DIFFICULT-TO-CONTROL SPECIES - ANNUAL MARSHELDER

General Information

Product Information

Resistance Management Guidelines

- Development of plant populations resistant to this herbicide mode of action is usually not a problem on rangeland, permanent grass pastures, or CRP since these sites receive infrequent pesticide applications.

- Similar looking biotypes of a given weed species occurring in a treated area may vary in their susceptibility to a herbicide. Application of a herbicide below its specified rate may allow more tolerant weeds to survive and a shift to more tolerant biotypes within the treated area.

- Where identified, spreading of resistant weeds to other fields may be prevented by cleaning harvesting and tillage equipment before moving to other areas and by planting weed-free seed.

- Scout before after herbicide application to monitor weed populations for early signs of resistance development. Indicators of possible herbicide resistance include: (1) failure to control a weed species normally controlled by the herbicide at the dose applied, especially if control is achieved on adjacent weeds; (2) a spreading patch of non-controlled plants of a particular weed species; (3) surviving plants mixed with controlled individuals of the same species. If resistance is suspected, prevent weed seed production in the affected area by an alternative herbicide from a different group or by a mechanical method such as mowing.

- Use tank mixtures with herbicides from a different group if such use is permitted. Where information on resistance in target weed species is available, use the less resistance-prone partner at a rate that will control the target weed(s) equally as well as the more resistance-prone partner. Consult your local extension service or certified crop advisor if you are unsure as to which active ingredient is currently less prone to resistance.

- If a weed pest population continues to progress after treatment with this product,
discontinue use of this product, and switch to another management strategy or herbicide with a different mode of action, if available.

- Contact your extension specialist, certified crop consultant, or Dow AgroSciences representative for the latest resistance management information.

Use Precautions

- Applications made during periods of intense rainfall, to soils saturated with water, surfaces paved with materials such as asphalt or concrete, or soils through which rainfall will not readily penetrate may result in runoff and movement of TerraVue. Injury to crops may result if treated soil and/or runoff water containing TerraVue is washed, or moved onto land used to produce crops. Exposure to TerraVue may injure or kill susceptible crops and other plants, such as grapes, soybeans, tobacco, sensitive ornamentals.

- Grass revegetation
TerraVue can be used to control broadleaf plants in grass revegetation programs. Consult Dow AgroSciences’ literature for more details about TerraVue applications and grass stand establishment.

- Application before seeding grasses

- Preemergence: Tall fescue, orchardgrass, timothy, and annual ryegrass can be reseeded after a minimum of 15 days following an application of 2.85 oz per acre of TerraVue. Sorghum-sudangrass, teff, crabgrass, and pearl millet can be seeded a minimum of 30 days following an application of 2.85 oz per acre of TerraVue. When using higher rates or on other grass species wait a minimum of 45 days after an application of TerraVue.

- Postemergence applications on grass: During the season of establishment, TerraVue should be applied only after perennial grasses are well established have developed a good secondary root system and show good vigor. Most perennial grasses are tolerant to TerraVue at this stage of development. TerraVue may suppress certain established grasses, such as smooth bromegrass (Bromus inermis), especially when plants are stressed by adverse environmental conditions. Plants should recover from this transient suppression with the onset of environmental conditions favorable to grass growth and upon release from weed competition. Tall fescue, orchardgrass, timothy, and annual ryegrass are tolerant of
2.85 oz per acre of TerraVue once plants have developed 3, collared leaves.

- Seeding Broadleaf Plants (Forbs) and Wildflowers

TerraVue can be applied in the summer to control broadleaf weeds prior to forb planting. Forbs can be seeded 90 days after a summer application as a dormant fall planting or the following spring. Consult Dow AgroSciences literature for details.

- Field Bioassay Instructions: In fields previously treated with this product, plant short test rows of the intended rotational crop across the original direction of application in a manner to sample variability in field conditions such as soil texture, soil organic matter, soil pH, rainfall pattern, or drainage. The field bioassay can be initiated one year after the last application of aminopyralid and florpyrauxifen-benzyl in that field. Observe the test crop for symptoms of herbicidal activity, such as poor stand (effect on seed germination), chlorosis (yellowing), epinasty, and necrosis (dead leaves or shoots), or stunting (reduced growth). If herbicidal symptoms do not occur, the test crop can be grown. If there is apparent herbicidal activity, do not plant the field to the intended rotational crop; plant only to wheat, forage grasses, native grasses or grasses grown for hay.

Pasture and Rangeland Restrictions

- Do not use grasses treated with TerraVue in the preceding 18 months for hay intended for export outside the United States.

- Hay and silage from areas treated with TerraVue in the preceding 18 months can NOT be distributed or made available for sale off the farm or ranch where harvested unless allowed by supplemental labeling.

- Hay from areas treated with this product in the preceding 18 months can NOT be used for silage, haylage, baylage, and green chop unless allowed by supplemental labeling.

- Do not move hay and silage made from grass treated with TerraVue within the preceding 18 months off farm unless allowed by supplemental labeling.

- Do not use hay, silage, and manure from areas treated with TerraVue within the preceding 18 months or manure from animals feeding on hay treated with TerraVue in compost.

- Do not use grasses treated with TerraVue in the preceding 18 months for seed
production.

Restrictions for All Uses

- Do not reformulate or repackage this product into other end-use products.

- Do not treat frozen soil where runoff could damage sensitive plants.

- Use 2 or more gallons of spray solution per acre.

- Do not make more than two applications per year.

- Do not apply within 30 days of previous application.

- If grass is to be cut for hay, Agricultural Use Requirements for the Worker Protection Standard are applicable.

- Maximum Application Rate

  - On all labeled use sites (except total vegetation control areas and non-crop areas that are not grazed or hayed), do not broadcast apply more than 2.85 oz per acre of TerraVue (0.126 lbs aminopyralid and 0.0106 lbs florpyrauxifen-benzyl) per year. The total amount of TerraVue applied broadcast, as a re-treatment, and/or spot treatment must not exceed 2.85 oz per acre. Spot treatments may be applied at an equivalent broadcast rate of up to 5.7 oz of TerraVue (0.252 lbs aminopyralid and 0.0213 lbs florpyrauxifen-benzyl) per acre per annual growing season; however, not more than 50% of an acre may be treated at that rate.

  - For total vegetation control and non-crop areas that are not grazed or hayed, do not apply more than a total of 5.7 oz per acre of TerraVue (0.252 lbs aminopyralid and 0.0213 lbs florpyrauxifen-benzyl) per year as a result of broadcast, spot, or repeat applications.

  - Obtain Required Permits: Consult with appropriate state or local water authorities before applying this product around public waters. State or local public agencies may require permits.

  - Avoiding Injury to Non-Target Plants: Do not aerially apply TerraVue within 50 feet of a border downwind (in the direction of wind movement), or allow spray drift to come in contact with, any broadleaf crop or other desirable broadleaf plants, including, but not limited to, alfalfa, cotton, dry beans, flowers, grapes, lettuce,
potatoes, radishes, soybeans, sugar beets, sunflowers, tobacco, tomatoes or other broadleaf or vegetable crop, fruit trees, ornamental plants, or soil where sensitive crops are growing or will be planted. Avoid application under conditions that may allow spray drift because very small quantities of spray may seriously injure susceptible crops. Read and follow the Spray Drift Management and Spray Drift Advisories sections of this label.

- Chemigation: Do not apply this product through any type of irrigation system.

- Do not contaminate water intended for irrigation or domestic purposes. Do not treat inside banks or bottoms of irrigation ditches, either dry or containing water, or other channels that carry water that may be used for irrigation or domestic purposes.

- Do not apply this product to lawns, turf, ornamental plantings, urban walkways, driveways, tennis courts, golf courses, athletic fields, commercial sod operations, or other high-maintenance, fine turfgrass areas, or similar areas.

- Trees adjacent to or in a treated area can occasionally be affected by root uptake of TerraVue. Do not apply TerraVue within the root zone of desirable trees unless such injury can be tolerated. Use special caution near roses, and leguminous trees such as locusts, redbud, mimosa, and caragana.

- Do not treat frozen soil where runoff could damage sensitive plants. - Grazing and Haying Restrictions: There are no restrictions on grazing or grass hay harvest following application of TerraVue at labeled rates. Cutting hay too soon after spraying weeds will reduce weed control. After application wait 14 days after herbicide application to cut grass hay to allow herbicide to work. Do not transfer grazing animals from areas treated with TerraVue to areas where sensitive broadleaf crops occur without first allowing 3 days of grazing on an untreated pasture. Otherwise, urine and manure may contain enough aminopyralid and florpyrauxifen-benzyl to cause injury to sensitive broadleaf plants.

- Grazing Poisonous Plants: Herbicide application may increase palatability of certain poisonous plants. Do not allow livestock to graze treated areas until poisonous plants are dry and no longer palatable to livestock.

- Restrictions in Hay or Manure Use:
- Do not use aminopyralid-treated or and florpyrauxifen-benzyl-treated plant residues, including grass, wood plants, trees, hay, or straw from areas treated within the preceding 18 months, in compost, mulch wood chips, or mushroom spawn.

- Do not use manure from animals that have eaten aminopyralid-treated or florpyrauxifen-benzyl-treated forage or hay within the previous 3 days in compost, mulch, or mushroom spawn. Livestock must have 3 days of eating non-aminopyralid-treated or florpyrauxifenbenzyl- treated materials in order to clear their system of aminopyralid and florpyrauxifen-benzyl. Do not use aminopyralid-treated or florpyrauxifen-benzyl-treated plants in areas where commercially grown mushrooms or susceptible broadleaf plants may be grown.

- Do not spread manure from animals that have consumed aminopyralid-treated or florpyrauxifen-benzyl-treated forage or hay within the previous 3 days on land used for growing susceptible broadleaf crops.

- Manure from animals that have consumed aminopyralid-treated or florpyrauxifen-benzyl-treated forage or hay within the previous 3 days may only be used on areas used for pasture, grass grown for seed, wheat, and corn.

- Do not plant a broadleaf crop (including soybeans, sunflower, tobacco, vegetables, field beans, peanuts, and potatoes) in fields or areas treated with aminopyralid or florpyrauxifen-benzyl-treated or manure from animals that have grazed forage or eaten hay harvested from aminopyralid-treated or florpyrauxifen-benzyl-treated areas until an adequately sensitive field bioassay is conducted to determine that the aminopyralid and florpyrauxifen-benzyl concentration in the soil is at level that is not injurious to the crop to be planted.

- Do not plant a broadleaf crop in fields or areas treated in the previous year with manure from animals that have consumed aminopyralid-treated or florpyrauxifen-benzyl-treated forage or hay until an adequately sensitive field bioassay is conducted to determine that the aminopyralid and florpyrauxifen-benzyl concentration in the soil is at level that is not injurious to the crop to be planted.

- To promote herbicide decomposition, plant residues must be evenly incorporated in the surface soil or burned. Breakdown of aminopyralid and florpyrauxifen-benzyl in plant residues or manure is more rapid under warm, moist soil conditions and
may be enhanced by supplemental irrigation.

- Crop Rotation: Do not rotate to any crop from rangeland, permanent pasture, or CRP acres within one year following treatment. Cereals and corn can be planted one year after treatment. Broadleaf crops are sensitive to aminopyralid and florpyrauxifen-benzyl residues in the soil, and prediction of crop safety by field bioassay (see instructions below) is the best way to determine planting options. Broadleaf crops such as canola, flax, and alfalfa can require at least 2 to 3 years depending on the crop and environmental conditions. More sensitive crops such as soybeans, tobacco, peanuts, potatoes, and peas may require a longer plant back interval and should not be planted until a field bioassay shows that the level of aminopyralid and florpyrauxifen-benzyl present in the soil will not adversely affect that broadleaf crop.

- Consult with a Dow AgroSciences representative if you do not understand the Use Precautions and Use Restrictions. Call 1-800-258-3033 for more information.

Application Methods
Apply the specified rate of TerraVue as a coarse to coarser low-pressure spray. Do not apply this product with mist blower systems that deliver very fine spray droplets. Spray volume should be sufficient to uniformly cover foliage or intended application site. Increase the spray volume to ensure thorough and uniform coverage when target vegetation is tall and/or dense. To enhance foliage wetting and coverage, a non-ionic agricultural surfactant or other adjuvant may be added to the spray mixture as specified by the adjuvant label.

TerraVue may be applied by ground or aerial application equipment on any registered use site specified on this label.

Ground Broadcast Application: Higher spray volumes (greater than 10 gallons per acre) generally provide better coverage and better control, particularly in dense and/or tall foliage.

Aerial Broadcast Application: Do not apply less than 2 gallons per acre total spray volume. Five gallons per acre or greater will generally provide better coverage and better control, particularly in dense and/or tall foliage.

High-Volume Foliar Application: High volume foliar treatments may be applied at rates equivalent to a maximum of 2.85 oz per acre per year. Use sufficient spray
volume to thoroughly and uniformly wet foliage and stems.

For basal bark and cut stubble and all types of cut surface applications, see woody plant control section.

Low-Volume Foliar Treatment: To control susceptible woody plants, use TerraVue alone or in tank mixes with other herbicides in water. The spray concentration of TerraVue tank mixes and total spray volume per acre should be adjusted according to the size and density of target woody plants and type of spray equipment used. With low-volume application, use sufficient spray volume to obtain uniform coverage of target plants including the surfaces of all foliage, stems, and root collars. For best results, an adjuvant should be added to all spray mixtures. Match equipment and delivery rate of spray nozzles to height and density of woody plants. When treating tall, dense brush, a truck mounted spray gun with spray tips that deliver up to 2 gallons per minute at 40 to 60 psi may be required. Backpack or other types of specialized spray equipment with spray tips that deliver less than 1 gallon of spray per minute may be appropriate for short, low to moderate density brush.

Spot Application: Spot treatments may be applied at an equivalent broadcast rate of up to 5.7 oz of TerraVue per acre per year; however, if area is hayed or grazed, not more than 50% of an acre may be treated at that rate. Do not apply more than a total of 5.7 oz per acre of TerraVue per year as a result of broadcast, spot, or repeat applications. Spray volume should be sufficient to thoroughly and uniformly wet weed foliage, but not to the point of runoff. Repeat treatments may be made, but the total amount of TerraVue applied must not exceed 2.85 oz per acre per year. To prevent misapplication, spot treatments should be applied with a calibrated sprayer with a known volume per acre.

Mixing Instructions

Mixing with Water
To prepare the spray, add about half the required amount of water in the spray tank. Then, with agitation, add the specified amount of TerraVue and other herbicides, if tank mixing. Finally, with continued agitation, add the rest of the water and additives such as adjuvants, surfactants or drift control and deposition aids.

Addition of Surfactants or Adjuvants on All Labeled Use Sites: The addition of a high
quality non-ionic surfactant (of at least 80% active principal), methylated seed oil at 0.5 to 1.0 % volume per volume (2 to 4 quarts per 100 gallons of spray), or blended adjuvants (rate as directed on specific label) is allowed to enhance herbicide activity.

TerraVue – Tank Mixes

DO NOT TANK MIX ANY PESTICIDE PRODUCT WITH THIS PRODUCT without first referring to the following website for the specific product: www.TerraVueTankmix.com. This website contains a list of active ingredients that are currently prohibited from use in tank mixture with this product.

Continuous agitation is required for tank mixes. Sparger pipe agitators generally provide the best agitation in spray tanks.

TerraVue at rates of up to 2.85 oz per acre may be mixed with labeled rates of other labeled herbicides to broaden the spectrum of weeds and brush controlled or to improve control of certain weeds.

Tank Mixing Restrictions
Only use products in tank mixture with this product that: 1) are registered for the intended use site, application method and timing; 2) are not prohibited for tank mixing by the label of the tank mix product; and 3) do not contain one of the prohibited active ingredients listed on the www.TerraVueTankmix.com website.

Applicators and other handlers (mixers) must access the website within one week prior to application in order to comply with the most up-to-date information on tank mix partners.

Do not exceed specified application rates for respective products or maximum allowable application rates for any active ingredient in the tank mix.

Read carefully and follow all applicable use directions, precautions, and limitations on the respective product labels. It is the pesticide user’s responsibility to ensure that all products in the mixtures are registered for the intended use. Users must follow the most restrictive directions for use and precautionary statements of each product in the tank mixture.
Always perform a jar test to ensure the compatibility of products to be used in tank mixture.

Tank Mixing Precautions
Ensure TerraVue is fully dispersed in water BEFORE adding other liquid products as this could affect the ability of TerraVue or other dry formulations from fully dispersing. For direct injection or other spray equipment where the product formulations will be mixed in undiluted form, special care should be taken to ensure tank mix compatibility.

Mixing with Sprayable Liquid Fertilizer Solutions
TerraVue is usually compatible with liquid fertilizer solutions. It is anticipated that TerraVue will not require a compatibility agent for mixing with fertilizers; however, a compatibility test (jar test) should be made prior to mixing. Jar tests are particularly important when a new batch of fertilizer or pesticide is used, when water sources change, or when tank mixture ingredients or concentrations are changed. Compatibility may be determined by mixing the spray components in the desired order and proportions in a clear glass jar before large scale mixing of spray components in the spray tank. Note: The lower the temperature of the liquid fertilizer, the greater the likelihood of mixing problems. Use of a compatibility aid may be required if TerraVue is mixed with a 2,4-D-containing product and liquid fertilizer. Mixing TerraVue and 2,4-D in N-P or N-P-K liquid fertilizer solutions is more difficult than mixing with straight nitrogen fertilizer and should not be attempted without first conducting a successful compatibility jar test. Agitation in the spray tank must be vigorous to be comparable with jar test agitation.

Apply the spray mixture the same day it is prepared while maintaining continuous agitation. Rinse the spray tank thoroughly after use.

Note: Foliar-applied liquid fertilizers themselves can cause yellowing of the foliage of forage grasses and other vegetation.

Use Rates and Timing
TerraVue may be applied as a broadcast spray by ground or aerial equipment or as a spot application to control weeds listed on this label. When a rate range is given use the higher rate to control weeds at advanced growth stages, or under less than favorable growing conditions, or for longer residual control. Best results are
obtained when spray volume is sufficient to provide uniform coverage of treated weeds. For optimum uptake and translocation of the herbicide, avoid mowing, haying, shredding, burning, or soil disturbance in treated areas for at least 14 days following application.

TerraVue provides post emergence control and preemergence control of emerging seedlings of susceptible weeds and re-growth of certain perennial weeds following application. Preventing establishment of weeds will depend upon application rate, season of application, and environmental conditions after application.

TerraVue can provide long-term control of susceptible weeds. The length of control is dependent upon the application rate, condition and growth stage of target weeds, environmental conditions at and following application, and the density and vigor of competing desirable vegetation. Long-term weed control is most effective where grass vegetation is allowed to recover from overgrazing, drought, etc., and compete with weeds.

TerraVue can be an important component of integrated vegetation management programs designed to renovate or restore desired plant communities. To maximize and extend the benefits of weed control provided by TerraVue, it is important that other vegetation management practices, including proper grazing management, biological control agents, replanting, fertilization, prescribed fire, etc., be used in appropriate sequences and combinations to further alleviate the adverse effects of weeds on desirable plant species and to promote development of desired plant communities. Agricultural and natural resources specialists with federal and state government agencies can provide guidance on best management practices and development of integrated vegetation management programs.

Plants Controlled
The following weeds and woody plants will be controlled with the rates of TerraVue indicated below (Table 1). For best results, apply when weeds and woody plants are actively growing and under conditions favorable for growth. Use a higher rate in the rate range when growing conditions are less than favorable or when weed foliage is tall and dense, or when optimal longer term residual control is desired. TerraVue also provides preemergence control of germinating seeds or seedlings of susceptible weeds following application.

Limitations, Restrictions, and Exceptions
Directions

Apply TerraVue at 2 to 2.85 oz per acre before annual marshelder is 6 inches tall. If marshelder is greater than 6 inches tall, efficacy will be decreased. To improve efficacy, tank mix 2.85 oz per acre of TerraVue + 4-10 fl oz per acre of dicamba (4 lb ae/gallon) when plants are greater than 6 inches tall.

Method

- Broadcast/Foliar Air
- Broadcast/Foliar Ground
- Restricted Entry Interval

48 hours

Timings

- Hack and Squirt