affecting Vegetable Crops

Crop	Disease	Description of Injury	Control Recommendations
Bean	Anthracnose	Pod spots, brown and sunken with dark centers; seed spotted; irregular stem and leaf lesions.	Use clean seed. Rotate crops.
	Bacterial blight	Leaf spots large, irregular with light margins; defoliation frequent. Pod spots brown with irregular margins (resembles sun-scald).	Use disease-free seed. Cultivate only when dry and keep free from weeds.
Cabbage	Black rot	Leaves show dark brown or black veins, wither and fall from the plant; vascular bundles darkened.	Rotate crops. Treat seed with Semesan (as directed), or mercuric chloride ½ oz. in 3 gals. water for 30 minutes. Destroy infected seedlings.
	Club-root	Irregular knobby swellings on the roots. Plants wilt during hot days.	Favoured by acid soil. Apply lime as indicated by soil test. Use long rotation. Do not plant seedlings from an infested flat or seed-bed.
	Bacterial soft rot	A soft, watery, light brown decay.	Cultivate only when dry and avoid injury to plants. Control insects. Gather up and destroy crop refuse. Rotate crops.
Corn	Smut	White swellings (boils), filled with black powdery spores, on any part of plant.	Collect and burn boils before they open and scatter spores. Rotate crops.

Diseases Affecting Vegetable Crops—*continued*

Crop	Disease	Description of Injury	Control Recommendations
Cucumber	Bacterial wilt	A typical wilting and dying of part or all of a plant.	Control cucumber beetles. Remove and destroy infected plants at once.
	Leaf spots	Irregularly shaped brown or greyish areas on leaves or stems.	Spray or dust with fixed copper dust or with bordeaux 2-3-40 when plants young and 4-5-40 after vines begin to run.
	Fungus wilts	Typical wilting of the vines.	Disinfect seed (Semesan). Rotate crops, destroy refuse.
Onion	Mildew	Purplish mould on leaves, causing water soaked area. Leaf dies and turns yellow or white.	Rotate crop. Do not plant sets near seed onions. Keep free from weeds. Destroy crop refuse.
	Smut	Appears as dark streaks within the tissues of leaves or bulbs. Filled with brown powdery spores.	Formalin, 1 pint in 10 gallons of water, applied while seeding at the rate of 100 gallons per acre.
	Soft rot and neck rots	Decay of the bulb or bases of the leaves.	Make certain onions are mature before harvesting. Cure and dry properly before storing.
Pea	Blight (leaf and pod spots, root rot and wilt.)	Spots on leaves or pods, decay of roots, and wilting of plants.	*Use disease-free seed.* Rotate crops, destroy crop refuse. Do not plant close and keep free of weeds to assure good aeration.
Potato	Bacterial ring rot	Rolling of leaflets which turn yellow; wilt and die. Tubers show light brown, diffuse cheesy rot along vascular ring.	Use certified seed. Disinfect tools and machinery with 1 pint of formalin in 40 gallons water, and storage houses with white wash containing 1 lb. copper sulphate in 10 gallons.
	Early blight	Dry, brownish spots with well-defined margin, on leaves and stems.	Spray with bordeaux 4-5-40. Apply 8-100 gallons per acre. Start spraying when plants are 5 to 8 inches high and repeat at 10-day intervals, oftener in wet weather.
	Rhizoctonia and scab	Purplish-black scurfs, and rough, raised or depressed, corky scabs on tubers.	Treat seed with Semesan Bel before planting.
Spinach	Downy mildew	Whitish mould on leaves.	Harvest as soon as possible after disease appears. Keep fall and spring plantings well separated. Rotate crops.
Tomato	Leaf spots and fruit rots.	Dark areas on leaves, cankers on vines and diseased lesions on fruits.	Treat seed with red copper oxide. Spray twice in the seed-bed, first when true leaves are formed and again 4 or 5 days before setting the plants. Spray a fixed copper or bordeaux 3-4-40.

The More Troublesome Insects Attacking Vegetable Crops in Canada*

Insect	Plants Attacked	Description of Insect and Injury	Control Recommendations*
Cutworms	Miscellaneous field and garden crops.	Dull coloured caterpillars–feed chiefly at night.	Scatter poisoned bran bait in the evening of a warm day—on prairies use oil bait. Bran 5 lbs., paris green 2 oz., water 2½ qts.*
Aphids	Cabbage, turnip, spinach, pea, potato, etc.	Small, soft-bodied sucking insects found in clusters.	Spray with nicotine sulphate when air temperatures are high. 1½ teaspoonsful nicotine sulphate, 1 oz. soap in 1 gal. water.*
Flea Beetles	Potato, tomato, turnip, radish, etc.	Tiny, quick-jumping beetles—eat small round holes in leaves.	Dust with diluted powdered derris, or on potatoes spray with poisoned bordeaux. 1 part of derris and 6 parts gypsum, talc or flour.*
Blister Beetles	Potato, bean, etc.	Large, soft-bodied beetles, frequently present in swarms.	Dust with barium or sodium fluosilicate diluted with 6 parts of flour.*
European Earwig	Miscellaneous garden crops.	Adult with pincer-like structure at end of body—feeds on flowers and foliage.	Scatter special poisoned bait where insects are abundant, 30 lbs. per city lot.*
Beet Webworm	Lettuce, pea, onion, bean, cabbage, weeds, etc.	Slim, active caterpillar—feeds on leaves (prairie).	Spray infested plants and nearby weeds with 3 lbs. calcium arsenate, 3 lbs. hydrated lime, 100 gals. water and protect threatened field with a trench in which is spread poisoned bait made of weeds, finely chopped 50 lbs., paris green 1 lb.*
Cabbage Maggot	Cabbage, cauliflower, turnip, radish.	White maggot—attacks the roots.	Apply corrosive sublimate solution to the stems of transplants. Dissolve 1 oz. corrosive sublimate in 10 gals. of water. Apply ½ cupful to soil around plants using wooden, glass or earthenware vessels.*
Onion Maggot	Onion.	White maggot—tunnels in the roots and lower portions of the leaves.	Apply four weekly applications oil emulsion spray or (West) corrosive sublimate, when seedlings are small along the rows of plants, solution made as for cabbage root maggot.*
Carrot Rust Fly	Carrot, celery, parsnip.	Slender maggot—makes tunnels in the roots.	Seed late and harvest early.
Colorado Potato Beetle	Potato, tomato, eggplant.	Striped beetle and soft, brick-red and black grub—feeds on foliage.	2 lbs. calcium arsenate to 40 gals. water or bordeaux mixture. For small gardens 2 tablespoonsful in 2½ gals. water or bordeaux mixture.*
Cabbage Worm	Cabbage, cauliflower, turnip.	Green caterpillar—feeds on leaves.	Dust with 1 part arsenate of lead, 3 parts hydrated lime or (West) calcium arsenate, paris green or white arsenic 1 part to 10 parts of hydrated lime—later cauliflowers only with diluted derris when the plants approach marketable size.
Striped Cucumber Beetle	Cucumber, melon, squash.	Small yellow and black beetle—feeds on the leaves.	Dust with calcium arsenate especially under surface of the leaves. Calcium arsenate 1 part, gypsum 19 parts.*
Tobacco Hornworm	Tomato, tobacco.	Large, green caterpillar—devours leaves and green fruit.	Spray with lead arsenate 2 lbs. to 40 gals. water or hand pick caterpillars from small plots.*
European Corn Borer	Corn.	Caterpillar which bores into stalks and ears.	Destroy all crop refuse by feeding, burning or ploughing under before May 20th.

* (For more details apply for Special Pamphlet No. 45 Wartime Production Series, Dominion Department of Agriculture, Ottawa.)