

Virginia Soil & Water Conservation Board

Standards for Pesticide and Fertilizer Application Equipment

The following criteria have been developed to comply with §58.1-337 of the Code of Virginia. This section of the Code of Virginia established a “Tax credit for purchase of advanced technology pesticide and fertilizer application equipment.”

The categories of equipment covered include:

- A. Spray systems for pesticides and liquid fertilizers**
- B. Pneumatic fertilizer applicators**
- C. Monitors and flow regulators for pesticide and liquid fertilizer applicators**
- D. Manure application equipment**
- E. Tramline Adapters**
- F. Starter fertilizer banding and in-furrow attachments for planters**
- G. Variable rate application equipment using spatial positioning systems**
- H. Other equipment**
- I. Accessories to protect the water source by preventing back flow or back siphoning.**

The certification criteria for equipment eligible to receive this income tax credit are as follows:

A. Spray systems for pesticides and liquid fertilizers

Newly purchased sprayers, to qualify for the credit, must have all of the following features.

1. Quick change nozzles to enable operators to select and position the correct nozzle for each type of pesticide and/or liquid fertilizer application. These must also be "anti-drip" type nozzles.
2. Adequate pump capacity to maintain required pressures at all nozzles on the boom and to ensure complete mixing at all times of the spray solution by recirculating at least 40% of the pumped volume.
3. Sectioned boom "cutoffs" for boom widths greater than 20 feet that enable the operator to reduce spray width and thus reduce overlaps and applications to non-field areas when finishing irregularly shaped areas of fields.
4. Pressure gauges or monitors on each boom section to ensure adequate pressure for even applications rates across the boom.
5. Steps and a platform or other means where applicable to safely and easily add materials to the spray tank. The spray tank opening must be large enough for the safe addition of materials to the tank and have a lid that seals.
6. Calibration kits for all new sprayers.

Optional features for new spray systems:

The following components are optional for new spray systems but considered desirable. Both these items and those listed above, when purchased as components for addition to an existing sprayer will qualify for the tax credit.

7. Spray tank drain that can be opened and closed without exposure of the operator to the solutions.
8. Mechanical or hydraulic boom height adjustment to enable operators to select the appropriate height for each spraying situation.
9. Marker systems which allow the applicator to more precisely locate previously sprayed areas to prevent over application in the overlap between sprayer passes.
10. Clean water rinse systems which provide the ability to rinse spray tanks or pesticide containers in the field at the time the application is being made.
11. Self-leveling booms which minimize boom movement and assure accurate spray patterns across the width of the boom.
12. Multiple nozzle body systems or multiple boom systems which allow for a rapid change between previously selected nozzles to allow for appropriate changes in the field without leakages.
13. Chemical injection metering systems which eliminate the need for tank mixing.
14. Air carrying sprayers.
15. GPS guidance and auto-steer systems.
16. Pesticide application systems incorporating electrostatic charging technology to improve spray deposition.

Required features for upgraded existing spray systems:

Items added to upgrade an existing spray system qualify if the resultant sprayer has the essential features previously stated for new spray systems in items 1-6 above.

Optional features for upgraded existing spray systems:

Both these items and those listed above, when purchased as components for addition to an existing sprayer will qualify for the tax credit. Spray systems may have the essential features previously stated for new spray systems in items 7-16 above.

Required features for air assist spray systems:

Newly purchased air assist application equipment must have the following features:

1. Air assist spray systems must have the essential features previously stated for spray systems in items 2-6 above. Nozzles need not be “quick change” but must be “anti-drip” for the system to qualify.
2. Manifold sections must have separate cutoff or actuator valves.
3. There must be top deflectors, guide vanes, or other means to adjust the direction of the flow of air.
4. The equipment must be capable of variable air volume (i.e. a variable pitch fan, variable slot width, etc...)

Optional features for air assist spray systems:

1. Multiple nozzles.
2. Powder mixers or pre-mixers.

3. Optical or electronic sensing system to control sprayer application by providing spray shut off to the whole nozzle bank or to individual nozzles when no target is present.
4. Equipment which permits the recovery of excess spray for reuse.
5. Shields or deflectors to contain or direct the spray.

B. Pneumatic fertilizer applicators

Pneumatic applicators are capable of uniformly applying materials that vary in particle size on non-uniform terrain. They must possess the following characteristics to qualify for the tax credit:

Required features:

1. Provide uniform division of the fertilizer materials from the central hopper to each distribution device on the boom.
2. Allow infinitely variable rates of application within the range of application rates for the particular applicator.
3. Have a spread pattern coefficient of variation of less than 15% for the entire boom width.

Optional features:

1. Be equipped for "static" and/or moving calibration prior to field use.
2. Have monitoring equipment which indicates the actual application rate for boom sections during field operation.
3. Be equipped to vary the rate of application during field operation.

C. Monitors and flow regulators for pesticide and liquid fertilizer applicators

These are defined as electronic and mechanical devices which provide operators with an accurate indication of any of the following:

1. True ground speed;
2. Nozzle pressure;
3. Flow rates of the spray solution;
4. Air flow in air assist spray systems;
5. Blocked nozzles or distribution devices;
6. Actual application rates;
7. Allows for the accurate adjustment of application rates while spraying;
8. Metering for injected liquid fertilizer application at or post planting; or
9. Monitor boom height and adjust to appropriate height for each spraying situation to assure accurate spray patterns across the width of the boom.

D. Manure application equipment

Newly purchased manure application equipment must have the following features. Items added to upgrade an existing applicator qualify if the resultant spreader meets the following criteria also.

1. Dry Manure Spreaders

Required features:

1. Constructed so as to prevent leakage during transport and include a litter/slurry pan or a hydraulic end gate.
2. Capable of spreading manure at 2.5 tons/acre or less in a uniform swath.
3. Box spreaders (flat bottom) having a beater spreader mechanism shall be equipped with an upper beater and a gear reduction unit (slow down kit) to provide chain speeds of no more than 2.5 feet/minute.

Optional features:

1. Spreaders having an adjustable discharge gate/door may be equipped with an indicator to display the position of the gate/door.
2. Spreaders used to apply poultry manure and litter less than 50% moisture content may have cupped beaters.

2. Liquid Manure Spreaders

Required features:

1. Constructed so as to prevent leakage during equipment transport.
2. Capable of spreading manure at 1,000 gallons/acre or less in a uniform swath behind the spreader.
3. Have an application swath width of 20 feet or greater. The applicator must be driven by a positive discharge system.

Optional features:

1. Equipment to inject the manure directly into the soil. The application swath width requirements are waived for this option.

3. Manure Irrigation System

Required features:

1. Designed for a maximum application rate of 0.30"/hour. The nutrient management plan must address the issues of infiltration rates and environmentally sensitive areas.
2. Components submitted for the tax credit must meet the IRS "equipment" definition requirements of Federal Tax Regulation 1.48-1(c). Pipe installation in the ground is defined as real property and does not qualify.
3. Be purchased and utilized primarily for waste application.

E. Tramline Adapters

A tramline adapter alters a grain drill to leave certain rows unplanted. This allows for later access (traffic patterns) to the growing crop for split application of fertilizers and pesticides without

damage to the crop. For the purposes of these criteria, the adapter is defined as the following components necessary for the adoption of the system:

1. The tramline mechanism for the drill.
2. As a set, the tires and associated rims, not to exceed 13.6" wide, necessary to adapt tractors for use in tramline systems.

F. Starter fertilizer banding and in-furrow attachments for planters

Starter fertilizer attachments for planters, drills and transplanters include appropriate soil opening components and allow for accurate band applications of fertilizers near the root zone when planting or transplanting a crop. Fertilizer hoppers or liquid fertilizer tanks attached or connected by hoses to the planter during field operation are an integral component of this equipment. The starter fertilizer banding or in-furrow attachment may be purchased as part of a new planter or purchased for installation on an existing planter. For newly purchased planters, only the cost of the starter fertilizer banding or in-furrow attachment is eligible for this tax credit. The starter fertilizer banding or in-furrow attachment must meet the following criteria:

1. Constructed to place fertilizer in a band below the soil surface and within the root zone of seedlings or transplants.
2. Capable of accurately metering a range of application rates.

G. Variable rate application equipment using spatial positioning systems

This equipment combines the use of spatial positioning systems, such as global positioning using satellite technology, with variable rate application equipment for nutrients or pesticides, to result in more precise applications. To qualify for the tax credit, the equipment must:

1. Be used in conjunction with pesticide, manure, and fertilizer application equipment.
2. Result in automated variable nutrient or pesticide application rates using:
 - a. Spatial positioning systems;
 - b. Variable application rate controllers; and
 - c. Other input data such as, but not limited to, grid or management zone soil analysis results, soil types, expected yields, or weed maps.

H. Other equipment

Application systems which incorporate entirely new technology or application technology not covered by these criteria will be considered by the Board on a case-by-case basis upon request.

1. Pesticide application systems incorporating electrostatic charging technology to improve spray deposition shall qualify for the tax credit.
2. Equipment added to irrigation systems which provide more precise pesticide or nutrient application will qualify for the tax credit. Eligible necessary components include:

I. Accessories to protect the water source by preventing back flow or back siphoning.

1. A flow sensor to monitor water flow and adjust the injection rate of pesticide or fertilizer to achieve the appropriate application rate.