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Alfalfa Year-Round IPM Program Annual Checklist

Supplement to UC IPM Pest Management Guidelines: Alfalfa

These practices are recommended for a monitoring-based IPM program that reduces water quality problems related to pesticide use. Track your progress through the year using this form. Water quality becomes impaired when pesticides move off-site and into water. Each time a pesticide application is considered, review the Pesticide Application Checklist at the bottom of this form for information on how to minimize water quality problems.

This program applies to fall planted alfalfa hay in Sacramento or the San Joaquin Valley. Contact your farm advisor for IPM practices specific to alfalfa in your location or to seed alfalfa. Details on carrying out each practice, information on additional pests, and additional copies of this form are available from the UC IPM Pest Management Guidelines: Alfalfa at <http://www.ipm.ucdavis.edu/PMG>. Stand establishment is the most critical single factor affecting successful IPM strategies in alfalfa. Follow the practices below to establish and maintain healthy vigorous stand that resists pest problems.

Planting to Stand Establishment	
✓ Done	Preplanting activities Special issues of concern related to water quality: drift, runoff due to rain.
	Select your field, considering: <ul style="list-style-type: none"> • Pest history, especially weeds. • Current crops and pest problems. • Surrounding crops and vegetation. • <i>Sclerotinia</i> in neighboring mature fields. • Stem and crown rot (white mold). • Soil conditions.
	Prepare the field for planting by taking into account potential for drainage and run-off problems.
	Manage weeds with preplant herbicides if necessary.
	Consider crop rotation to minimize, weeds, diseases and nematodes.
	Select varieties that are tolerant or resistant to known problem pests.
	Select seeds, considering: <ul style="list-style-type: none"> • Use of weed free certified alfalfa seed. • Seed treatment for suspected field pathogens or if planting at suboptimal time. • <i>Rhizobium</i> treatment if alfalfa has not grown in the field for the last 5 to 10 (or more) years.

✓ Done	<p>Stand establishment Special issues of concern related to water quality: drift, runoff due to rain, irrigation.</p>		
	<p>Plant seed, following proper timing, depth, and seedling rates.</p> <ul style="list-style-type: none"> • Plant in early fall for best results. • Plant 1/4" deep, depending on soil type. • Use a higher seed rate for organic production. 		
	<p>Consider interplanting oats to:</p> <ul style="list-style-type: none"> • Reduce weed competition. • Increase the first forage yield. • Reduce erosion. 		
	<p>Survey weeds when the crop germinates.</p> <ul style="list-style-type: none"> • Keep records on a weed survey form. • Treat** with postemergent herbicide, if needed according to PMG. 		
	<p>Watch for seedling pests.</p> <table style="width: 100%; border: none;"> <tr> <td style="vertical-align: top;"> <ul style="list-style-type: none"> • Damping off and other seedling diseases • Sclerotinia stem and crown rot (white mold) • Downy mildew </td> <td style="vertical-align: top; padding-left: 20px;"> <ul style="list-style-type: none"> • Aphids • Cutworms • Garden symphylans </td> </tr> </table> <p>Keep records on a map of the field.</p>	<ul style="list-style-type: none"> • Damping off and other seedling diseases • Sclerotinia stem and crown rot (white mold) • Downy mildew 	<ul style="list-style-type: none"> • Aphids • Cutworms • Garden symphylans
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✓ Done	<p>Growth to first cutting Special issues of concern related to water quality: drift, runoff due to rain, irrigation.</p>		
	<p>Look for signs of weevils, such as chewed leaves.</p> <ul style="list-style-type: none"> • Treat** if needed according to PMG. 		
	<p>Monitor aphids and their natural enemies.</p> <ul style="list-style-type: none"> • Keep records on an aphid monitoring form. • Manage if needed according to PMGs. 		
	<p>Check soil moisture.</p>		
	<p>Survey weeds to plan weed management strategy.</p> <ul style="list-style-type: none"> • Keep records on a weed survey form. • Treat with postemergent herbicide, if needed according to PMG. 		
	<p>Time first cutting carefully to maintain stand vigor.</p> <ul style="list-style-type: none"> • Make sure rooting depth is at least 14 inches and the crown is formed. • Check soil moisture status considering compaction by heavy equipment. 		
	<p>Identify other diseases you may see.</p> <ul style="list-style-type: none"> • <i>Sclerotinia</i> • Downy mildew • Common leaf spot 		



Established Stands	
✓ Done	Winter Special issues of concern related to water quality: Drift, runoff due to rain.
	Survey winter weeds in December through January. <ul style="list-style-type: none"> • Keep records on a winter weed survey form.
	Determine weed management strategy based on last year's weed population and consider: <ul style="list-style-type: none"> • Overseeding with grasses or legumes during the last year of the stand. • Grazing or cultivating with a spring-toothed harrow. • Applying herbicide**.
	Begin to monitor for cowpea aphid in late February.
	Monitor for weevils: <ul style="list-style-type: none"> • Look for damage such as chewed leaves or take sweep net samples. • Keep records on a weevil monitoring form. • Manage if needed according to PMG.
	Look for signs of vertebrates.

✓ Done	Spring
	Time harvests by evaluating: <ul style="list-style-type: none"> • Alfalfa growth, vigor and quality. • Pest problems including: <ul style="list-style-type: none"> ○ Weevils ○ Aphids ○ Leaf and stem diseases • Irrigation and wheel traffic Consider border-strip harvesting to conserve natural enemies.
	Determine appropriate weed management strategies based on last summer's weed populations. Note any special problem weeds such as: <ul style="list-style-type: none"> • Grasses • Nutsedge • Dodder Manage if needed according to PMGs.
	Look for signs of vertebrates.
	Monitor weevils. Consider early harvest if Egyptian alfalfa weevil is a problem in your field. <ul style="list-style-type: none"> • Keep records on a weevil monitoring form. • Manage if needed according to PMG.
	Monitor aphids and their natural enemies. <ul style="list-style-type: none"> • Consider border or strip harvest to preserve natural enemies. • Keep records on an aphid monitoring form. Manage if needed according to PMG.
	Look for cutworms if damage is apparent. <ul style="list-style-type: none"> • Manage if needed according to PMG.
	If you see thrips, no treatment is needed.
	Watch for signs of diseases and nematodes.
	Consider field sanitation: <ul style="list-style-type: none"> • Harvest disease- and nematode-free fields before infested fields. • Avoid moving contaminated farm machinery or livestock from a field infested with nematodes or disease to a clean field.



✓ Done	Summer
	Time harvests by evaluating: <ul style="list-style-type: none"> • Alfalfa growth, vigor and quality • Pest problems • Irrigation and wheel traffic
	Survey weeds, especially weedy grasses. <ul style="list-style-type: none"> • Keep records on a weed survey form for next spring's weed management decisions.
	Monitor cowpea and spotted alfalfa aphids. <ul style="list-style-type: none"> • Consider border or strip harvest to preserve natural enemies. • Keep records on a monitoring form. Manage if needed according to PMG.
	Monitor caterpillars and armyworms. Consider early harvest to reduce losses. <ul style="list-style-type: none"> • Keep records on a caterpillar monitoring form. • Manage if needed according to PMGs.
	Monitor for leafhoppers at the first sign of damage. Consider early harvest to reduce losses. <ul style="list-style-type: none"> • Keep records on a monitoring form. • Manage if needed according to PMG.
	Look for cutworms if damage is apparent. Manage if needed according to PMG.
	Watch for signs of diseases and disorders.
	Keep records of other invertebrates.
	Consider field sanitation: <ul style="list-style-type: none"> • Harvest disease- and nematode-free fields before infested fields. • Avoid moving contaminated farm machinery or livestock from a field infested with nematodes or disease to a clean field.
✓ Done	Fall
	Time harvests by evaluating pest problems.
	Survey weeds in September just after the alfalfa is cut. <ul style="list-style-type: none"> • Keep records on a monitoring form.
	Monitor aphids and their natural enemies. <ul style="list-style-type: none"> • Keep records on a monitoring form. • Manage if needed according to PMG.
	Monitor caterpillars. Consider early harvest to reduce losses. <ul style="list-style-type: none"> • Keep records on a monitoring form. • Manage if needed according to PMG.
	Consider field sanitation: <ul style="list-style-type: none"> • Harvest disease- and nematode-free fields before infested fields. • Avoid moving contaminated farm machinery or livestock from a field infested with nematodes or disease to a clean field.



✓ Done	**Pesticide application checklist
	<p>When planning for possible pesticide applications in an IPM program, review and complete this checklist to consider practices that minimize environmental and efficacy problems.</p> <ul style="list-style-type: none"> ✓ Choose a pesticide from the UC IPM Pest Management Guidelines for the target pest considering: <ul style="list-style-type: none"> ○ Impact on natural enemies. ○ Potential for water quality problems using the UC IPM Watertox Database. ○ Impact on aquatic invertebrates. ○ Chemical mode of action if pesticide resistance is an issue. Select an alternative chemical or nonchemical treatment when risk is high. ✓ Choose sprayers and application procedures that keep pesticides on target. ✓ Avoid spraying areas of bare soil, such as weevil-damaged areas, with pesticides prone to cause water quality problems; consider overseeding these areas with grasses. ✓ Identify and take special care to protect sensitive areas (for example, waterways or riparian areas) surrounding your application site. ✓ Review and follow label for pesticide handling, storage, and disposal guidelines. ✓ Be aware of reentry times and pre- and postharvest intervals. ✓ After an application is made, record application date, product used, rate, and location of application. Follow up to confirm that treatment was effective. <p>Consider water management practices that reduce pesticide movement off-site.</p> <ul style="list-style-type: none"> ✓ Install an irrigation recirculation or storage and reuse system. ✓ Use drip rather than sprinkler or flood irrigation. ✓ Limit irrigation to amount required using soil moisture monitoring and ET. ✓ Consider vegetative filter strips or ditches. ✓ Redesign inlets into tailwater ditches to reduce erosion. Ditches should not be lower than furrows.

