

# **DRY BEANS - MINNESOTA, MONTANA, NORTH DAKOTA, SOUTH DAKOTA AND WYOMING**

## General Information

## Product Information

Varisto herbicide controls broadleaf weeds and grass weeds by postemergence contact and systemic activity. After an application of Varisto, susceptible weeds may show yellowing, bronzing, and necrosis. Adequate soil moisture is important for optimum Varisto activity. When adequate soil moisture is present, Varisto provides residual activity on susceptible germinating weeds. Activity on established weeds depends on weed species and the location of its root system in the soil.

When organophosphate insecticide or carbamate insecticide is tank mixed with Varisto, temporary injury to the treated crop may result. Separate organophosphate and Varisto application by at least 7 days to reduce potential for injury.

All labeled crops are tolerant to Varisto. Leaf speckling or bronzing may occur, but plants generally outgrow this condition within 10 days. New growth is normal, and crop vigor is not reduced. Occasionally, internode shortening and/or temporary yellowing of crop plants may occur following Varisto application. These effects can be more pronounced if crops are growing under stressful environmental or hot and humid conditions. These effects occur infrequently and are temporary. Normal growth and appearance should resume within 1 to 2 weeks.

Use of Varisto is expected to result in normal growth of rotational crops in most situations; however, various environmental and agronomic factors make it impossible to eliminate all risks associated with use of this product and, therefore, rotational crop injury is always possible.

## Replanting

If replanting is necessary in a field previously treated with Varisto, the field may be replanted to Clearfield corn, lentil, and rice; dry beans and dry peas except non-Clearfield lentil; English pea; lima bean (succulent); snap bean; or soybean. Rework the soil no deeper than 2 inches. DO NOT apply a second treatment of Varisto. DO

NOT apply another ALS-inhibiting herbicide if replanting is required.

## Mode of Action

Varisto contains two herbicide active ingredients: imazamox and bentazon. Imazamox, a Group 2 (WSSA) herbicide, inhibits branched chain amino acid production in plants by inhibition of the enzyme acetolactate synthase (ALS) or acetohydroxy acid synthase (AHAS). Bentazon, a Group 6 (WSSA) herbicide, inhibits photosynthesis at photo system II (PS II).

Varisto is readily absorbed by leaves. Growth of susceptible plants is inhibited within a few hours after application. Chlorosis begins 3 to 5 days after application followed by foliar desiccation and necrosis. Foliar bronzing may occur on tolerant crops such as soybean.

Any weed population may contain plants naturally resistant to either Group 2 or Group 6 or both herbicides. Weeds resistant to Group 2 or Group 6 herbicides may be effectively managed using herbicide(s) from a different group and/or by using cultural or mechanical practices. Consult your local BASF representative, state cooperative extension service, professional consultants, or other qualified authority to determine appropriate actions if you suspect resistant weeds.

## Resistance Management

Resistance management practices include a diversified weed control strategy that integrates multiple options including biological, chemical, cultural, and mechanical (tillage) control practices. Cultural control practices include crop rotation, seeding rate, row spacing, and timely tillage.

## Chemical Control

- Start clean with tillage or an effective burndown herbicide program.
- DO NOT rely on a single herbicide site of action for weed control for the growing season.
- Follow labeled application rate and weed growth stage specifications.

- Use of preemergence herbicides that provide soil residual control of broadleaf and grass weeds is recommended to reduce early season weed competition and allow for more timely in-crop postemergence herbicide applications.
- Avoid repeat application of herbicides with the same site of action.
- Use tank mixes and sequential applications with other effective herbicides possessing different sites of action; include herbicides that provide residual control.

### Scouting and Containment

- Scout fields after herbicide application to identify areas where weed control was ineffective.
- To reduce future weed populations, control weed escapes with herbicides possessing a different site of action or mechanical control.
- Clean equipment between sites to avoid moving plant material between sites.

### Spray Additives

Postemergence application of Varisto herbicide requires the addition of an adjuvant and nitrogen fertilizer unless otherwise directed in this label.

### Adjuvants

When an adjuvant (or a specific adjuvant product, such as a drift control agent) is to be used with this product, the use of a Chemical Producers and Distributors Association (CPDA) certified adjuvant is recommended.

To achieve consistent weed control, an adjuvant [methylated seed oil (MSO), crop oil concentrate (COC), or nonionic surfactant (NIS)] AND a nitrogen fertilizer [urea ammonium nitrate (UAN) or ammonium sulfate (AMS)] are required. The addition of an adjuvant may cause some leaf burn, but new growth is normal and crop vigor is not reduced. The potential for leaf burn is increased when relative humidity and temperature are high. See Crop-specific Information for restriction of additive use on specific crops.

### Methylated Seed Oil

MSO is recommended when weeds are under moisture or temperature stress. Use

methylated seed oil at 1 gallon/100 gallons of spray solution [1% volume/volume (v/v)].

OR

#### Crop Oil Concentrate

Use COC adjuvant at 1 to 2 gallons/100 gallons of spray solution (1% to 2% v/v).  
Use high surfactant oil concentrate (HSOC) at 0.5 gallon/100 gallons of spray solution (0.5% v/v).

OR

#### Nonionic Surfactant

Use NIS containing at least 80% active ingredient. Apply surfactant at 1 quart/100 gallons of spray solution (0.25% v/v). Organosilicone surfactant may be used instead of NIS.

AND

#### Nitrogen Fertilizer

Recommended nitrogen-based fertilizers include liquid fertilizers (such as liquid AMS, 28% N, 32% N, or 10-34-0) at 2.5 gallons/100 gallons of spray solution. Instead of liquid fertilizer, spray grade AMS may be used at 12 lbs to 15 lbs/100 gallons of spray solution.

#### Spraying Instructions

When applied by ground or air, Varisto spray drift or other indirect contact may injure sensitive crops including, but not limited to: non-imidazolinone-tolerant canola, lentil, rice, sunflower, or wheat; cotton; leafy vegetables; okra; and sugar beet. DO NOT apply when wind conditions may result in drift, when temperature inversion conditions exist, or when spray may be carried to sensitive crops.

#### Ground Application

For best performance, uniformly apply with properly calibrated ground equipment in 10 gallons to 20 gallons of spray solution per broadcast acre at a spray pressure of 40 PSI (measured at the boom, not at the pump or in the line).

To ensure thorough coverage, use a minimum of 20 gallons of water per acre when applying Varisto to minimum-till or no-till crops. Use higher volumes for fields with dense vegetation or heavy crop residue.

Adjust boom height to ensure proper coverage of weed foliage (according to the manufacturer's instructions). Use flat-fan nozzle tips or similar appropriate nozzle tips to ensure adequate coverage. Avoid overlaps when spraying. Apply using spray nozzles that deliver medium-to-coarse spray droplets as defined by ASABE standard S-572.1 and as shown in the nozzle manufacturer's spray catalogs. DO NOT use flood, whirl chamber, or controlled droplet applicator (CDA) nozzles or selective application equipment such as recirculating sprayers or wiper applicators. DO NOT use brass nozzles because of the corrosive effects of nitrogen additives.

#### Aerial Application

Varisto may be applied by air to all crops listed on this label.

DO NOT apply Varisto by air if sensitive crops (including, but not limited to: non-imidazolinone-tolerant canola, lentil, rice, sunflower, or wheat; cotton; leafy vegetables; okra; and sugar beet) are within 200 feet downwind.

DO NOT apply when conditions favor drift from target area or when wind speed is greater than 10 mph. DO NOT apply Varisto by aircraft when wind is blowing more than 10 mph.

Use coarse sprays (larger droplets) because they are less likely to drift.

Uniformly apply with properly calibrated equipment in 5 or more gallons of water per acre. Spray pressure of aerial application can be up to 40 PSI.

#### Application Information

Apply Varisto postemergence as broadcast, band, or spot-spray application when weeds are small or actively growing and before they exceed the maximum specified size (see Weeds Controlled section).

For best control, apply Varisto at specified rates to actively growing weeds when weeds are small before they reach maximum sizes listed in Table 1. Early application produces the most beneficial effect on weed control (EXCEPTIONS: yellow nutsedge and Canada thistle) and makes thorough spray coverage easier to obtain. Delaying application allows weeds to exceed the maximum specified size and will prevent adequate control.

In general, apply Varisto when weeds are less than 3-inches tall and actively growing. Weeds must be thoroughly covered with spray. Dense leaf canopies shelter smaller weeds and can prevent adequate spray coverage. In irrigated areas, it may be necessary to irrigate before treatment to ensure active weed growth because weeds growing under drought conditions usually are not satisfactorily controlled.

An adjuvant (COC, MSO, or NIS) AND a nitrogen fertilizer MUST be added to the spray solution for best weed control, except as indicated in Crop-specific Information (refer to requirements and restrictions of adjuvant use for specific crops). Refer to the Adjuvants section for specific instructions and rates required.

When Varisto is applied postemergence, absorption will occur through both roots and foliage. Susceptible weeds stop growing and die or are not competitive with the crop. Varisto not only controls many existing broadleaf weeds and grass weeds when applied postemergence, it is also active on susceptible weeds that may emerge shortly after application.

Weeds are most easily controlled when actively growing. Under cold temperature conditions (less than 40° F maximum daytime temperature), weed control may be less than optimal.

### Cleaning Spray Equipment

To avoid injury to sensitive crops, spray equipment used for Varisto application must be drained and thoroughly cleaned with water before being used to apply other products.

#### Restrictions and Limitations (All Crops)

- DO NOT cultivate within 5 days before applying Varisto or within 7 days after application. Timely cultivation after 7 days may help provide overall weed control, especially under dry conditions.
- DO NOT apply more than a total of 2.0 pounds of bentazon ai (from all sources) per acre, per season.
- DO NOT apply to weeds under stress such as lack of moisture, mechanical injury, cold temperatures, hail damage, flooding, drought, injury from other herbicides, or widely fluctuating temperatures or unsatisfactory control may result.
- DO NOT apply to crops that show injury (leaf phytotoxicity or plant stunting) produced by any other prior herbicide applications because this injury may be enhanced or prolonged.
- Rainfast period - Rainfall or overhead irrigation within 4 hours after application may reduce the effectiveness of Varisto herbicide.
- DO NOT apply through any type of irrigation system.
- DO NOT apply when conditions favor drift from target area or when wind speed is greater than 10 mph.
- DO NOT tank mix organophosphate insecticide or carbamate insecticide with Varisto unless otherwise specified in writing by BASF.

#### Limitations, Restrictions, and Exceptions

##### DRY BEANS

Minnesota, Montana, North Dakota, South Dakota, and Wyoming

Varisto may be applied at 11 fl ozs/A to aid in the control of volunteer canola and mustard species weeds in Minnesota, Montana, North Dakota, South Dakota, and Wyoming.

Apply Varisto herbicide at 11 fl ozs/A to volunteer canola and mustard species weeds before the bloom stage of dry beans. Varisto at 11 fl ozs/A is not intended to be applied as a stand-alone product and is intended to be used in tank mix combination with 16.8 fl ozs/A of Basagran 5L herbicide and a graminicide. Use the appropriate adjuvant and nitrogen fertilizer for dry beans as recommended in Application Rate and Timing.

#### Dry Beans Restrictions and Limitations

- DO NOT apply Varisto to chickpea (garbanzo bean), lupines, or lentil.
- DO NOT apply Varisto to dry beans until the first trifoliate leaf has fully expanded because severe crop damage may occur.
- Application of Varisto must be made before dry beans bloom.
- DO NOT apply more than 16 fl ozs of Varisto/A per season to dry beans grown in Georgia and South Carolina. DO NOT tank mix with additional bentazon product.
- DO NOT apply Varisto to dry beans within 30 days of harvest.
- Following harvest of furrow-irrigated or flood-irrigated dry beans, thoroughly mix soil by plowing or deep disking to a minimum of 8 inches to minimize the potential for herbicide carryover to the follow crop.

#### Method

[Broadcast/Foliar Air](#)

[Broadcast/Foliar Ground](#)

#### Pre-Harvest Interval

30 days

#### Rates

[field\\_rates 0](#)

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#### Restricted Entry Interval

48 hours

EXCEPTION: If the product is soil-injected or soil-incorporated, the Worker Protection



Standard, under certain circumstances, allows workers to enter the treated area if there will be no contact with anything that has been treated.

Timings

[Before the bloom stage of dry beans.](#)