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Fire Ant Management for Livestock Producers: Hayfields and Pastures

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Introduction

Imported fire ants (*Solenopsis invicta* and its hybrids) are an increasing concern for farming operations as they expand across Virginia. To slow the spread of imported fire ants, the Virginia Department of Agriculture and Consumer Services (VDACS) and the US Department of Agriculture have set a Federal Fire Ant Quarantine (FFAQ; Fig. 1) over much of the southeastern portion of the state. The FFAQ does not currently include all the localities in Virginia known to have imported fire ants and will likely be expanded in the future.

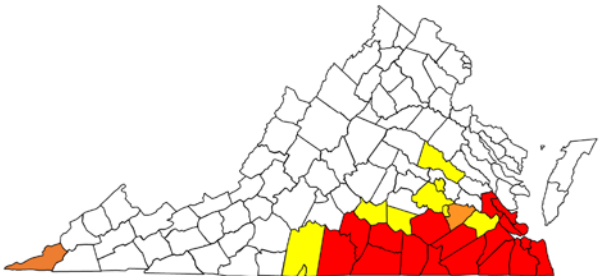

Figure 1. Currently known distribution of imported fire ants in Virginia as of Feb 2024. Red indicates heavily infested areas and the current quarantine set by VDACS. Orange indicates widespread infestation in areas not quarantined by VDACS to date. Yellow indicates lightly infested or only small, localized infestations to date. (Insect ID Lab, Virginia Tech)

Imported fire ant management within the FFAQ (Fig. 1) is the responsibility of those living and working there. VDACS manages colonies only found outside the quarantine area to slow their spread into new areas. If you find fire ants **outside** of the established FFAQ, please submit a sample of the ants to your local Cooperative Extension office or contact VDACS at 804-786-3515.

Fire Ant Identification

Adult imported fire ants have a two-node "waist" and antennae with 10 segments, including a two-segmented club at the tip (Fig. 2). *Solenopsis invicta* is a reddish brown but its hybrids may be darker in color. The stinger visibly protrudes at the tip of the abdomen. Other ants in Virginia are also known to build mounds and/or sting and may be mistaken for imported fire ants. Contact your local Cooperative Extension office to have ants identified as the appropriate management strategy may differ by the species of ant present. Ants other than imported fire ants are not under quarantine in Virginia.

Figure 2. Fire ant worker (April Noble, Antweb.org, Bugwood.org).

Moving Baled Hay and Straw Within and Outside the FFAQ

Movement of baled hay and straw **inside the FFAQ** is not restricted, but bales should be inspected to avoid moving fire ants into new areas inside the quarantine area.

Baled hay and straw to be **moved out of the FFAQ** must be stored on hard, impervious surfaces such as concrete, off the ground on pallets, or otherwise elevated above ground. Bales that have been stacked can be moved out of the FFAQ except for any bales in the bottom layer in direct contact with the ground. Inspection and permits are not required for bales that were stored on hard, impervious surfaces or elevated off the ground.

Baled hay and straw stored in direct contact with the ground can be moved out of the FFAQ only after an inspection to determine that they are free of fire ants and with an accompanying permit. Contact VDACS at 804-786-3515 regarding the permitting process for baled hay and straw.

Movement of hay and straw that is cut, baled, loaded, and shipped without spending any time in storage within the FFAQ is not restricted. However, bales of hay and straw containing soil cannot leave the quarantined area regardless of how they are stored.

Fire Ant Management

Treatment of large areas is not economically feasible and unlikely to eradicate imported fire ants completely. Suppression and management should be the goal for fire ants rather than eradication. Producers selecting the best treatment option for their operation should consider the cost of the insecticide material, the rate of application, the number of times the material will be applied, as well as the appropriate application method.

Fast-acting contact insecticides kill foraging workers before they can return and share the material with the rest of the colony. This reduces the colony size initially, but a healthy colony will recover in time if the queen continues to lay eggs and some workers remain underground to care for the offspring. A better strategy is to use fire ant baits that the foragers carry back and share with other ants in the colony, gradually distributing the material from ant to ant through shared feeding. Fire ant baits are an ideal method of targeting smaller colonies that might otherwise go undetected.

Fire ant baits typically contain an insect growth regulator (IGR), like methoprene, or a metabolic/nervous system disruptor, such as hydramethylnon. IGRs disrupt the development of the ant brood (eggs, larvae, and pupae) so they do not reach the adult stage, but they have no effect on adult ants. IGRs are slow acting, taking up to two months for effectiveness, but eventually the queen dies unattended as no new worker ants are present to replace the older workers as they die off. In contrast, metabolic/nervous system inhibitors work by killing the adult ants in 1-4 weeks. As the workers die off, the developing brood dies without constant care from the workers. Another option is the use of products that combine an IGR with a metabolic/nervous system inhibitor. The combination of the two materials kills adult ants, including the queen, and prevents the developing brood from reaching the adult stage.

Used properly, fire ant baits will reduce the number of colonies within a given area, but complete or permanent eradication is unlikely. Winged, newly mated queens from surrounding colonies can fly into previously treated areas and re-populate the area with new colonies. The length of time an area remains uninfested after treatment will depend on invasion pressure from outside the treated area. Fire ants can also arrive unrecognized on regulated materials, such as items containing soil, baled hay, or on earth moving equipment. Fire ant management will be an ongoing process in areas where fire ants are established.

Using Fire Ant Baits

Baits offer effective management for fire ants in pastures and hayfields, but they work slowly. Apply baits early in the year and repeat applications as needed as directed on the label.

Monitor the perimeters of fields and pastures for colony establishment (Fig. 3). It’s easier to stop the development of small, young colonies as they appear on the edges of a field than controlling larger, established colonies spread throughout an entire field. Preventive applications of bait will help protect fields against newly established colonies with foraging workers in areas with heavy fire ant pressure. However, preventive bait applications are not effective against newly mated queens arriving from other areas as the queens do not forage for food.

A product selected for use in pastures and hayfields should be appropriately labeled for both the site and the intended forage use. Products labeled for use in home lawns are not appropriate for use in pastures or hayfields and may result in pesticide residues in

animals intended for consumption. Some products labelled for use against fire ants in pastures can be used for companion animals such as horses or llamas, but not with animals intended for meat or milk. Some products are labeled for both broadcast application as well as a mound treatment, but different rates are used for the different application methods. See Table 1 for materials labeled for use in pasture and rangeland in Virginia with applicable grazing and haying restrictions.

Figure 3. Fire ant mounds in a cattle pasture (USDA APHIS PPQ, Bugwood.org).

Always read the label and understand the restrictions for the fire ant bait before applying the material. For example, **Amdro Pro Fire Ant Bait** is labeled for hayfields (not grazing pastures) with a 7-day restriction for cutting and baling hay for animals intended for meat or milk, but there are no preharvest restrictions on cutting and baling hay for use by strictly companion animals not intended for milk or meat. However, the similarly named **Amdro Fire Ant Bait** is labeled for use on noncrop areas and ornamental turf, but not for grazing pastures or hayfields. Any turfgrass treated with Amdro Fire Ant Bait cannot be grazed and the clippings cannot be fed to livestock.

Around Water Sources

Fire ants are attracted to water sources and often build mounds around ponds, drainage areas, ditches, streams, well water pumps, and similar sites. They can be a nuisance near fish farms, livestock water supplies, and recreational sites. Many materials labeled for fire ant control are highly toxic to aquatic organisms and must be applied correctly to avoid killing fish and other animals. Use products with low toxicity around water sources to protect the environment and avoid contaminating potable water supplies.

Consider applying baits around water sources rather than treating mounds directly. Apply baits only when workers are actively foraging. Check for the presence of foraging workers with potato chips, hot dog slices, or other greasy foods. If active, foraging workers should find these food sources very quickly, indicating that bait application would be appropriate at that time.

Observe all precautions on the label regarding applications around water. Do not apply more than the labeled rate. Overapplication may result in rainfall runoff carrying the material into the water. Do not apply materials if rain is expected. Do not apply materials directly to water sources and do not allow broadcast particles to reach the water's surface.

Cultural Management

Remove straw and hay bales from fields as soon as possible to reduce the chance of fire ants infesting the bales.

Disking or dragging fields will reduce the size of fire ant mounds and reduce potential damage to farm equipment in areas where mounds consist of hard-packed soil. Dragging also breaks up animal manure in fields and discourages egg-laying by filth flies, which are a food source for fire ants. However, while fire ants may prefer areas with less disturbance from mowing, cultivation, etc., well established colonies are unlikely to move elsewhere because of mechanical disturbances like disking or dragging.

For additional information about best management practices for fire ants, see the Virginia Cooperative Extension fact sheets Red Imported Fire Ant (RIFA) (VCE 444-284) and Avoiding Fire Ant Stings (ENTO-481NP).

Revised

Revised by T. Dellinger, 26 March 2024.

Table 1. Materials labeled for use against fire ants in Virginian pastures and hayfields.

Trade Name	Active Ingredient (%)	Rate/acre	Restrictions[1]
Advion Fire Ant Bait	indoxacarb (0.045%)	Broadcast 1.5 lb/acre	For use in fenced pastures grazed only by companion animals. Not for use on pastures or hayfields for animals intended for meat or milk. No PHI listed on label but observe the 4 hr restricted-entry interval before allowing animals in treated areas.
Amdro Pro Fire Ant Bait	hydramethylnon (0.73%)	Broadcast 1-2 lb/acre	No PHI to graze or cut and bale hay if for use by companion animals. Not for use on pastures or hayfields for animals intended for meat or milk.
Carbaryl 4L	Carbaryl (43%)	Spray 1.5 fl oz/gal	Only kills foraging workers. 14 days PHI to cut and bale hay or graze.
Distance Fire Ant Bait	pyriproxyfen (0.5%)	Broadcast 1-1.5 lb/acre	Non-grazed pasture or rangeland only. Do not hay treated areas.
Esteem Ant Bait	pyriproxyfen (0.5%)	Broadcast 1.5-2 lb/acre	No PHI for haying treated pasture or rangeland. Do not plant any crop other than those with registered pyriproxyfen uses in treated areas sooner than 30 days after the last application.
Extinguish Plus Fire Ant Bait	hydramethylnon (0.365%) + S-methoprene (0.25%)	Broadcast 1.5 lb/acre	7 days PHI to cut and bale hay if for animals intended for meat or milk. No PHI to graze or cut and bale hay if for use by companion animals.
Extinguish Professional Fire Ant Bait	S-methoprene (0.5%)	Broadcast 1-1.5 lb/acre	No PHI or grazing restrictions for livestock or companion animals on treated pasture or rangeland.
Hopper blend of Extinguish Professional and other fire ant bait labeled for pasture or rangeland	S-methoprene (0.5%) + hydramethylnon (0.73%) if using Amdro Pro	Mix 0.75 lb Extinguish Pro and 0.75 lb of Amdro Pro and broadcast 1.5 lb/acre	More restrictive label applies to mixture when blending products. Follow Amdro Pro restrictions if using Amdro Pro.
Sevin SL	Carbaryl (43%)	Spray 1.5 fl oz/gal	Only kills foraging workers. 14 days PHI to cut and bale hay or graze.
Sevin XLR Plus	Carbaryl (44.1%)	Spray 1.5 fl oz/gal	Only kills foraging workers. 14 days PHI to cut and bale hay or graze.

[1]Companion animals (i.e., horses, llamas, etc.) are domestic livestock not intended for milk or meat. PHI (post-harvest interval) is the number of days you must wait to cut hay after application.

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