

Chemical Curing Of Alfalfa Seed Crops

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A chemically-treated alfalfa crop in Canyon county with a yield of 1775 pounds of clean seed per acre.

Alfalfa seed can be harvested by windrowing followed by combining, or by spray curing, followed by direct combining. The method to use will be influenced by such factors as:

1. Weather conditions such as occurrence of strong winds, rains or dewless nights.
2. Grower's preference.
3. Maturity of stand and amount of green seed.
4. Economy of operation.
5. Length of harvesting season.

Spray Curing

The use of chemicals to artificially cure an alfalfa seed crop so it can be harvested by direct combining, is an accepted practice. Chemical curing eliminates the need for cutting and windrowing the plants, which may increase loss of seeds due to shattering. Furthermore, direct combining of treated crops reduces the hazard of windrows being blown about by the wind. Chemical desiccants should be applied when the principal seed crop is mature or at about the same time as the field normally would be cut with a swather.

The maturity of an alfalfa seed crop is indeterminate. With favorable moisture and temperature, alfalfa will bloom and set seed from early

summer to the first killing frost. Growth of a particular crop should be terminated when it appears that the maximum yield of **mature** seed can be obtained following either swathing or chemical desiccation. This is called the principal seed crop. It is a matter for each grower to determine on the basis of his judgment and experience.

Low temperatures will delay and high temperatures will speed the drying rate, but usually the crop is ready to combine 5 to 12 days after treatment.

Pre-Conditioning the Field

Low soil moisture is important to the success of a chemical spray treatment. High soil moisture is not desirable because it causes the plant to stay green and reduces the effectiveness of the chemical spray. High soil moisture also causes new growth from the crown before the older seed-bearing growth is ready to harvest. Both of these conditions reduce efficiency of chemical defoliation.

Another disadvantage of high soil moisture at harvest may occur after a defoliant has been applied. Some times combining has to be delayed longer than planned because of unfavorable weather, or for other reasons. The better light penetration due to defoliation combined with high

soil moisture may result in vigorous, new growth from the crown that may be so heavy it interferes with combining and requires another defoliant application.

When soil moisture is adequate to mature the principal seed crop, irrigation should be stopped. It is seldom necessary to make the final irrigation after August 1 in southwestern Idaho.

The seed crop must be completely and thoroughly covered with a chemical desiccant. If some spots are left untreated, drying will be uneven making the crop difficult to combine. Growers with large acreages of seed alfalfa will find it to their advantage to treat only the number of acres that they can harvest within a certain time. This allows them to work in a field that is always ready for combining.

Chemical Desiccants

Three chemicals have been quite popular for use as desiccants.

Dinitro compounds mixed with oil and water are effective materials. They are now in wide use, although they present handling problems, are extremely toxic and stain badly. Dinitro and oil acts quite rapidly and is very effective in drying out all types of weeds and grasses. Seed pods sprayed with Dinitro that are not mature will not produce good seed. Very heavy foliage may require a second application. Treated crops can be combined in about five days.

Another product widely used is Diquat. It is extremely effective on alfalfa and clover and will

normally dry a crop in 7 to 10 days. Although it dries a crop relatively fast, some pods which are not quite ripe will mature. Although Diquat is a water soluble, non-volatile salt, it may drift to a considerable extent because of very small spray droplets that result from aerial application.

Diquat should not be applied when drifting may be a problem, especially during periods of inverted field air temperature. This condition exists when the temperature is cooler near the ground than at a short distance above the ground. This cap of warm air prevents air mixing vertically and the spray particles are not mixed with the surrounding air. A cloud of spray droplets may be suspended and carried great distances under these conditions. Diquat is extremely toxic to sugar beets.

Endothal works best on seed crops that are low in moisture. Results have sometimes been disappointing when Endothal has been applied to alfalfa which still has a lush growth.

Desiccants can be successfully applied either by ground or air. More chemical must be used with ground equipment, and there is likely to be considerably more shattering of seed as the spray machine passes through the field. Aerial spraying of desiccants is preferred to ground spraying, because of the rapidity and uniformity of application. Aerial applications should be applied at a minimum of 10 gallons of total solution per acre with low pressure. No desiccant will effectively kill an actively growing alfalfa plant with high soil mixture.

Preharvest Crop Drying for Alfalfa Seed Production

| <u>Chemical</u> | <u>RATE</u> | |
|---|--|---|
| | <u>Aerial Application</u> | |
| Diquat (Ortho) | Use 1½ to 2 pints in 10 gallons of water per acre. | Apply when the principal seed crop is mature enough for harvest by swathing. Don't apply to crop wet from rain. Avoid spraying during periods of thermal inversion. Do not graze treated areas nor feed treated forage to livestock. |
| Dinitro—General (Dow, Niagara, Stauffer) | Use 1 to 4 pints in 10 gallons diesel oil to make at least 10 gallons per acre. | Apply when the principal seed crop is mature enough for harvest by swathing. If foliage is heavy, make 2 applications 2 days apart using 1 quart in 9¾ gallons of oil total spray material per acre each application. Do not graze treated areas nor feed forage or seed from treated crops to livestock. |
| Endothal (Pennsalt) | Use 1½ gallons Endothal in 8½ gallons of water per acre for medium stands . . . or Use 1 gallon of Endothal in 9 gallons water per acre. Repeat in 5-7 days. | Apply when the principal seed crop is mature enough for harvest by swathing. Weather will affect drying time, but the crop is usually ready to combine 8-10 days after treatment. Do not graze treated areas nor feed forage or seed from treated crops to livestock. |
| | <u>Ground Application</u> | |
| | Use chemicals as indicated above, but increase volume to 15-20 gallons per acre. The use of a suitable wetting agent may increase the effectiveness of the chemical. | |

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