



University of Idaho
 College of Agriculture
 Cooperative Extension Service
 Agricultural Experiment Station

Current Information Series No. 275
 March 1975

LIBRARY

APR 17 1975

UNIVERSITY OF IDAHO

IDAHO COMMERCIAL ONION INSECT, DISEASE AND WEED CONTROL PROGRAMS

Hugh W. Homan, Paul J. Torell, Arthur J. Walz

Production of high quality commercial onions requires protection from pests. Though diseases, insects and weeds are not a serious problem each year, they do have the potential to reduce yields or quality. Common problems are discussed in this publication. For specific problems, contact your county extension agent.

Onion crop residues provide an overwintering place for insects and disease. Cull dumps should be located away from production fields. To prevent thrips, onion maggots and diseases from moving to the new crop, cull onions should be buried or disposed of before new seedlings emerge in the production fields.

Insect Problems

Onion thrips - A generation of onion thrips is complete in as little as 2 weeks during the summer. The female thrip lays her eggs in the tender tissue of an onion plant where the eggs hatch in 4 to 10 days. The larvae feed on the foliage for 5 days, then burrow into the soil where they spend about 4 days before emerging as an adult. A short residual insecticide will miss controlling the stages that emerge from the egg in the leaf and the pupa in the soil. A longer residual insecticide is more effective and requires fewer applications to control onion thrips.

Onion maggot - Up to 90 percent of the seedling may be killed and late season onions may be ruined for storage by the onion maggot. There are 3 generations of onion maggots each year in Idaho. If the first generation is controlled — with a seedbed treatment — additional treatments are not necessary. If the soil treatment is not made, a foliar spray must be used every 4 or 5 days until the first generation is past, which could take a period of 6 weeks.

Wireworms - Wireworms are very difficult to control in onions. Chemicals for this pest must be applied preplant. Since wireworms do not get into the root zone area until the soil temperature is 50°F and the two effective chemicals will last only about 6 weeks in the soil, they are only marginally effective. The best control is to treat the soil during rotation so the field will be relatively free of wireworms before planting onions. This may be done by soil fumigation or by chemical control on the preceding crop.

Garden symphylan - This small white centipede is difficult to control, but treatment usually allow you to raise a crop in heavily infested soils. Symphylan is controlled best by soil fumigation. However, parathion, applied preplant in a well prepared seedbed, will also allow growth of an onion crop.

Brown wheat mite - The brown wheat mite is a small, light tan-to-brown mite that sometimes damages onion leaves. This mite is usually found on low-growing grasses and grain crops. It usually attacks on-

ions during cooler weather — May and June — so populations would be declining as the early thrips population builds up. Parathion used to control thrips controls the brown wheat mite on onions.

Disease Problems

Purple blotch - Warm, humid weather aids the spread of purple blotch. Dew helps spore germination and the resultant fungus threads invade the onion leaf through stomatas. The disease appears first as a small, sunken area on the leaf, whitish in color with a purple center. The area enlarges rapidly and may girdle the leaf. The lesions show masses of spores. The light and dark areas have a target-like appearance. The advancing fungus causes the leaf tissues to turn yellow and then purple.

There is no known cure for the disease so preventive sprays must be used where the disease is a problem. Sprays used to prevent downy mildew also will control purple blotch.

S
53
E322

Downy mildew - Cool, moist weather favors the development of downy mildew on onions. A violet, furry growth can be found on infected leaves especially when viewed while the dew is still on the plants. Leaves turn pale green and eventually yellow as the infected areas dry. The disease usually starts in a small area and spreads throughout the field.

The spores germinate on the leaf surface during damp, cool weather. The germ tube usually enters the leaf through stomatas (breathing pores) and attacks the internal tissues. The fungus absorbs food from the leaf cells and the tissue

gradually succumbs, yellows and dies. Downy mildew spores overwinter in onions and onion residues left in the fields. Plow down refuse as soon as possible after harvest.

Control measures are preventive and sprays should be applied during weather periods favorable for invasion by the mildew spores. The mildew does not invade the onion plant during dry periods.

Pink root - The fungus that causes pink root of onions lives in the soil and can live on other crops and weeds. The disease is spread by machinery and waste water from infested fields. The fungus invades

and kills the individual roots which turn pink in color before rotting away. The onions continually send out new roots and these also are invaded by the fungus and destroyed. Pink root fungus does not kill the onion plant but infected plants do not produce large bulbs. This disease does not invade the onion bulb. Fumigation will help you produce a marketable crop. Light, frequent irrigations also help the onion plant to overcome the attacks of the fungus. Crop rotation on a 4- to 5-year basis is a means of holding the disease in check.

Neck rot - Neck rot is a fungus that can attack onions in the spring and

INSECT CONTROL RECOMMENDATIONS FOR COMMERCIAL ONION PRODUCTION

Insect	Insecticide	Dosage per acre actual material	Remarks
Wireworms	diazinon	4 lb.	Broadcast over soil surface in spring as close to planting as practical and immediately incorporate into soil by discing, plowing and cross-discing or by rotary tilling. Soil temperature should be above 50°F at the 6-inch level. Use granular formulations.
	parathion	6 lb.	
Wireworms	Vorlex	115-144 lb. (12-15 gal)	Fall application: Place chemical 8 inches deep in soil. Plow in or inject into fallow soil every 12 inches. Soil temperatures must be between 50°F and 90°F at the 6-inch depth. Do not apply when soil is very wet or very dry. When following grain, stubble should be removed. Poor soil insect control may be expected when temperatures are below 50°F. Do not use any formulations of methyl bromide or ethylene dibromide for 2 years before planting onions.
Nematodes	Telone	200-250 lb. (20-25 gal)	
Symphytan	Telone C	208-250 lb. (20-25 gal)	
	Vidden D	250 lb. (25 gal)	
	DD	250 lb. (25 gal)	
	Terroicide 30 D	250 lb. (25 gal)	
Onion Maggot	Ethion	0.8-2.0 lb.	Apply as a furrow treatment at the time of planting. 8% granular: 25 lb. per acre on 15-inch row spacing 20 lb. per acre on 20-inch row spacing 15 lb. per acre on 24-inch row spacing 10% granular: 20 lb. per acre on 15-inch row spacing 16 lb. per acre on 20-inch row spacing 12 lb. per acre on 24-inch row spacing
			Trithion
Onion Thrips	malathion	2 lb.	Apply to foliage as needed. Coverage is essential for a good thrips control. Use a spreader-sticker unless specified differently on the container label. Apply all insecticides late evening or early morning to prevent damage to pollinators on adjacent crops.
	methyl parathion	½ lb.	
	parathion	½ lb.	
	toxaphene	2 lb.	
	diazinon	½ lb.	
Brown Wheat Mite	parathion	½ lb.	Apply only when problem occurs.

fall of the year. Late-season invasion of onion bulbs can cause serious storage losses. There is no known chemical control for neck rot. Several cultural practices will help suppress the organism:

- (1) Do not use excessive rates of nitrogen fertilizer that will prolong the active growing stage of the onion plant.
- (2) Cut off irrigation in late August to better force the onion plant into a dormant stage.
- (3) Harvest early to take advantage of good curing weather.

(4) Dry the tops so no free moisture is on the topping knives to spread the disease from bulb to bulb.

(5) Store only well-cured, dry onions.

Nematodes - There are several nematodes that invade onion plants and cause serious yield and quality losses. These microscopic worms are visible only with high magnification. A laboratory can analyze soil samples from your fields to deter-

mine if nematodes are present. Fumigation is the only presently known control.

THE AUTHORS — Hugh W. Homan is Extension Entomologist, University of Idaho Cooperative Extension Service, headquartered at Moscow. Paul J. Torell is Research Professor of Agronomy and Arthur J. Walz is Area Potato Specialist, both headquartered at the University's Research and Extension Center, Parma.

DISEASE CONTROL RECOMMENDATIONS FOR COMMERCIAL ONION PRODUCTION

Disease	Fungicide	Dosage per acre actual material	Remarks
Purple Blotch	Dithane M-45	2 lb.	Apply as needed. Follow label instructions for use of spreader-stickers on onion foliage. Thorough coverage is essential for disease prevention.
Downy Mildew	Difoliation	1 ¼ lb.	
Neck Rot	Maneb	2 lb.	
	Zineb	2 lb.	
	Dyrene	3 lb.	
Pink Root	Telone C	291-332 lb. (28-32 gal)	Follow label instructions.
	Vorlex	240-384 lb. (25-40 gal)	Fall application - Place material 8 inches deep in soil. Plow in or inject into fallow soil every 12 inches. Soil temperatures must be between 50°F and 90°F at the 6-inch depth. Do not apply when soil is very wet or very dry. When following grain, stubble should be removed. Poor control may be expected when temperatures are below 50°F.
	DD/PIC	280-320 lb. (28-32 gal)	
Sprout Inhibitor	Maleic Hydrazide (Sprout Stop, MH-30, etc.)	2 lb.	Apply in 100-150 gal water per acre with a ground sprayer. Use 10 gal water per acre for aerial applications. Bulbs should be fully mature before application. Best results occur when 25 to 50% of the tops have fallen, but all of the tops are still green. Follow label instructions for use of a spreader-sticker.

USE CARE WITH CHEMICALS

1. Be certain there is an economic need before applying any chemical.
2. Read and follow label instructions on all chemicals.
3. Where hazardous chemicals are used, follow label instructions for handling the chemical.
4. When band treating in the onion row, calculate for actual area treated at the broadcast rate for a chemical.
5. A full record should be kept on all chemical applications on a farm.
6. Protect honeybees, beneficial insects and wildlife from pesticide injury not only on the onion crop, but also on adjoining crops where drift may occur.
7. These recommendations for use are based on the best information currently available for each chemical listed. If followed carefully, residues should not exceed the tolerance established for any particular chemical. To avoid excessive residues follow label recommendations carefully with respect to dosage levels, number of applications, and minimum interval between applications and harvest.
8. The grower is responsible for residues on his crops as well as for problems caused by drift from his property to other properties or crops.

Weed Control

Onions can be damaged by herbicides presently labeled for use in the crop if they are applied during the period from emergence to the 2-leaf stage. Research in progress at the University of Idaho Research and

Extension Center at Parma may overcome this obstacle and give effective season-long weed control in the crop. Reasonable satisfactory weed control may be obtained with the treatments shown in Table 2.

WEED CONTROL RECOMMENDATIONS FOR COMMERCIAL ONION PRODUCTION

Situation	Treatment per acre	Remarks
Preemergence weed control	Dacthal 10 lb.	Apply after planting but before onion germination. Incorporate lightly with nailboard or implement that will not disturb the onion seed. Will give fair control of grass weeds; some broadleaf weeds will not be controlled effectively but others will be stunted and delayed, making them more amenable to later postemergence treatments. Do not use more than 10½ pounds actual Dacthal per acre/year.
Weeds emerging before onions	Propane flaming	Broadcast flame at a speed and intensity that will cause weed leaves to appear water-soaked.
Postemergence weed control	TOK E.C. 4 lb. -OR- Norex 2 lb. + 1% non-toxic oil having a UR No. of 93 or greater	Apply after onions have 2 to 3 true leaves; use a spray volume of at least 40 gpa. Will give fair to good control of broadleaf weeds that are less than 3 inches tall; only very small grass weeds will be satisfactorily controlled. Spray a 6 inch band in water furrow just before the last cultivation but no longer than 14 weeks after planting onions. Incorporate herbicide with last cultivation.
Postemergence control of dodder	Dacthal 6 lb.	Broadcast spray over onion beds when dodder germination is first noted. Avoid soil disturbance as much as possible after spraying Dacthal.

Issued in furtherance of cooperative extension work in agriculture and home economics, Acts of May 8 and June 30, 1914, in cooperation with the U.S. Department of Agriculture, James L. Graves, Director of Cooperative Extension Service, University of Idaho, Moscow, Idaho 83843. We offer our programs and facilities to all people without regard to race, creed, color, sex, or national origin.