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# Management of Insect Pests in Rangeland and Pasture

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Arthropod pests of rangeland and pasture rarely become a serious economic problem. Many pest problems can be avoided by implementing an Integrated Pest Management (IPM) plan that includes the use of good pasture management practices, proper fertilization, mowing and optimal stocking rates. Pesticide applications should not replace the use of good pasture management practices and should not be applied as "preventative insurance" because it is rarely economically or environmentally justifiable.

The information herein is for educational purposes only. Reference to commercial products or trade names is made with the understanding that no discrimination is intended and no endorsement by the Cooperative Extension Service is implied.

Pesticide recommendations in this publication were correct as of the "Modified Date" but always check the label that came with the purchased insecticide for the most current rates and restrictions

The first name listed is the trade name of a product registered for use in corn for the listed pest. The name in (parentheses) listed below the trade name is the name of the active ingredient. The active ingredient name is provided because in many cases, there are other registered products containing the same active ingredient that may cost less, so producers should compare prices.

The number [in brackets] following a product is its Mode of Action number [MOA]. The more frequently insecticides with the same MOA are used, the more likely resistance will occur. This number provides an easy way to select different modes of action to avoid selecting for pests that are resistant to a certain mode of action.

Refer to the following OSU publications for additional information.

| | |
|---|---|
| EPP-7196 | Grasshopper Management in Rangeland, Pastures and Crops |
| NREM-2869 | Management Strategies for Rangeland and Introduced Pastures |
| NREM-2870 | Drought Management Strategies |
| NREM-2875 | Intensive Early Stocking |
| NREM-2882 | Weed Control on Rangelands |
| NREM-2886 | Stocking Rate Determination on Native Rangelands |
| PSS – 2583 | Choosing, Establishing and Managing Bermudagrass Varieties in Oklahoma |
| PSS-2585 | Forage Legumes for Oklahoma |
| PSS-2591 | Bermudagrass Pasture Management |
| PSS-2594 | Plan Grazing Management Using the Oklahoma Grazing Stick |

## Management of Insect Pests in Rangeland and Pasture

| *Pest, Damage and Treatment Threshold* | *Insecticide Formulation* | *Rate of Product (lb. active ingredient) per Acre* | *Comments* |
|---|---|---|---|
| **Ants (including fire ants)**<br><br>Ants range in size from 1/16 inch to nearly 1/2 inch in length and from light tan to black in color. These social insects live in a colony with thousands of workers. The two | **Baits for Grazed Land** | Individual mound broadcast | For all baits: Apply as a broadcast or individual mound treatment when ants are active and soil temperatures exceed 60 F. If treating individual mounds, estimate the mound density, and do not disturb the mound or apply the bait directly on the mound. |

| *Pest, Damage and Treatment Threshold* | *Insecticide Formulation* | *Rate of Product (lb. active ingredient) per Acre* | *Comments* |
|---|---|---|---|
| **Ants (including fire ants) (cont'd)** | | | |
| most important pest species for rangeland and pasture are the red imported fire ant and the red harvester ant.<br><br>Damage: Fire ants can be an irritant to cattle as they feed. Harvester ants sometimes clear large patches of grass as they feed.<br><br>Threshold: No threshold established. | Amdro Pro [20A] (hydramethylnon) | 5 tbs/mound<br>1.0 to 1.5 lb./acre | 0-day wait for grazing, 7-day wait for harvest. |
| | Esteem [7C] (pyriproxifen) | 2 to 4 tbs/mound<br>1.5 to 2 lb/acre | 0-day wait for grazing or 1 day for harvest. Repeat every 10 to 12 weeks as needed. |
| | Extinguish [7A] (s-methoprene) | 3 to 5 tbs/mound<br>1 to 1.5 lb/acre | 0-day wait for grazing or harvest. Repeat every 10 to 12 weeks as needed. |
| | Extinguish Plus [7A] (s-methoprene + hydramethylnon) | 2 to 5 tbs/mound<br>1.5 lb per acre | 0-day wait for grazing, 7-day wait for harvest. |
| | Amdro Pro + Extinguish | 3-5 tbs/mound<br>0.75 + 0.75 lb/acre<br>7-day wait for harvest. | Mix baits thoroughly, 0-day wait for grazing, |
| | **Additional Baits for Non-Grazed Land** | | |
| | Advion Fire Ant Bait [22A] (Indoxacarb) | 4 level tbs/mound<br>1.5 lb/acre broadcast | May be applied to fenced grazed pastures if grazed by companion animals only. |
| | Distance [7C] | 1 to 4 tbs/mound<br>1.0 to 1.5 lb/acre | 1-day wait for harvest. Repeat after 12 to 16 weeks as needed. |
| **Armyworm**<br><br>Caterpillar can reach slightly over 1 inch. Dark green or brown with five stripes along body.<br><br>Damage: Feed on foliage, usually a problem in the spring.<br><br>Threshold: Get a wire coat hanger, bend it into a hoop, place it on the ground and count all sizes of fall armyworms in the hoop. Examine plants at several locations along the field margin as well as in the interior. The hoop covers about 2/3 of a square foot, so a threshold in pasture would be an average of two or three ½ inch-long larvae per hoop sample (three to four per square foot). | *Bacillus thuringiensis** Biobit XL Javelin WG Xen Tari [11B1, B2] | See product label for specific rates. | *All *Bacillus thuringiensis* products work best when applied to small caterpillars. Caterpillars cease feeding upon ingestion of product, but will take several days to die. 0-day waiting period. |
| | Baythroid XL [3] (beta-cyfluthrin) | 1.6 to 1.9 fl oz<br>(0.013 to 0.015 lb.) | 0-day waiting period. |
| | Besiege [3,28] (lambda-cyhalothrin + chlorantraniliprole) | 6.0 to 10.0 fl oz | 0-day waiting period for grazing or harvest, 7-day wait for last cutting of hay. |
| | Blackhawk [5] (spinosad) | 1.1 to 2.2 oz<br>(0.025 to 0.05 lb.) | 0-day wait for grazing, 3-day wait for harvest. |
| | Coragen [28] (chlorantraniliprole) | 3.5 to 7.5 fl oz<br>(0.045 to 0.098 lb.) | 0-day wait for grazing or harvest. |
| | Declare [3] (gamma-cyhalothrin) | 1.02 to 1.54 fl oz<br>(0.01 to 0.015 lb.) | 0-day wait for grazing, 7-day wait for hay. |
| | Lannate LV [1A] (methomyl) | 0.75 to 3 pt<br>(0.225 to 0.9 lb.) | For Bermudagrass pasture ONLY. 7-day wait for grazing, 3-days for harvest. |
| | Malathion 5EC [1B] (malathion) | 1.4 pt<br>(0.92 lb.) | 0-day wait for grazing or harvest. |
| | Mustang MAXX [3] (zeta-cypermethrin) | 2.8 to 4.0 fl oz<br>(0.0175 to 0.025 lb.) | 0-day wait for grazing or harvest. |

| *Pest, Damage and Treatment Threshold* | *Insecticide Formulation* | *Rate of Product (lb. active ingredient) per Acre* | *Comments* |
|---|---|---|---|
| **Armyworm (cont'd)** | Sevin 4F, XLR Plus [1A] (carbaryl) | 2 to 3 pt (1 to 1.5 lb.) | For improved pasture only: do not apply more than two applications per season and not more than once every 14 days. Sevin label states a 14-day waiting period for grazing or harvest. |
| | Tombstone [3] (cyfluthrin) | 1.6 to 2.8 fl oz (0.025 to 0.044 lb.) | 0-day wait for grazing or harvest. |
| | Warrior II w Zeon [3] (lambda-cyhalothrin) | 1.28 to 1.92 fl oz (0.2 to 0.3 lb.) | 0-day waiting period for grazing, 7 days for hay. |
| **Bermudagrass stem maggot**<br><br>Immature stage of an introduced fly. Infests only Bermudagrass and star-grass. Mature maggots are yellow and about 1/8 inch.<br><br>Damage: Feed on top node of grass stem. Burrow into shoot, killing leaves above feeding zone.<br><br>Threshold: Plan for early harvest when infestations reach 10% to 20% of plants showing damage. Harvest and remove bales as soon as possible. Spray with registered insecticide seven days later. | Baythroid XL [3] (beta-cyfluthrin) | 1.6 to 1.9 fl oz (0.013 to 0.015 lb.) | 0-day waiting period. |
| | Besiege [3,28] (lambda-cyhalothrin + chlorantraniliprole) | 8.0 to 9.0 fl oz | 0-day waiting period for grazing or harvest, 7-day wait for last cutting of hay. |
| | Declare [3] (gamma-cyhaolthrin) | 1.02 tp 1.54 fl oz (0.01 to 0.015 lb.) | 0-day wait for grazing, 7-day wait for hay. |
| | Warrior II w Zeon [3] (lambda-cyhalothrin) | 1.28 to 1.92 fl oz (0.2 to 0.3 lb.) | 0-day waiting period for grazing, 7-days for hay. |
| | Mustang MAXX [3] (zeta-cypermethrin) | 2.8 to 4.0 fl oz/A (0.0175 to 0.025 lb.) | 0-day wait for grazing or harvest. |
| **Fall armyworm**<br><br>Large striped caterpillar that reaches 1.5 inches when mature. Has an inverted "Y" in the front of its head.<br><br>Damage: Feed on foliage. Typically a problem in the fall, feeding on the emerged heads.<br><br>Threshold: Get a wire coat hanger, bend it into a hoop, place it on the ground, and count all sizes of fall armyworms in the hoop. Examine plants at several locations along the field margin as well as | *Bacillus thuringiensis** Biobit XL Javelin WG Xen Tari [11B1, B2] | See product label for specific rates. | Use higher rate for heavy infestations or when plant growth is rapid. A contact insecticide may be added for enhanced control of heavy populations. 0-day waiting period for grazing or harvesting. |
| | Baythroid XL [3] (beta-cyfluthrin) | 2.6 to 2.9 fl oz (0.02 to 0.022 lb.) | 0-day wait for grazing or harvest. |
| | Besiege [3,28] (lambda-cyhalothrin + chlorantraniliprole) | 6.0 to 10.0 fl oz | 0-day waiting period for grazing or harvest, 7-day wait for last cutting of hay. |
| | Blackhawk [5] (spinosad) | 1.1 to 2.2 oz (0.025 to 0.05 lb.) | 0-day wait for grazing, 3-day wait for harvest. |
| | Coragen (28) (chlorantraniliprole) | 3.5 to 5.0 fl oz (0.045-0.065 lb.) | 0-day waiting for grazing or harvest. |
| | Declare [3] (gamma-cyhalothrin) | 1.02 to 1.54 fl oz (0.01 to 0.015 lb.) | 0-day waiting period for grazing, 7 days for hay. |

| *Pest, Damage and Treatment Threshold* | *Insecticide Formulation* | *Rate of Product (lb. active ingredient) per Acre* | *Comments* |
|---|---|---|---|
| **Fall armyworm (cont'd)** | | | |
| in the interior. The hoop covers about 2/3 of a square foot, so a threshold in pasture would be an average of two or three ½-inch long larvae per hoop sample (three to four per square foot) | Dimilin (diflubenzuron) | 0.5 to 2 fl oz (0.125 to 0.5 lb.) | 0-day waiting period for grazing or harvest. |
| | Lannate SP [1A] (methomyl) | 0.25 to 1.0 lb (0.225 to 0.9 lb.) | For Bermudagrass pasture ONLY. 7-day wait for grazing, 3 days for harvest. |
| | Malathion [1B] | 1.4 pt | 0-day wait for grazing or harvest. |
| | Mustang MAXX [3] (zeta-cypermethrin) | 2.8 to 4.0 fl oz (0.0175 to 0.025 lb.) | 0-day wait for grazing or harvest. |
| | Sevin 4F, XLR Plus [1A] (carbaryl) | 2 to 3 pt (1 to 1.5 lb.) | For improved pasture only: do not apply more than two applications per season and not more than once every 14 days. Sevin label states a 14-day wait for grazing or harvest. |
| | Tombstone [3] (cyfluthrin) | 2.6 to 2.8 fl oz (0.04 to 0.044 lb.) | 0-day waiting period for grazing or harvest. |
| | Warrior II w Zeon [3] (lambda-cyhalothrin) | 1.28 to 1.92 fl oz (0.2 to 0.3 lb.) | 0-day wait for grazing, 7-days for hay. |
| **Grasshopper** | **PASTURE:** | | |
| Damage: Feed on foliage. Can damage from spring through fall, but more of a problem in late summer. Small grasshoppers less than ½ inches are more easily controlled and can be spot treated with foliar spray if nesting sites are mapped out in spring. | Baythroid XL [3] (beta-cyfluthrin) | 2.6 to 2.9 fl oz (0.02 to 0.022 lb.) | 0-day wait for grazing or harvest. |
| | Besiege [3,28] (lambda-cyhalothrin + chlorantraniliprole) | 6.0 to 10.0 fl oz | 0-day wait for grazing or harvest, 7-day wait for last cutting of hay. |
| | Coragen (28) (chlorantraniliprole) | 2.0 to 5.0 fl oz (0.026 to 0.065 lb.) | 0-day wait for grazing or harvest. |
| | Declare [3] (gamma cyhalothrin) | 1.02 to 1.54 fl oz (0.01 to 0.015 lb.) | 0-day waiting period for grazing, 7 days for hay. |
| Threshold: Small: 24 to 100 per yard$^2$ (less than ½ inches) | Dimilin 2L [15] (diflubenzuron) | 2 fl oz (0.5 lb.) | Apply when majority of grasshoppers are in the 2nd or 3rd instar nymphal stage (less than ½ inch). Do not exceed a total of 2 fl oz per year. |
| Large: 8 to 40 per yard$^2$ (greater than ½ inches) | Malathion 5EC (1B) (malathion) | 1.4 pt (0.92 lb.) | 0-day wait for grazing or harvest. |
| | Mustang MAXX [3] (zeta-cypermethrin) | 2.8 to 4.0 fl oz (0.0175 to 0.025 lb.) | 0-day wait for grazing or harvest. |
| | Sevin 4F, XLR Plus [1A] (carbaryl) | 2 to 3 pt (1 to 1.5 lb.) | For improved pasture: do not apply more than two applications per season and not more than once every 14 days. Sevin label states a 14 day waiting period for grazing or harvest in pastures. |

| *Pest, Damage and Treatment Threshold* | *Insecticide Formulation* | *Rate of Product (lb. active ingredient) per Acre* | *Comments* |
|---|---|---|---|
| **Grasshopper (cont'd)** | Tombstone [3] (cyfluthrin) | 2.6 to 2.8 fl oz (0.025 to 0.044 lb.) | 0-day wait for grazing or harvest. |
| | Warrior II w Zeon [3] (lambda-cyhalothrin) | 1.28 to 1.92 fl oz (0.2 to 0.3 lb.) | 0-day waiting period for grazing, 7-days for hay.(Other names: Grizzly, Kais Lambdastar) |
| | **RANGE:** | | |
| | Baythroid XL [3] (beta-cyfluthrin) | 2.6 to 2.9 fl oz (0.02 to 0.022 lb.) | 0-day wait for grazing or harvest. |
| | Besiege [3,28] (lambda-cyhalothrin + chlorantraniliprole) | 6.0 to 10.0 fl oz | 0-day wait for grazing or harvest, 7-day wait for last cutting of hay. |
| | Coragen (28) (chlorantraniliprole) | 2.0-5.0 fl oz (0.026-0.065 lb.) | 0-day waiting period for grazing or harvest. |
| | Declare [3] (gamma-cyhalothrin) | 1.02 to 1.54 fl oz (0.01 to 0.015 lb.) | 0-day waiting period for grazing, 7 days for hay. |
| | Dimilin 2L [15] (diflubenzuron) | 0.5 to 2 fl oz (0.125 to 0.5 lb.) | Applications of Dimilin may be applied as a Reduced Area & Agent Treatment (RAAT) strip spray. See label for specific directions. Apply when majority of grasshoppers are in the 2nd or 3rd instar nymphal stage (less than ½ inches) Do not exceed 1 fl oz/acre/ year. If second application is needed, wait two to three weeks from 1st application. |
| | Malathion 5 EC (1B) 1 (malathion) | .4 pt (0.92 lb.) | 0-day wait for grazing or harvest. |
| | Sevin SL [1A] | 2 to 4 pt (1 to 2 lb.) | 0-day wait for grazing. Do not make more than one application of Sevin per year, and do not exceed 1.0 lb ai/acre per year. |
| | Mustang MAXX [3] (zeta-cypermethrin) | 2.8 to 4.0 fl oz (0.0175 to 0.025 lb.) | 0-day wait for grazing or harvest. |
| | Sevin XLR Plus [1A] | 1 to 3 pt (0.5 to 1.5 lb.) | For Sevin XLR, registered for Reduced Area and Agent Treatment; aerial application is allowed only the USDA APHIS and State Grasshopper Programs only. |
| | Tombstone [3] (cyfluthrin) | 2.6 to 2.8 fl oz (0.04 to 0.044 lb.) | 0-day waiting period for grazing or harvest. |
| | Warrior II w Zeon [3] (lambda-cyhalothrin) | 2.56 to 3.84 fl oz (0.2 to 0.3 lb.) | 0-day waiting period for grazing, 7 days for hay. |

| *Pest, Damage and Treatment Threshold* | *Insecticide Formulation* | *Rate of Product (lb. active ingredient) per Acre* | *Comments* |
|---|---|---|---|
| **Housefly, Stable Fly** | | | |
| | Dibrom 8 [1B] Naled | 0.8 to 1.6 fl oz | 24-hour waiting period for lactating cattle. |

## Pre-harvest Intervals and grazing restrictions

| | |
|---|---|
| Amdro | 7-day waiting period for harvest |
| Baythroid | 0-day waiting period for grazing or harvest. |
| Besiege | 0-day waiting period for grazing or harvest, 7-day wait for last cutting of hay |
| Blackhawk | 0-day waiting period for grazing, 3 days for hay or fodder |
| Coragen | 0-day waiting period for grazing or harvest |
| Declare | 0-day waiting period for grazing, 7 days for hay |
| Dimilin | 0-day waiting period for grazing or harvest |
| Esteem | 0-day waiting period for grazing, 1 day for harvest |
| Extinguish | 0-day waiting period for grazing, 7 days for hay or fodder |
| Lannate | For bermudagrass ONLY. 7-day waiting period for grazing, 3-day waiting period for harvest |
| Malathion | 0-day waiting period for grazing or harvest |
| Mustang MAXX | 0-day waiting period for grazing or harvest |
| Sevin | 14-day waiting period for grazing or harvest |
| Warrior | 0-day waiting period for grazing, 7 days for hay |

# The Oklahoma Cooperative Extension Service
## *Bringing the University to You!*

The Cooperative Extension Service is the largest, most successful informal educational organization in the world. It is a nationwide system funded and guided by a partnership of federal, state, and local governments that delivers information to help people help themselves through the land-grant university system.

Extension carries out programs in the broad categories of agriculture, natural resources and environment; family and consumer sciences; 4-H and other youth; and community resource development. Extension staff members live and work among the people they serve to help stimulate and educate Americans to plan ahead and cope with their problems.

Some characteristics of the Cooperative Extension system are:

- The federal, state, and local governments cooperatively share in its financial support and program direction.
- It is administered by the land-grant university as designated by the state legislature through an Extension director.
- Extension programs are nonpolitical, objective, and research-based information.
- It provides practical, problem-oriented education for people of all ages. It is designated to take the knowledge of the university to those persons who do not or cannot participate in the formal classroom instruction of the university.
- It utilizes research from university, government, and other sources to help people make their own decisions.
- More than a million volunteers help multiply the impact of the Extension professional staff.
- It dispenses no funds to the public.
- It is not a regulatory agency, but it does inform people of regulations and of their options in meeting them.
- Local programs are developed and carried out in full recognition of national problems and goals.
- The Extension staff educates people through personal contacts, meetings, demonstrations, and the mass media.
- Extension has the built-in flexibility to adjust its programs and subject matter to meet new needs. Activities shift from year to year as citizen groups and Extension workers close to the problems advise changes.

The pesticide information presented in this publication was current with federal and state regulations at the time of printing. The user is responsible for determining that the intended use is consistent with the label of the product being used. Use pesticides safely. Read and follow label directions. The information given herein is for educational purposes only. Reference to commercial products or trade names is made with the understanding that no discrimination is intended and no endorsement by the Cooperative Extension Service is implied.



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