

# Onions: Bulb, Green and Leeks

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## Culture

### Bulb Onions

The bulb onions grown in Ohio are the long day storage varieties. The market prefers the golden color with a single center that will store all winter.

All bulb-type onions are direct seeded beginning in early April with the last seedings in mid-May. Harvesting begins in early August and continues through October. Curing is started in the field and finished while in storage. Generally, Ohio weather conditions are not favorable for field curing.

### Green Onions

Green onions, or scallions, are divided into two types: woody, non-bulbing; and bulbing. The bulbing types do well in Ohio in the spring and fall. Woody, non-bulbing types are preferred for summer planting.

In order to achieve the long white shoulder or shank on the onions, the soil is hilled at least 2-3 weeks before harvest.

## Varieties

### Bulb (for storage)

#### Early (seeded, non-storage)

- Norstar
- Candy

#### Main Season (seeded, storage)

- Sweet Sandwich
- Burgos

#### Main Season (seeded, non-storage)

- Capable

### Green Onions

#### Bulbing Types (Spring or Fall)

- Southport White Bunch

#### Non-bulbing Summer

- Ishikura
- White Spear
- Emerald Isle
- Parade
- Beltsville Bunching

## Leeks

- Tadorna (blue)
- Otina (blue-green)
- Lancelot (blue-green)
- Firena (blue-green)
- Albanistar (green)
- RZ-L (green)

## Lime and Fertilizer

Mineral soils: Maintain soil pH between 6.2-6.8.

Muck soils: Maintain soil pH between 5.4-5.6.

Mineral soils: Broadcast and disk in all fertilizer prior to planting. Apply per acre: 80-100 lb N, 50-150 lb P<sub>2</sub>O<sub>5</sub> and 50-150 lb K<sub>2</sub>O. On very light soils following leaching rains, additional N may be needed at the rate of 30 lb/A in a sidedress application. Too much N may delay maturity.

Muck soils: Disk in prior to planting on a per acre basis: 40-60 lb N, 50-100 lb P<sub>2</sub>O<sub>5</sub> and 100-300 lb K<sub>2</sub>O depending on soil test. Sidedress with an additional 30-35 lb N/A.

## Spacing and Seeding Dry Onions

Rows: 14-16 inches.

Seeding rate: 3-4 lb/A.

## Green Onions

Rows: 14-16 inches.

Seeding rate: 8-10 lb/A. A scattered shoe is used on all planters.

On mineral soils, double-row, double-shoe precision planters increase the plant population to 9-12 plants per ft of row.

## Leeks

Transplants are used to achieve uniformity and earliness. Plants are grown for 8 weeks in a greenhouse. Rows 16-20 inches; in rows: 3 to 4 inches between plants.

## Storage

Best skin color is developed when onions are cured at 75-80°F and 70%-80% relative humidity. Undercutting on mineral soils several days before harvest will help to improve storage ability. Decrease temperatures gradually but not too fast; rapid cooling can cause condensation of moisture, resulting in bulb staining, sprouting and decay. Cooling should follow the average monthly temperature.

## Sprout Inhibitor

For onions stored until mid-fall or winter, maleic hydrazide (2.7 qt of MH-30/A) should be applied when about 50% of the tops are down, the bulbs mature, the necks are soft and 5-7 leaves are still green (see the product label).

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# Disease Control

## Damping off and Smut

Buy commercial fungicide-treated seed, if available. If Pythium has been a problem, apply **Ridomil Gold EC** at 0.5-1.0 pt/treated A. See label directions for details.

For smut, apply **Mancozeb** (80 WP) at 3 lb/A at planting according to label directions (dry bulb only). Before applying an EBDC fungicide, check with potential buyers to ascertain if crops treated with these fungicides will be commercially acceptable.

## Purple Blotch and Botrytis Leaf Blight (Blast) or Neck Rot

Spray at weekly intervals with one of the following fungicides. Use of a spreader-sticker will provide more complete spray coverage.

\***Endura** 6.8 fl oz/A (7 days-PHI).

\***Switch** 11-14 fl oz/A (7 days-PHI). See label for rotational crop restrictions.

**Bravo Ultrex** (dry bulb only) 0.9-1.8 lb/A (7 days-PHI).

**Bravo Weather Stik Green, Leek:** 1.5-3.0 pt/A (14 days-PHI); dry bulb:1-2 pt/A (7 days-PHI).

**Penncozeb (75DF)** 2-3 lb/A (dry bulb, 7 days-PHI).

**Mancozeb (Dithane M-45)** dry bulb: 2-3 lb/A (7 days) at 7 day intervals. See label for special precautions.

**Maneb (75DF)** 2-3 lb/A (dry bulb and green, 7 days-PHI).

**Manex** 1.6-2.4 qt/A (7 days-PHI).

**Rovral (50 W)** 1.5 lb/A (7 days-PHI) (dry bulb only). See label for special instructions.

**Rovral (4F)** 1.5 pt/A (7 days-PHI) (dry bulb only).

\***Aliette/Maneb 2+2** (dry bulb only) 4.0 lb/A (7 days-PHI).

\***Quadris** 6.2-12.3 fl oz/A or \***Amistar** 2.0-4.0 oz/A (0 days-PHI). Do not make more than three sequential applications of Quadris before alternating with a fungicide with a different mode of action.

\***Cabrio EG** 8-12 fl oz/A (7 days-PHI).

\***Pristine** 14.5-16.5 fl oz/A (0 days-PHI) (Botrytis); 10.5-18.5 fl oz/A for Purple blotch.

## Downy Mildew

Begin application when conditions are favorable for downy mildew development (cool, wet), and continue application on a 7-day schedule while favorable conditions persist.

**Dithane** 75 DF 3 lb/A (7 days-PHI).

**Maneb** 75 DF 2-3 lb/A (7 days-PHI).

**ManKocide** 2.5 lb/A (7 days-PHI).

\***Aliette** WDG (dry bulb only) 2-3 lb/A (7 days-PHI). See label directions.

**Aliette/Maneb 2+2** (dry bulb only) 4 lb/A (7 days-PHI).

\***Presidio** 3-4 fl oz/A (2 days-PHI).

\***Quadris** 9.2-15.4 fl oz/A (0 days-PHI).

\***Quadris Opti** 2.4-3.7 pt/A (14 days-PHI).

\***Cabrio EG** 8-12 fl oz/A (7 days-PHI).

\***Acrobat** 50WP 6.4 oz/A (0 days-PHI).

\***Ridomil Gold/Bravo 81 W** 1.5-2 lb/A (bulb onions—7 days-PHI, green onions—21 days-PHI). See label restrictions.

Use only when disease is present.

## White Rot (Sclerotium)

**Botran (75W)** Apply according to label. Do not plant spinach as a follow-up crop in treated soil.

\***Topsin M** 70 DF 2 lb/A. In furrow at planting.

\*Follow guidelines for fungicide resistance management on the product label (see pages 59-60).

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# Insect Control

Note on maggot control: Avoid organic fertilizer in the seeded row if possible. Thorough incorporation of organic matter (crop and weed residues) into the soil, preparation of the soil surface layers for rapid germination, and shallow planting reduce damage because seedcorn maggot and onion maggot are attracted to humus and moisture. Use one of the insecticides listed at the rate indicated per acre. However, the amount of chemical per acre must be doubled if twin onion rows are used. For example, if two Planet Junior planter shoes are used, double the chemicals used. Introduce insecticide at time of seeding into open seed furrow just in back of seed, but before the furrow closes.

### • Seed treatment

**Cyromazine** (60 days-PHI)

For onion maggot.

Trigard OMC (75WP): 6.6 lb per 100 lb of seed.

### • Preplant treatment for maggots

**Diazinon**

Apply as broadcast treatment just prior to planting and incorporate into soil 3-4 inches immediately.

Diazinon AG500 (4EC): 2-4 qt/A.

Diazinon AG600: 51-102 fl oz/A.  
Diazinon 50WP: 4-8 lb/A or 1.5-3 oz/1,000 ft.  
Diazinon 14G: 14-28 lb/A.

## • At-planting seed furrow treatment for maggots

**Chlorpyrifos** (dry bulb onions only)

Limit 1 application per year.

Lorsban 75WG: 0.73 oz/1,000 ft of row.

Lorsban 15G: 3.7 oz/1,000 ft of row for 18-inch spacing.

Lorsban 4E, Warhawk 4EC, Yuma 4E: 1.1 oz/1,000 ft of row for 18-inch spacing. Use minimum of 40 gal of drench per acre.

## • Area spray treatment for onion maggot adults

**Note:** Spray ditch banks, wind breaks, and other areas where adult flies seek shelter when flies first appear. Repeat spraying at regular intervals to kill newly emerged flies before they lay eggs.

**Malathion** (3 days-PHI)

Malathion 5EC; Malathion 57EC: 1.5-3 pt/A.

Malathion 8EC; Malathion 8 Aquamul: 1.5-2 pt/A.

**Permethrin** (1 day-PHI, dry onions only)

Pounce 3.2EC, Arctic 3.2EC: 4-12 fl oz/A. Limit 96 oz/A per season.

Pounce 25WP; Ambush 25WP: 6.4-19.2 oz/A. Limit 153 oz/A per season.

**Zeta-cypermethrin** (7 days-PHI)

Mustang 1.5EW: 2.4-4.3 oz/A.

Mustang Max (0.8EC): 2.88-4.0 fl oz/A.

## • Foliar treatment for onion thrips or other pests

**Note on thrips management:** Insecticide treatment is suggested if scouting of 15 to 50 randomly selected plants per field shows that the thrips population exceeds an action threshold. Thresholds used for thrips on onion in nearby states are: 3 or more thrips per leaf, or 10 to 15 thrips per plant. Insecticide treatment is most effective when high pressure (400 psi) and high spray volumes (100 gpa) are used.

**Acetamiprid** (7 days-PHI)

Assail 30SG: 5-8 oz/A. Limit 4 applications per season.

**Cypermethrin** (7 days-PHI)

Ammo 2.5EC, Battery 2.5EC: 4-5 oz/A for onion thrips; 2-5 oz/A for onion maggot adults, cutworms.

**Cyromazine** (7 days-PHI)

For leafminers.

Trigard 75WP: 2.66 oz/A. Limit 6 applications per crop.

**Deltamethrin** (1 day-PHI)

Decis 1.5EC, Delta Gold 1.5EC: 1.0-1.5 fl oz/A for cutworms. 1.5-2.4 fl oz/A for stink bugs, thrips. Allow 5 days between applications. Limit 9.6 fl oz/A per season.

**Diazinon** (14 days-PHI)

Diazinon AG500 (4EC): 1 pt/A.

Diazinon AG600: 12.75 fl oz/A.

Diazinon 50WP: 1 lb/A.

**Gamma-cyhalothrin** (14 days-PHI, bulb onion and garlic)

For cutworms, onion maggot adults, onion thrips.

Proaxis (0.5EC): 1.92-3.84 fl oz/A.

**Lambda-cyhalothrin** (14 days-PHI, bulb onions and garlic)

For cutworms, onion maggot adults, thrips.

Warrior 1EC, Silencer 1EC, Taiga Z 1CS: 1.92-3.84 fl oz/A. Limit 1.92 pints/A per year.

**Malathion** (3 days-PHI, dry and green onions)  
Malathion 5EC; Malathion 57%EC: 1.5-2 pt/A.  
Malathion 8EC; Malathion 8 Aquamul: 1-2 pt/A.

**Methomyl** (7 days-PHI, dry and green onions)  
Lannate 90SP: 1 lb/A.  
Lannate LV (2.4WSL): 3 pt/A.

**Methoxyfenozide** (1 day-PHI, green onion only)  
For armyworms, loopers, and other caterpillars.  
Intrepid 2F: 4-12 fl oz/A.

**Methyl parathion** (15 days-PHI, dry and green onions)  
Do not apply to blooming crops or weeds when bees are actively foraging.  
PennCap-M 2F: 2 pt/A.

**Permethrin** (1 day-PHI, dry onions only)  
Pounce 3.2EC, Arctic 3.2EC, Permethrin 3.2EC: 6-12 fl oz/A. Limit 96 oz/A per season.  
Pounce 25WP; Ambush 25WP: 9.6-19.2 oz/A. Limit 153 oz/A per season.

**Pyriproxyfen** (3 days-PHI)  
For suppression of onion thrips.  
Esteem 35WP: 2.5 oz/A. Limit 2 applications or 5 oz/A per season.

**Spinetoram** (1 day-PHI, dry and green onions)  
For thrips, caterpillars.  
Radiant 1SC: 5-10 fl oz/A. Limit 5 applications per year.

**Spinosad** (1 day-PHI)  
For suppression of onion thrips. For control of armyworms, dipteran leafminers, European corn borer, flea beetles, loopers.  
SpinTor 2SC: 6-8 fl oz/A for thrips; 3-6 fl oz/A for other pests. Limit 29 fl oz/A per crop.

**Zeta-cypermethrin** (7 days-PHI)  
Mustang 1.5EW: 3.2-4.3 fl oz/A.  
Mustang Max (0.8EC): 2.88-4.0 fl oz/A.

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## Weed Control

### Preplant Incorporated

**Prefar 4E:** Controls germinating annual grasses and certain broadleaf weeds. Not effective on muck soils. Apply 5-6 qt/A Prefar 4E preplant incorporated. Preemergence applications are effective only if followed by irrigation within 36 hours to provide activation. For dry bulb onions, garlic and shallots only.

### Preemergence

**Dacthal 75W:** Controls germinating annual broadleaf weeds and grasses. Apply 10.6 lb/A Dacthal 75W preemergence or postemergence of crop. Irrigation or rain soon after applying Dacthal improves weed control. Do not use on muck soils.

### Dry Onions and Green Onions

**Dual Magnum:** Controls germinating annual grasses and broadleaf weeds. Apply 0.67 to 1.33 pt/A Dual Magnum. Apply at the two true leaf stage of onions. Use lower rates on coarse soils (sandy) and higher rates on heavy soils (silty, clay). On soils with organic matter content higher than 5%, one additional treatment may be applied three to four weeks after the initial treatment. See product label for specific information. Do not apply within 60 days of harvest. Do not apply through any type of irrigation system. Note: Ohio 24(c) Special Local Needs label. The use of this product is legal only if a Waiver of Liability and Indemnification provided by Ohio Vegetable and Potato Growers Association has been signed by the grower, all fees have been paid, and a label is in your possession provided by the grower's association.

# Preemergence and Postemergence

**Buctril 4EC:** Controls emerged broadleaf weeds in dry bulb onions only. Apply 1/4-1/2 pt/A before onions emerge, or to onions with 2 to 5 leaves. Refer to the label for additional information on potential for crop injury.

**Prowl 3.3EC:** Controls germinating annual grasses and certain broadleaf weeds in dry bulb onions only. Refer to the label for specific comments on soil texture and rates.

## Muck soils

May be applied sequentially to direct seeded and transplanted dry bulb onions as follows:

Preemergence through loop stage—2.4-4.8 pt/A.

Early postemergence (onions: 2-6 true leaf stage)—3.6-4.8 pt/A.

Late postemergence (onions: 6-9 true leaf stage)—3.6-4.8 pt/A.

Do not apply more than 14.4 pt/A per season. (45 days-PHI) To maximize crop safety, delay preemergence application to the loop stage. Do not apply through the loop stage if heavy rains are expected. If irrigating after application, do not apply more than 0.5 inches of water. See the label for complete details on restrictions.

## Mineral soils

Apply 1.2-3.6 pt/A when onions have 2-9 leaves. Maximum rate of 3.6 pt/A/yr.

**Prowl H2O 3.8 ACS:** Controls germinating annual grasses and certain broadleaf weeds in dry bulb onions only. Refer to the label for specific comments on soil texture and rates.

## Muck soils

May be applied sequentially to direct seeded and transplanted dry bulb onions as follows:

Preemergence through loop stage—4 pt/A.

Early postemergence (onions: 2-6 true leaf stage)—4 pt/A.

Late postemergence (onions: 6-9 true leaf stage)—4 pt/A.

Do not apply more than 12.5 pt/A per season. (45 days-PHI). To maximize crop safety, delay preemergence application to the loop stage. Do not apply through the loop stage if heavy rains are expected. If irrigating after application, do not apply more than 0.5 inches of water. See the label for complete details on restrictions.

## Mineral soils

Apply 1.5-3.0 pt/A when onions have 2-9 leaves. Maximum rate of 3.6 pt/A/yr.

# Postemergence

**Chateau WDG:** Dry bulb onions only. Controls annual broadleaf weeds. Apply Chateau at 2 oz/A when onions are between the 3- to 6-leaf stage and before weeds have emerged. Application to transplanted onions can be made at the 2 leaf stage.

**Goal 2XL:** Controls small emerged annual broadleaf weeds. Apply 2-4 fl oz/A Goal 2XL (60 days-PHI) after onions reach the three true-leaf stage. Use on dry bulb onions only. Multiple treatments can be made, but a total of 2 pt/A/season cannot be exceeded. Follow label for other precautions.

**Fusilade DX:** Controls emerged annual and perennial grasses. Apply 1.0-1.5 pt/A Fusilade DX to emerged grasses (45 days-PHI). Do not exceed 6 pt/A/season. Add 1.0 qt/A nonphytotoxic oil concentrate. Rate is dependent on grass species and stage of development.

# Green Onions & Dry Onions

**Outlook:** For dry bulb onions, green onions, leeks, scallions, Japanese bunching onions, and green shallots, apply a single application of up to 21 fl oz/A, or as a split application 10.5-14 fl oz/A initially and the remaining 7-10.5 fl oz/A sequentially. Outlook should not be applied until the crop has 2 true leaves and not later than 30 days before harvest. Do not apply to transplants until several days after planting and after the soil has settled around the plants.

**Poast:** Controls emerged annual and perennial grasses. Apply 1-1.5 pt/A Poast (30 days-PHI) to emerged grasses. Do not exceed 4.5 pt/A/season. Add 1 qt/A nonphytotoxic oil concentrate. Rate is dependent on grass species and stage of development.

**Select:** Controls emerged annual and perennial grasses in dry bulb onions only. Apply 8 fl oz/A (14 days-PHI). Do not exceed 32 fl oz/A/season. Add a crop oil concentrate at 1% on a volume basis (v/v).