



## RID GRAIN LAND OF WILD MUSTARD

Clean Cultivation to Prevent Seeding is very Best Remedy

FALL DISKING IS ADVISED

O. A. C. Expert Gives Treatment that Should Materially Reduce Damage of Pest.

(By H. S. Hammond, Botanist, O. A. C.)

Where fields are infested with wild mustard the land should be worked up with a disc or spring tooth harrow after the grain is harvested to cover the seeds and induce germination. The plants resulting may be destroyed by fall plowing or by freezing, preferably by fall plowing in this region. The fields should be cultivated reasonably early in the spring and before the crop is sown, if grain is raised, to kill any plants that may have started. If the cultivation can be kept up until late in the spring many of the young plants will be destroyed. A liberal seeding of grain should be made when the soil is well prepared so that growth may be quickly made and will fully cover the ground. If the mustard starts in the grain many of the young plants may be destroyed by narrowing with a light spike-tooth harrow. If scattering plants appear they could be pulled by hand. If in spite of the careful preparation of the land, the field should still be badly infested with mustard, the plants may be destroyed without injury to the grain by spraying.

Spraying to destroy the mustards is a comparatively recent practice which originated in France and became known in America in 1900. Experiments in the United States and Canada have fully confirmed the European results as to safe destruction of these weeds by the spray, in crops of cereals. The method is to use a solution of either copper sulfate (blue vitriol) or iron sulfate (copperas) as a spray; if the copper sulfate 2, 2½ or 3% solution, (8, 10, 12 lbs. in 50 gallons of water), applying 40 or 50 gallons to the acre upon the fields of grain containing mustard plants in dry weather either cloudy or bright and sunny. The most effective results are obtained before the mustard comes into bloom. While the cereals, such as corn, oats, and wheat, may show slight apparent injury at the time, the injured plants appear to recover and the mustard is killed or prevented from seeding. Showers soon after spraying may require repetition of the spray.

This will kill or injure practically all plants of the mustard family if applied on the foliage. It is especially to be recommended when the weed infests wheat and oat fields. Of the iron sulfate (copperas) solution, 15 to 20 per cent solution, (60 to 80 lbs.

in 50 gallons of water) may be employed as the chemical is cheaper though less active.

Wild mustard is one of the most troublesome weeds because of its persistent seeding habit and the endurance of the seeds when buried in the soil. It is most common in fields that are devoted exclusively to grain, and disappears when a system is introduced which provides for grass and cultivated crops. The vital point in the process of eradication is to prevent the seeds maturing and shattering out.

### BENEFITS OF GARDENING

"In every school and community there should be at least one teacher who knows gardening both theoretically and practically," said United States Commissioner of Education, P. P. Claxton, who recently inspected the Oregon Agricultural College. "This teacher should teach the elementary sciences during school hours, and out of school hours direct the home gardening of the children between the ages of seven and fourteen or fifteen years. Where possible, the teacher should have the assistance of an expert gardener so that the work may be done in the most practical and profitable way. The teacher and gardener should help the children find plots of ground in back yards and vacant lots, aid them in having the lots properly plowed and prepared for cultivation, help them select the seeds and show them how to plant and cultivate and harvest to obtain the best results."

### MANUAL TRAINING TOOLS

The following list of tools was prepared by the Industrial Art Department of the Agricultural College for rural school teachers and pupils of Oregon who do not have the requisite tools for carrying on manual training:

Block plane	.....\$ .50
Jack plane	..... 1.75
Bevel edge chisel ¼ in.	..... .35
Bevel edge chisel ¾ in.	..... .40
Back saw, 12 inch	..... 1.00
Marking gauge	..... .10
Four fold rule	..... .25
Wing dividers 6 in	..... .20
Try square	..... .20
The foregoing list mentions tools necessary for each pupil while the following may be supplied for the entire group:	
Hand saw, rip 22 in. 6 points to inch	.....\$ 1.00
Hand saw, cross cut, 20 in., 10 points to inch	..... 1.00
Auger bits, ¼ in., ¾ in., 1 in., 1 ¼ in., 1 ½ in., and 1 in.	..... 1.80
Drill bits, 1-16 in., ¼ in., 3-16 in.	..... .24
Screw driver, 8 in.	..... .24
Bit brace, 8 in. swing	..... .90
Carpenter's square, 24 in.	..... 1.00
¼ in. gouge	..... .60
½ in. gouge	..... .50
Slip stone	..... .25
Oil stone	..... .60
Nail hammer, 7 ozs.	..... .40
Glue pot	..... .45
Cabinet scraper, 3 in. x 5 in.	..... .30
Draw knife	..... .75
Bevel square	..... .25
4 hand clamps, 6 in.	..... 1.40
4 pair of door clamp fixtures, Taylor's, No. 31	..... 5.00
Bench	..... 12.00

Instead of the manual training bench costing \$12.00 a bench screw may be purchased for 50 cents and a very good bench made by the pupils. The pupils may also make a bench hook, draw board, saw horse and miter box, according to drawings and specifications furnished by the College in the Industrial Club bulletin, "Suggested List of Tools and Materials," copies of which will be furnished free upon request.

## GROWING CURRANTS AND GOOSEBERRIES

Valuable Points on Location Soil, Tillage and Pruning Given

AMERICAN VARIETIES BEST

Worst Insect and Disease Pests Considered by College Specialists, who Give Treatment.

(By C. I. Lewis, Horticulturist O. A. C.)

The American gooseberries are successful and make a good commercial proposition. Very few of the English varieties do well in this country, as they succumb to the American mildew disease. The best variety is the Champion, sometimes known as Oregon. Another good variety is the Industry. In Eastern Oregon the Red Jacket, sometimes called the Josselyn, is preferred. The best all round currant is the Perfection. The London Market is earlier, is not so badly attacked by worms, and generally escapes frosts. The Fay is also a good red currant.

### Soils.

Both fruits prefer moist, cool, well-drained soils, those with some clay preferable. They will stand shady conditions, north slopes, and in regions of the Inland Empire, where the ground tends to become warm, it is better to grow them in the proximity of shade. They do not like hot soils, and when planted on hot sand or silt, do not thrive, as a rule.

### Propagation.

They are very easily propagated. Hardwood cuttings 8 or 10 inches long are taken in the fall, buried in moist sand, and planted out in the spring. They can be propagated by mound layering or by root cuttings.

### Tillage and Fertilizers.

The tillage should be the same as for other small fruits, but should be very thorough, yet shallow, as the roots of these berries tend to come to the surface.

Both these plants are rank feeders and respond to moderate amounts of well-rotted manure, or wood ashes. The latter is especially desirable for these plants. Heavy applications of coarse, loose, strawy manure should be avoided as it tends to make the ground too dry and warm for these fruits.

### Pruning and Planting.

In this country pruning to the bush form is recommended. The gooseberry bears fruit on the two, three, and four year old wood and this growth should not be cut. The currant bears most of its fruit on the second and third year old wood. Cut out all canes that droop toward the ground. Cut out all weak canes, and reduce the plant to the number of canes that will grow in a vigorous condition. Whenever the canes tend to get gnarly, old, or weak, remove them. The plantation should be renewed in 6 to 10 years. While it will fruit longer, it will not pay as the fruit tends to get small.

The plants can be set at varying distances, according to size: 5x5, 4x4, or in rows 6 feet apart and the plants 3 feet apart in the row. They can be harvested when desired, and for canning should be harvested green, and for jam, very ripe.

### Diseases.

(By F. D. Bailey, Plant Pathologist.)  
Powdery mildew is the most serious fungus disease known to attack the

fruit and foliage of the gooseberry and upon European varieties it is worse than upon the American. Its symptoms are an artificial white mold, or mildew, on fruits and foliage of young canes. It is first noticed by growers on the fruit but probably starts upon young foliage. The whitish spots change to a buff or even to a brown, from which time the disease spreads rapidly. The standard remedy is to spray with potassium sulphide, one ounce to two or three gallons of water, beginning when the buds break open and continuing for about ten days in which seven applications will have been made. Experiments conducted in Oregon indicate that an application of winter-strength lime-sulphur solution to the dormant branches, followed by application of lime-sulphur diluted to 1-30 to the foliage, gives excellent satisfaction. The slight deposit of lime-sulphur left by this solution makes it better to use potassium sulphide in the later sprayings.

The most common currant fungus disease found in Oregon is anthracnose, which is widely distributed. It may grow upon practically all parts of the plant above ground. It causes small brown spots, more or less thickly scattered, on the leaves, which turn yellow and fall as the disease becomes advanced. Conspicuous black spots, slightly shrunken, are formed on the stalks and leaf and fruit stems. These spots are from one-fourth to one-half inch in length on the cane, but on the fruit they resemble fly specks. Plants in shade are not seriously attacked. The fungus exists in two stages, one on the canes, leaves, and petioles, and the other on dead leaves that drop in the fall. Control is helped by plowing under the dead leaves early in spring before the new leaves start, or by raking and burning them. Spraying should follow along toward spring with a 5-5-50 Bordeaux mixture, again when the leaves unfold, and at ten-day intervals until the fruit is two-thirds grown, avoiding the blossoming period.

### Insect Pests.

(By A. L. Lovett, Insect Specialist.)

There are two insect pests of currants and gooseberries which may do considerable injury where allowed to go unchecked. One attacks the foliage and is known as the green currant worm. The other attacks the fruit and is known as the currant fruit fly or gooseberry maggot.

The green currant worm, as the name implies, is a soft velvety green worm less than an inch long. Often the currant and gooseberry bushes are almost entirely stripped of foliage just as the fruit is nearly mature. The adult of this worm is a wasp-like insect known as a sawfly. The females are present in the field at blossoming time and deposit eggs in the surface of the leaf near the margin. These eggs hatch in about ten days and the young worms feed greedily. They are about mature and their injury becomes really serious when the fruit is about mature. There is a second generation of worms some three weeks later.

Spray just after fruit has set with lead arsenate one ounce to three gallons of water. If spraying is delayed until fruit is nearly mature spray with white hellebore powder one ounce to three gallons of water. The earlier spray is recommended. The latter spray is colorless and practically non-poisonous, therefore preferable on nearly mature fruit.

The currant fruit fly is found as a maggot causing the fruit to ripen prematurely and drop to the ground. The adult of this maggot is a small yellow two winged fly. This fly is present in the field when the fruit is one-third grown. The female flies deposit eggs underneath the skin of the forming fruit. The young maggots on hatching tunnel to the interior of the fruit where they feed and grow. When mature they leave the fruit and tunnel into the soil to a depth of about two inches where they form a small brown capsule-like puparium. Here they remain until the following spring when they emerge again as flies.

Stir the soil about the plants in late summer or fall and again in the spring. By turning these puparia under to a considerable depth or exposing them to predacious birds they are held in check.