WEED CONTROL

IN ESTABLISHED

ASPARAGUS

IN CENTRAL WASHINGTON
The most common method of controlling annual weeds in asparagus has been to cultivate and hill the rows. However, five to seven days of spear production are usually lost after each cultivation during the cutting season.

The sodium salt of 2,4-D (2,4-dichlorophenoxyacetic acid) has also been used rather widely to control broadleaved weeds in asparagus. However, 2,4-D does not control weedy grasses. Eight years of experimental testing have shown that broad-leaved and grassy annual weeds in established asparagus can be controlled effectively, economically, and safely with monuron (3-(p-chlorophenyl)-1,1-dimethylurea). Recent supplemental labeling permits recommendation of procedures that proved highly satisfactory at the Irrigation Experiment Station, Prosser, Washington.

Field Preparation

After the asparagus has matured in the fall, cut down the plants with a rotobeater, chopper, or similar machine. Within about two weeks, work the plant residue into the top 2 or 3 inches of soil with a disk or other implement. Deep tillage may injure asparagus crowns so it is advisable to use implements with positive depth-control mechanisms.

The field may then be spike-tooth harrowed lightly or the rows may be shaped by slight hilling if desired. Then ditch for irrigation.

Identity or location of the old irrigation furrows and the asparagus rows must be carefully maintained during tillage. This is best done by avoiding severe tillage and by working in the same direction as the rows rather than across the rows.

Application of Monuron

Monuron should be applied as soon as field preparations have been completed and before weed seedlings emerge and become established.

The first year, apply monuron at the rate of 3.2 pounds per acre (4 pounds of the 80 per cent commercial product) as an overall, blanket treatment. In following years, the rate of application can usually be reduced to 2.4 pounds per acre (3
pounds 80 per cent commercial product) unless weed, soil, or other conditions are unusually bad.

After the overall application of monuron, no tillage should be necessary until the next fall when field preparations for another treatment are repeated. If reditching for irrigation is necessary, disturb no more soil than is needed to clean the furrows. Some weed growth, particularly barnyardgrass and the green and yellow foxtails, may develop in or along the irrigation furrows during mid- or late summer. Such growth, however, usually causes little concern.

**Late-Season Application**

Fall-applied monuron usually is carried into the surface soil and activated by late fall and early winter rains. This is important. If, for some reason, the monuron cannot be applied until late winter or early spring, when rain is frequently limited, mechanical incorporation of the chemical with the first 1 or 2 inches of moist topsoil is advisable. Use a rotovator or similar machine to do this.

Incorporation of the chemical into the soil assures effective weed control, especially when the field is treated for the first time. This operation also kills winter annuals, such as downy brome and the mustards, which may have become established between field preparations in the fall and the application of the chemical. The monuron treatment alone will not usually kill well-established annual weeds.

**Spray Equipment**

The presently available commercial preparation is a wettable powder which contains 80 per cent monuron. It forms a suspension in water and tends to settle out rapidly. Constant mechanical agitation in the spray tank is necessary for uniform application of the material.

The sprayer should not be equipped with strainers smaller than 50 mesh. Nozzles with .04-inch or .06-inch orifices perform satisfactorily at pressures as low as 20 pounds per square inch. The use of 40 or more gallons of water per acre is advisable.

**Precautions**

To avoid possible injury, asparagus crowns should be at least 4 or 5 inches below the soil surface when monuron is applied. If hilled rows are leveled by tillage or other means prior to treatment, always treat *after* the rows are rehilled, not before.

Monuron injures young asparagus. Fields less than two years old should not be treated with monuron. If the asparagus field is to be plowed up and planted to another crop, do not apply monuron during the preceding two years. Residual monuron from an application during the two previous years would be likely to injure the new crop.
WEED CONTROL AND SOIL EROSION

BY BEN ROCHE AND W. J. CLORE

The problem of soil erosion by wind complicates weed control measures on some of the light soils in central Washington. Overall applications of monuron, for example, may be hazardous on soils subject to blowing.

The Farm Service Department of Prosser Packers, Inc., Prosser, Washington, conducted several field-scale tests on annual weed control in asparagus in 1962. The tests were on Ritzville fine sandy loam in an area where erosion by wind was a serious problem.

In all of the tests, the asparagus fern was cut down in the fall after maturity with a rotobeater. One or two shallow diskings in the same direction as the rows followed. Then various weed and erosion control measures were applied. Three methods appeared especially effective in controlling weeds, in preventing soil erosion and soil- or sand-blasting by wind, and in producing high quality spears.

Method 1--Winter Wheat and Monuron

Monuron was applied in 18-inch bands over the asparagus rows in late February. The rate used was 3.2 pounds per acre (4 pounds 80 per cent commercial product) for the area actually covered by spray (see illustration). The fern stubs that remained erect after shallow diskings and the old irrigation furrows served as guides for making the band applications. Immediately after treatment, the monuron was incorporated with the top 1 to 2 inches of soil by rotovation. During the first week in March, winter wheat was seeded over the entire field.

Good stands of wheat were obtained, even in the strips treated with monuron. The wheat in the treated bands began to die after reaching a height of 3 to 4 inches. Excellent weed control, prevention of soil erosion and of blasting by wind-blown sand, and good yields of high quality spears resulted. No difficulty in harvesting the spears was encountered.

Mechanical incorporation of monuron with the soil would not be necessary if the applications were made in late fall or early winter. Rod-weeding to flatten the remnants of fern stalks just before drilling wheat in early March probably would not reduce the effectiveness of the monuron treatment appreciably.

Method 2--Winter Wheat and Dalapon plus 2,4-D

The field was rod-weeded to flatten the stubby fern stalks without pulverizing the topsoil and seeded with winter wheat about March 1.
BLANKET APPLICATION
Monuron at 3.2 pounds per acre covered by spray or 
Dalapon at 10.2 pounds per acre and 2,4-D at 2 1/8 pounds per acre

Chargeable to an acre of asparagus:
3.2 pounds of monuron or 10.2 pounds of dalapon and 2 1/8 pounds of 2,4-D

18-INCH BAND APPLICATION
Monuron at 3.2 pounds per acre covered by spray or 
Dalapon at 10.2 pounds per acre and 2,4-D at 2 1/8 pounds per acre

Chargeable to an acre of asparagus:
1.1 pounds of monuron or 3.4 pounds of dalapon and 0.7 pound of 2,4-D

On about May 15, when the wheat was 4 or 5 inches high, beginning to
tiller, and interfering with asparagus cutting, chemicals were applied.

Dalapon (2,2-dichloropropionic acid) was applied in 18-inch bands
over the rows to control the wheat and grassy weeds. The rate used was
10.2 pounds per acre (12 pounds of 85 per cent commercial product) for
the area actually covered by spray (see illustration). The sodium salt
of 2,4-D was added to the spray mixture to control broadleaved weeds.
The rate used was 2 1/8 pounds active ingredient per acre for the area
actually covered by spray. The field was not ditched until just before
the first irrigation.

This treatment controlled weeds effectively during the cutting season.
The slowly dying wheat in the treated bands and the wheat between the
bands or rows prevented soil erosion by wind. The wheat in the rows
caused no handicap in cutting spears. Above-normal yields of high quality spears were obtained. The weather was unusually cool during the cutting season after the chemical treatment. At lay-by time, no tillage of the treated strips was necessary and the rows were only slightly hilled.

Undoubtedly, good results would still be obtained if the rate of dalapon was decreased from 10.2 pounds to 6 to 8 pounds per acre (approximately 7 to 9.5 pounds of 85 per cent commercial product).

**Limitation**—During cutting season, dalapon should be applied immediately after cutting.

### Method 3—Peas and 2,4-D

After proper seedbed preparation, Early Alaskan peas were drilled uniformly in February at the rate of 100 to 125 pounds per acre and at right angles to the direction of prevailing winds. The field was diked for irrigation after asparagus spears emerged and rows could be identified. Between May 10 and 20, when pea growth began to interfere with cutting operations, the entire field was sprayed with the sodium salt of 2,4-D at the rate of 2 1/2 pounds active ingredient per acre. Enough spreader-sticker was added to the spray mixture to adequately wet the hard-to-wet pea vines. The peas started curling within a few hours and some wilting and drying of the vines was noted. Since the weather was cool, however, many of the peas survived and localized areas had to be retreated the first week in June.

The pea vines, even when killed, provided excellent protection against soil erosion and blasting by wind. Yields of high quality spears were maintained.

### Comparison of Methods

Wheat in strips treated with dalapon-2,4-D did not dry up as quickly and thoroughly as that in monuron-treated bands. Therefore, the dalapon-2,4-D treatment appeared somewhat more effective in preventing wind erosion, particularly when asparagus rows were parallel to the direction of prevailing winds. On light soils, the asparagus rows and drill rows of wheat should be at right angles to prevailing winds if possible.

On extremely light soils, the peas-2,4-D method may be less effective than the other treatments because peas are susceptible to soil- or sand-blasting, particularly during the seedling or early stages of growth.

---


2 Research Agronomist, Crops Research Division; Horticulturalist, Washington State University; and Extension Weed Specialist, Washington State University; respectively.

3 The cooperation of the Farm Service Department, Prosser Packers, Inc., Prosser, Washington, in providing the information on trial methods is gratefully acknowledged.

Published and distributed in furtherance of the Acts of May 8 and June 30, 1914, by the Washington State University Extension Service; C. A. Svinth, Director, and the U.S. Department of Agriculture, cooperating.

41M-1064