

CONTROLLING PESTS of WAR GARDENS



Connecticut
Agricultural Experiment Station
New Haven

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**Controlling Pests
of
War Gardens**

By

Neely Turner and James G. Horsfall

**Connecticut
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New Haven**

Circular 159 is a revision of Circular 155, issued in 1943, made necessary mainly by changes in available insecticides.

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Controlling Pests of War Gardens

NEELY TURNER AND JAMES G. HORSFALL

THIS circular has been prepared to provide the essential facts for successful pest control in the home garden. It aims at maximum production of food, rather than maximum control of pests.¹

Like fleas on a dog, pests can be considered as normal in a garden. In extreme cases much production is lost to such pests. Fortunately, there are ways to outwit some pests and to reduce the damage from others by intelligent use of sprays, dusts, seed treatments and other methods. A well-diversified garden usually produces much edible food in spite of pests, although quality may be low and one or more crops may be a total loss.

To most gardeners pest control means application of sprays or dusts. Actually, such methods are effective in controlling only a small proportion of the ailments of plants. The root troubles, stem troubles and even many leaf pests cannot be touched by chemical treatment. The complete blueprint of pest control anticipates the pests as much as possible and uses preventive measures to the fullest extent.

There are, therefore, two types of pest control—the “armchair” method, which involves thoughtful planning and little work, and the “toil and sweat” method, which may involve less planning but certainly some physical effort. The former method is concerned with outwitting the pests; the latter, with besting them in combat. Both are necessary for the cleanest gardens.

ARMCHAIR CONTROL OF PESTS

Probably more pests can be controlled in an armchair in front of a February fire with a garden notebook and a seed catalog than can ever be knocked out in hand-to-hand combat in the garden with a spray or a dust gun. To that end we have classified garden crops on the basis of the damage that they can be expected to suffer. Then we have compiled a series of procedures by which the pests can be outwitted. And finally we have listed the decisions that must be made in order to spray and dust the crops properly.

Listing Crops by Damage

The first of the “armchair” procedures in pest control is to list those crops not usually afflicted, then those subject to pests that are easily controlled and, finally, those with pests difficult to control.

1. Crops not usually afflicted are:

Artichoke	Midseason
Asparagus	sweet corn
Beets	Dandelion
Carrots	Dill
Chard	Endive
Chicory	Leek
	Lettuce

¹ The classification of crops, dates of planting to avoid pests and dates for application of dusts or sprays are based on research conducted in Connecticut. They may not apply elsewhere.

outwit seed-borne diseases by purchasing disease-free seeds or treated seeds.



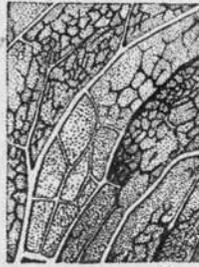
Anthracnose on bean pod and seed

Anthracnose or pod spot, bacterial leaf scorch and halo leaf spot of beans can be controlled by specifying that the seed must have been grown in California or the Twin Falls area of Idaho. Seeds of any vegetable should be grown as far north as possible. Northern seed will eliminate much of the disease from eggplants, tomatoes, sweet corn and potatoes.

Sometimes seedsmen cannot find disease-free areas for seed production. In those cases they can buy certified seed which has been examined in the field by a competent inspector. Certified seed is available for tomatoes and potatoes. Certified potato seed is usually a "must" in Connecticut, but Maine-grown table stock will serve in an emergency.

PURCHASING TREATED SEED.

Failing certification, seedsmen can rid certain seeds of disease by treatment. An increasing number of seedsmen sell treated seeds. Many seedsmen, however, are loath to treat seeds they sell because consumers are likely to feel that their seeds are basically poor and that they have been treated to cover up weaknesses. Such is not the case. Reputable seed specialists should be encouraged to treat seeds because there are no sources of naturally disease-free seeds of some crops and seed treatment is excellent insurance.



Black rot on cabbage leaf

DISINFECTIVE SEED TREATMENTS.

Some seed treatments are designed to rid the seeds of diseases carried thereon. Seeds of cabbage and other cole crops carry the black rot and black leg diseases which can be eliminated if the seedsmen will pasteurize the seeds in hot water. Pasteurization will also eliminate celery blights from celery seeds, and some of the bacterial canker, bacterial fruit spot, anthracnose, small leaf spot and bird's-eye leaf spot from tomato seeds. Details are not pertinent here since the procedure is so complex that it cannot be handled by the gardener.



Late blight on celery leaf

Seeds of the cucurbit family should be treated with corrosive sublimate to control scab disease on the fruit, angular leaf spot and some anthracnose or fruit spot. Eggplant seed also should be treated with corrosive sublimate to control leaf blight and fruit rot

disease. The material should be used at the rate of 1-1,000, or one tablet in one pint of water. Seeds should be soaked for five minutes, rinsed in clean water and dried.

Celery seeds carry large and small leaf spots, so-called early and late blights. Two years' storage of seed will cause these diseases to die out of celery seeds.

The foot rot disease of summer squash is also seed-borne, but it also will die out if the seeds are held two years before planting.

Seed disinfection is valueless unless the seeds so treated are sown on land that did not support a sick crop of the same vegetable the previous year. This involves rotation, as mentioned on page 52.

PROTECTIVE SEED TREATMENTS.

Gardeners hear much of treatments designed to protect seeds and seedlings against decay in the soil and against damping-off. Since it is easy for gardeners to overdose seeds with these chemicals, it is simpler to purchase them pretreated. The desirable treatments are listed on pages 50 and 51.

ADJUSTMENT OF PLANTING DATES.

1. **Radishes** planted before April 1 and after May 20 usually miss the cabbage maggot. There is no adequate home garden control method available for plantings between these dates, except covering the row with cheesecloth.

2. **Cabbage** set after June 1 avoids maggots.

3. **Peas** (early varieties) planted as early as possible and not later than April 15 usually mature a crop before root rot and mosaic ruin the vines.

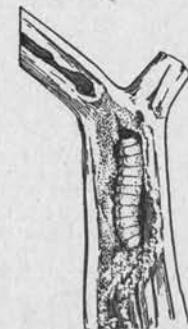
4. The **cucurbit crops**, such as melons, cucumbers and squash, planted after June 1 are not so seriously damaged by striped cucumber beetle or wilt. Mosaic and other diseases may come in later, of course. Reasonable crops may be expected, however.



Mexican bean beetle larvae and adult

5. **Beans** (bush snap varieties) planted between June 1 and 25 usually escape the Mexican bean beetle.

6. **Sweet corn** planted between May 20 and June 15 matures when few corn borers are present.



Squash vine borer

7. **Summer squash** planted after July 1 as a second crop will bear after the early plantings have been killed by vine borers, foot rot and wilt.

8. **Hubbard squash** planted on or before May 15 will be so well

established by July that it ordinarily escapes serious damage by squash vine borers.

9. **Tomatoes** grown in succession provide a means of escaping the effects of the defoliation disease (leaf destruction disease) that causes orange-colored, insipid fruits. The first two crops may be from plants transplanted May 20 and June 15. Seed for the last crop should be sown right in the field about June 1.

10. **Early potatoes** (Irish Cobbler variety) planted as early as possible in April usually mature a good crop before the leafhopper and tip burn season arrives.

11. **Beans, corn, squash** and occasionally **beets** planted after June 1 usually avoid serious damage by the seed corn maggot, which shreds germinating seeds. Shallow planting for quick emergence also helps.

ROTATION OF CROP FAMILIES.

Crops breed their own diseases in the soil. Therefore, they should not follow each other on the same spot for two consecutive years and preferably not for three or four years. The gardener should remember, too, that this applies

Planning to Spray or Dust

After the gardener has taken advantage of all the armchair methods of control, there will still be pests to be controlled by direct application of chemicals. The use of such direct methods can be planned before the garden is actually planted. It is simple to prepare a list of the crops needing treatment and to select equipment and materials to be ready when the pests arrive.

to plant families as well as to specific crops. The plant families concerned are as follows: the cucurbit family includes melons, cucumbers and squash; the cole or cabbage family includes cabbage, cauliflower, brussels sprouts, kohlrabi, broccoli, radishes and turnips; the tomato family includes tomatoes, eggplant and peppers. Rotation is difficult in the 1,000 square foot garden, but it is feasible in larger ones.

Several root diseases like black-root of strawberries and pink-root on onions can be reduced if care is taken not to plant on sod or following a rye cover crop.

FERTILIZING.

A heavy application of fertilizer, 15 pounds per 100 feet of row, at the sides of the row, (not touching the seeds), will help to control root rot of peas and onion pink-root. A caution should be introduced here against applying fertilizer in the row with seeds. This is sometimes done to stimulate early growth, but in a dry season, seed damage with consequent poor stands, is likely to occur. This is especially true for peas, beans and potatoes.

EQUIPMENT.

Gardeners who have both a sprayer and duster on hand can use either or both to advantage. If no equipment is already available, the choice of spraying or dusting depends largely on whether a sprayer or a duster can be purchased. Most gardeners consider dusting less work than spraying. Dusting controls some insects as well as spraying. Spray-

ing is highly superior to dusting for plant diseases and for control of leafhoppers and tip burn on potatoes.

Sprayers designed for use on a garden hose save much labor. In the cartridge type the water from the hose passes through the hole in the cartridge of a specially prepared material. The concentration of the material is greater when the cartridge is new and it decreases with use. The reservoir type mixes water with a liquid concentrate of standard materials. This sort of garden hose sprayer seems to offer a very satisfactory and labor-saving method of spraying, but neither type works properly if the water pressure is low.

AMOUNTS.

A pound of dust applied efficiently is enough to treat 400 feet of row once. One gallon of spray material should cover from 50 to 75 feet of row with hand sprayers. The average war garden of 1,000 square feet should require not more than two pounds of dust for the season. Enough spray material for 10 gallons of finished spray should accomplish the same results.

MATERIALS AVAILABLE.²

No restrictions of crops on which **rotenone** products may be used in war gardens have been issued for 1944. However, conservative estimates of the supply which may be available indicate that gardeners will not be able to find enough rotenone for use on all crops. It is suggested that rotenone products be saved for use on snap beans after the pods form and cauliflower, brussels

sprouts, broccoli and cabbage within two weeks of harvest. **Cryolite** may be used for earlier treatment of these vegetables and for other crops.

Most of the dusts of this type can be purchased by asking for rotenone dust, although a few products have trade names. On the other hand, spray materials containing rotenone are usually sold under a trade name.

No regulations for use of **pyrethrum** have been issued for 1944. However, the supply is expected to be very small and none may be available for war gardeners. If available, it can be substituted for rotenone.

Nicotine sulfate sprays and dusts are available in large quantities and can be used successfully for many garden pests. The most common pests controlled by nicotine are aphids. Nicotine dust can be made at home by adding one fluid ounce of nicotine sulfate to one pound of hydrated lime and mixing thoroughly by shaking or rolling in a jar or can with a tight-fitting lid. Two or three small stones may be used to insure better mixing. The dust should be stored in a tight container.

Vegetables to be eaten without cooking should not be sprayed or dusted with nicotine within a week of use.

Cryolite (Kryocide and Alorco) and **barium fluosilicate** (Dutox) are highly effective in controlling many chewing insects. They are particularly valuable for dusting potatoes, tomatoes (early in the season), beans and cabbage. Care should be taken to avoid drifting of dust or spray to leafy

² Information on materials available is as of January 1, 1944.

green vegetables, and treatment of beans and cabbage just before harvest should be avoided.

The dust materials just mentioned should be purchased ready for use in dusts. For sprays, the directions on the package may be followed.

Bordeaux mixture is an excellent spray for diseases but it is difficult to prepare. One gallon should cover 50 to 75 feet of row with hand sprayers. It is prepared by mixing one ounce of copper sulfate in $\frac{1}{2}$ gallon of water with $\frac{1}{2}$ ounce of fresh hydrated lime in $\frac{1}{2}$ gallon of water. The copper sulfate should be dissolved the day before use, in a glass container. The two materials are then mixed together and are ready for use. The mixture cannot be stored for use later, but should be prepared fresh for each application.

Manufacturers now sell many types of factory-made **copper**

sprays that are less injurious to most vegetables than Bordeaux mixture and are much easier to handle. These include Copper A Compound, Cupro-K, C. O. C. S., Tribasic Copper Sulfate and Cuprocide. Only Bordeaux mixture should be used on late potatoes in Connecticut, however.

It is not necessary to have all the materials mentioned. Any one of the combinations listed below will suffice.

1. Cryolite dust or spray for all chewing insects and nicotine dust or spray for aphids.
2. Rotenone dust (or spray) for all foliage insects.
3. Pyrethrum dust (or spray), if available, for all foliage insects.

In addition prepared cutworm bait is usually needed. If late potatoes are grown, materials for making Bordeaux mixture should be included.

TOIL AND SWEAT CONTROL OF PESTS

Despite any amount of mental manipulation of a pest control program, some pests will still remain to be combated by toil and sweat in the garden. For conven-

ience this portion of pest control will be divided into pre-season, growing season, and post-season treatments.

Preseason Treatments

SOIL TREATMENT.

Seeds grown indoors should be sown in new-washed sand in new or sterilized flats or boxes to prevent damping-off. If sand is used it must be watered with a solution of complete fertilizer to prevent seedling starvation. Soil, if used, should be cooked, either by flooding with boiling water

(which puddles the soil) or by steaming in flats in a covered kettle without pressure until temperature reaches 125° or 130° F. on a meat thermometer inserted into the soil. Treated soil should be placed only in sterilized flats and worked only with sterilized tools.

DISINFECTIVE SEED TREATMENTS.

Since it may be difficult to purchase pretreated seeds, some gardeners will desire to treat their own. Pasteurization is too complex a treatment for home use, but the corrosive sublimate treatment can be applied by the gardener. Seeds of the cucurbit family should be treated with corrosive sublimate to control scab disease on the fruit, angular leaf spot and some anthracnose or fruit spot.

The material should be used at the rate of 1-1,000, or one tablet in one pint of water. Seeds should be soaked for five minutes, rinsed in clean water and dried. Corrosive sublimate can be used also to some extent as a substitute for the hot water pasteurization of seeds of the cabbage family and of tomatoes.

PROTECTIVE SEED TREATMENTS.

Protective seed treatments can be applied by any gardener, especially if he is careful not to overdose.

This Station has participated in a nationwide testing of these materials. Results indicate that Arasan, a new material just reaching the market, is good for beets, onions and peas. Red Cuprocide is first choice for spinach, the cucumber family, lettuce, endive, beets, chard and the tomato family. It injures the cabbage family. Semesan is first choice for the cabbage family and Semesan Jr. for sweet corn. It injures the tomato family. Spergon is first choice for peas, snap beans and lima beans. It injures beets and chard.

The quantity of material necessary varies with the seed size. Big seeds like peas, beans, corn,

the cucumber family, beets and chard, should require $\frac{1}{4}$ teaspoonful per pound of seed (0.25 percent by weight). Small seeds should have one teaspoonful per pound of seed (1.0 per cent by weight).

Seeds should be shaken with the chemical in a small jar or can. Usually, excess dosage can be removed if the seed is screened vigorously after treatment.



Scab on potato tuber

ADJUSTMENT OF SOIL ACIDITY.

1. **Potato scab** develops in soil that has been limed suitably for spinach, beans and other vegetables. Most Connecticut soils are normally very acid. If land has not been limed in the past five years, 40 pounds to 1,000 square feet should not be enough to encourage scab.



Club root on cabbage seedling

2. **Club root** of cabbage and allied crops develops mostly in highly acid soils. Normal applications of lime (50 to 100 pounds to 1,000 square feet) should be used for these crops. If club root develops on the early crops, a second application of lime should be made before later plantings.

These diseases cannot both be controlled in the same soil. In land not cultivated recently scab is more likely to occur than club root.

POISONED BAITS.

Cutworms are hairless caterpillars hiding in the soil near plants during the day and feeding at night. They cut off newly-set plants near the surface of the ground. They are most destructive to tomato, pepper, cabbage and lettuce plants.

Paper collars wrapped around the stems of newly-set plants are very effective; or use prepared cutworm bait as directed.

Growing Season Treatments



Celery worm

HAND PICKING OF INSECTS.

The old-fashioned method of hand picking such pests as the Mexican bean beetle, Colorado potato beetle, hornworms on tomatoes, celery caterpillar on parsley, parsnips, carrots and other crops, and even cabbage worms on broccoli and kale is entirely practical. The adults and larvae can be killed by dropping them into a can containing some water and a film of kerosene. Egg masses can be crushed without harming the leaves. Any diseased or dead plants that appear should be pulled and burned.

Home-mixed bait: one pound of wheat bran and one ounce of Paris green, mixed dry and later moistened until damp (not enough to drip when squeezed lightly). Scatter in the evening. One pound is enough for 2,000 square feet. Paris green is a poison, so handle with care.

DESTROYING WEED HOSTS.

Many common weeds are host to many garden pests. This is especially true for the virus or mosaic diseases, those diseases that distort leaves or fruits and make them look mottled. However clean a gardener keeps his own premises, his neighbors can grow weeds for him. The important weeds are the mustard family, milkweeds, nightshade, mother wort, and groundcherry or husk tomatoes. Some ornamentals like petunia and flowering tobacco carry the mosaic disease of the cucurbit family and tomatoes or peppers. These may serve to infect tomato seedlings in the greenhouse before the gardener purchases them.

NO SMOKING.

Tobacco is commonly afflicted by the mosaic disease which is not killed by the curing process. Hence if tomatoes or peppers are pruned, staked or picked after handling tobacco, they may be inoculated with mosaic.



Cutworm and damaged plant

TOUCHING WET FOLIAGE.

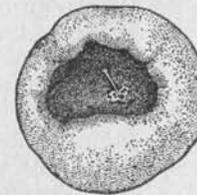
The fungi and bacteria that produce disease on leaves, pods or fruits enjoy moisture. In fact they move from leaf to leaf only during rainy periods. Obviously, the gardener should not encourage them by picking or cultivating vegetables when the foliage is wet with rain or dew. This is particularly true of beans, tomatoes, cucurbits, eggplants and strawberries.



Downy mildew on melon leaf

IRRIGATION.

Wilt diseases of tomato, cucurbits, eggplant and cabbage, pea root rot and blossom-end rot of tomato fruits are all more destructive in dry than in moist periods. Hence irrigation to keep up the soil moisture level is helpful.



Blossom-end rot on tomato fruit

SHADING.

The defoliation disease or bird's-eye leaf spot of tomatoes is one of the worrisome pests of the garden. Spraying or dusting is not especially effective against it. If the plants are covered with a tobacco cloth shade between June 1 and September 1, the disease can be markedly reduced.

COMBATING ANIMAL PESTS.

Rabbits and woodchucks frequently damage growing vegetables in rural and suburban areas. Fencing will protect gardens from these pests. Persistent applications of sulphur or tobacco dust are said to be effective in preventing damage. Spraying with nicotine sulfate also helps. Woodchucks should be eliminated early in the season before vegetation hides the openings of the dens used by these animals. Woodchuck "bombs" are perhaps the most satisfactory means of controlling this pest. They may be obtained from the county agents at a cost of a few cents each.

Moles do some damage to gardens, but are believed to eat animals and not plants. Mice frequently live and feed in old mole burrows, doing much damage to crops. Methods of poisoning mice and suggestions for controlling rabbits, woodchucks and moles may be obtained from Francis B. Schuler, Fish and Wildlife Service, University of Connecticut, Storrs, Connecticut.

Birds are serious pests of small fruits and especially blueberries. Covering the entire vines with coarse cheesecloth or tobacco tent cloth protects the ripening fruit.

VEGETABLE PESTS CONTROLLED BY SPRAYING AND DUSTING.

Some general suggestions for application of materials can be made. Pesticides at best may injure plants. They show a beneficial effect only when the gain from pest control outweighs the damage from the chemicals. Therefore an overload or an excessive number of applications

should be avoided. In fact, a fine, even coat of either sprays or dusts is sufficient for control. For many insects and all diseases, *both surfaces* of all leaves must be covered for best results. For insects feeding only on the under sides of the leaves, treatment may be limited to that surface. Either sprays or dusts must be applied with the nozzle pointing to the surface to be covered. Dusts can be applied most effectively late in the evening when no wind is blowing and before dew is present. A pound of dust applied efficiently is enough to treat 400 feet of row once. One gallon of spray should cover from 50 to 75 feet of row with hand sprayers.



Aphids on potato leaf

Aphids. Small red, green, brown or black sucking insects on the stems and leaves of various plants. Destructive most commonly to broccoli, cabbage, tomatoes and potatoes. Also occur on spinach, chard, peppers, brussels sprouts, kale, peas, corn, etc.

Any good contact insecticide, such as nicotine sulfate for sprays or dusts. Applications are most successful in the warm part of the day. Repeated treatments may be necessary.

Flea beetles. Small black beetles that jump when disturbed. Feeding marks are small round holes in the leaves of tomatoes, eggplants, potatoes and sometimes peppers.



Flea beetles on potato leaf

Cryolite or rotenone dusts or sprays. Damage is usually worst in May and June, and two or three treatments may be needed about May 15, May 25 and June 5.

Defoliation diseases. Many vegetables are afflicted by fungous diseases that produce spots on leaves followed by defoliation. Most seriously affected are tomatoe and potatoes. Attack also celery, cucurbits, beets, carrots, eggplants and sometimes beans. The eggplant disease may also produce a fruit rot. There is no passing of disease from one crop to another except between tomatoes and potatoes.

Usually copper sprays such as Bordeaux mixture are suggested. These seldom pay unless unremitting attention is given to the spraying. Several applications should be put on, beginning about July 4. If a gardener takes pride in good foliage and quality of production, it is desirable to spray, but he will seldom find an increased yield to pay for his trouble. Dusting with commercial copper dust is easier, but distinctly less effective. Dusts must be applied to damp foliage. Crops liable to defoliation diseases must on no account be picked or cultivated when wet, because the diseases are spread on wet foliage.

Mexican bean beetle. Attacks snap, shell and lima beans. A yellow to brown beetle about

one-fourth of an inch long, oval in shape. Has eight small black spots on each wing cover. Eggs are yellow and laid in groups on the under surface of the leaves. Larvae are light yellow and feed on the under surface of the leaves.

Persistent hand picking of adults and crushing the egg masses is practical in the home garden. Dusts or sprays of rotenone, pyrethrum or cryolite should be applied to the under surface of the leaves.

Early beans need treatment about June 7 and 21.

As previously mentioned, mid-season snap beans planted between June 1 and 25 seldom require treatment.

Late beans need treatment about July 29, August 9 and August 20. Pole and lima beans may need all treatments.



Striped cucumber beetle

Striped cucumber beetles. Feed on cucumbers, melons and squash. About one-fourth of an inch long, yellow with three longitudinal black stripes and a black head. Beetles appear in May or early June when seedlings are just getting started. The beetles eat leaves, and carry the wilt disease from plant to plant.

Dusts or sprays of cryolite, rotenone or nicotine as soon as the first beetles appear and re-

peated about twice a week until the plants are well started.



Bacterial wilt of squash vine

Small screen wire cages may be used to protect seedlings.

Cabbage maggots are small white maggots feeding on the tap root just below the surface of the ground. Larvae from eggs laid in May attack early cabbage, allied crops and radishes. The injury in radishes appears as rusty streaks.



Paper disc on cabbage plant

Set a tar paper disc around each plant immediately after planting. The edges of the disc can be held down with some soil. The discs must fit the stem tightly so that the adult fly cannot lay her eggs in the soil at the base of the plants. They should remain in place until June 1. Ready-made discs are available and are preferred because the paper is soft enough to fit well around the stems. Kraft paper or ordinary building paper warps when it is alternately wet and dried and allows the flies to deposit eggs around the stem of the plant.

Maggots from eggs laid in August may attack late turnips. (about May 15 and June 1) also control this pest.

Cabbage worms of at least three species may attack any planting of cabbage or allied crops. Damage is usually noticed first as comparatively large holes in the outer leaves. More serious on late crops.

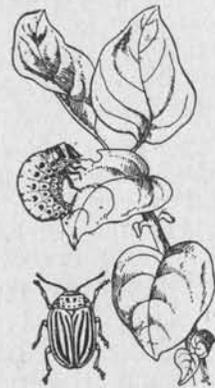


Cabbage looper

Cryolite or rotenone dusts or sprays. Needed on early crop about June 20 and on later plantings once in 10 days, starting late in July. Rotenone is preferred for any application necessary just before harvest.

European corn borer attacks sweet corn maturing early in July and late in August or September. Dusting methods are available (see Circular No. 147 of the Connecticut Agricultural Experiment Station). Also attacks potato vines in some seasons, and has damaged tomatoes growing near corn or potatoes. Dusts of cryolite applied about June 1, 8, 15, and 22 will control the corn borer on potatoes. Dusting should not be necessary on tomatoes. Cryolite should not be used on corn as it burns the foliage.

Colorado potato beetle. The black and yellow striped Colorado potato beetle attacks both early and late potatoes early in the season. Applications of cryolite to control flea beetles



Colorado potato beetle

Potato leafhopper. The pale green potato leafhopper is the most destructive pest of late potatoes. A sucking insect, about one-eighth of an inch long, feeding on the under surface of the leaves. The leafhopper and other factors bring about tip burn, a dying of leaves beginning at the tips. **Late blight** of potato may kill foliage badly every few years and cause the tubers to rot. **Bird's-eye leaf spot** sometimes peppers the foliage with black spots that have rings in them, hence the name.

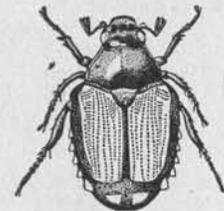


Bird's-eye leaf spot on potato

Both leafhoppers and late blight are controlled by Bordeaux mixture spray applied the first week in July and every 10 days thereafter until the vines die. Thorough spraying of both surfaces of the leaves is necessary. This is a "must" for all late potato varieties except Sequoia which resists leafhopper attacks. Even Sequoia should yield better if sprayed.



Late blight on potato leaf



Japanese beetle

Corn silks can be protected by dusting the silks with rotenone dusts or hydrated lime three times at intervals of three days.

Postseason Treatments

Weevils that lay their eggs in the pods before harvest frequently destroy dried peas and beans.



Bean weevil injury

Heating the dried peas or beans to 120° F. for four hours should kill the eggs and young larvae. The heat treatment may harden some of the beans.

The beans may be mixed with one pound of hydrated lime for each two pounds of beans.

Fumigation with carbon bisulfide at the rate of 1/2 ounce for each bushel of seed is effective. This material is highly explosive in the gaseous state and should

be used where there is no danger of fire. An ash can covered with heavy paper makes a good fumigation chamber. It should be left closed overnight and works most efficiently when the temperature is 60° F. or more.

Storage rot of sweet potatoes can be prevented by drying the roots at a temperature of 80° F. for a week and then storing in a warm, dry place. Care should be taken not to injure the potatoes.

Mold of dried beans (in the pod) can be avoided by spreading the pods thinly until thoroughly dry.

The **leaf spot or blight disease** of celery increases in storage. The best control is to spray with copper fungicides during the season and to remove spotted leaves at harvest time.

- Angular leaf spot, control 50
 Anthracnose, 49; control, illus. 50
 Aphids, control, desc., illus. 58
 Asparagus, rust, 49
- Bacterial canker, control 50
 fruit spot, control 50
 leaf scorch, 49; control 50
 wilt, illus. 59
- Beans, anthracnose, 49; control, illus. 50
 bacterial leaf scorch, 49; control 50
 defoliation diseases, control 58
 halo leaf spot, control 50
 Mexican bean beetle, control 51, 56,
 58-59; illus. 51; desc. 58-59
 mold, control 61
 mosaic, 49
 pod spot, 49; control 50
 seed corn maggot, control 52
 weevils, control 61
- Beets, defoliation diseases, control 58
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