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Corn Year-Round IPM Program

Annual Checklist ^(9/11)

Supplement to UC IPM Pest Management Guidelines: Corn

These practices are recommended for a monitoring-based IPM program that enhances pest control and reduces environmental quality problems related to pesticide use.

Water quality becomes impaired when pesticides and sediments move off-site and into water. Air quality becomes impaired when volatile organic compounds (VOCs) move into the atmosphere. Each time a pesticide application is considered, review the Pesticide Application Checklist at the bottom of this page for information on how to minimize water and air quality problems.

This year-round IPM program covers the major pests of field corn in the Central Valley. This program does not cover sweet corn. Details on carrying out each practice, example monitoring forms, and information on additional pests can be found in the Pest Management Guidelines. Track your progress through the year with this annual checklist form.

✓ Done	Preplant activities Special issues of concern related to environmental quality: pesticide runoff and leaching. Mitigate pesticide usage to minimize air and water contamination.
	Select the field: <ul style="list-style-type: none"> • Consider soil type, cropping and pest history, and plant back restrictions from previous crop. • Take soil samples for nutrient, salinity, and pH analysis to determine field suitability and soil nutrient management.
	Survey weeds when the previous crop is still in the field. <ul style="list-style-type: none"> • Keep records, noting the presence, location, and extent of problematic weeds. (See example form online.)
	Manage weeds according to the Corn Pest Management Guidelines. <ul style="list-style-type: none"> • Use winter flooding, where appropriate, in the Delta. • Pre-irrigate and cultivate to germinate and destroy weed seedlings.
	Consider crop rotation to prevent build up of soilborne pathogens, such as Fusarium and Pythium stalk rot, and problem weeds.
	Clean equipment and tractors between fields to prevent the spread of soilborne diseases and weed seeds.
	Prepare the field: <ul style="list-style-type: none"> • Manage residue from the previous crop and consider reduced tillage options. • Determine if planting flat or using beds. • If using beds, prepare seed beds with good drainage. • Apply fertilizer based on soil test results.
	In the San Joaquin Valley, choose planting dates considering a harvest by October 31 to help lower infestation rate of corn leafhopper and corn stunt.
	Select an appropriate hybrid based on yield and pest history. <ul style="list-style-type: none"> • Consider herbicide resistance and insect resistance. • Purchase only the genetic traits needed by understanding the stacked trait options.

✓ Done	Planting to 5th Leaf Mitigate pesticide usage to minimize air and water contamination.
	Consider a soil or seed treatment if wireworms have been a problem in the past or if conditions are conducive for seedcorn maggots. Avoid planting into overly wet or overly soft seedbeds.
	Soon after planting, monitor the field to identify germinated weeds. <ul style="list-style-type: none"> • Keep records. (See example form online.) • Manage weeds according to the Corn Pest Management Guidelines.
	If nutsedge, johnsongrass, or bermudagrass are present, cultivate with sweeps or knives before corn is 8 inches tall. If using glyphosate resistance technology, follow directions carefully and rotate with other herbicides and mechanical methods to avoid resistant weeds.
	Look for the following pests or their damage as corn emerges, and manage as needed according to the Corn Pest Management Guidelines. <ul style="list-style-type: none"> • Cutworms • Flea beetles • Seed corn maggot • Wireworms
	Other pests or damage you may see: <ul style="list-style-type: none"> • Aphids • Armyworms • Corn leafhopper • Corn leafminer • Cucumber beetles • Grasshoppers • Seed rots and damping-off • Thrips

✓ Done	6th Leaf to tassel appearance Special issues of concern related to environmental quality: volatile organic compounds (VOCs), drift, runoff. Mitigate pesticide usage to minimize air and water contamination.
	Survey and manage weeds. <ul style="list-style-type: none"> • Keep records. (See example form online.) • Manage according to the Corn Pest Management Guidelines. • Consider postemergent herbicides for weed seedlings not controlled by cultivation. <ul style="list-style-type: none"> ○ Create a custom herbicide chart for your field. Learn how.
	Randomly select and pick older, lower leaves on several corn plants throughout the field and inspect for spider mite damage. Manage as needed according to the Corn Pest Management Guidelines.
	Consider taking leaf tissue samples for nutrient analysis and apply nutrients as necessary.
	Monitor for Pythium stalk rot to prepare for next year's management.
	If aphids appear on the tassels, consider treating to prevent spreading of viruses.
	Look for corn leafhopper and note problems for next year's management.

	6th Leaf to tassel appearance (continued)
	<p>Other pests or damage you may see:</p> <ul style="list-style-type: none"> • Armyworms • Corn leafminer • Cucumber beetles • Grasshoppers • Thrips

✓ Done	<p>Early Silk Through Maturity Special issues of concern related to environmental quality: volatile organic compounds (VOCs), drift, runoff. Mitigate pesticide usage to minimize air and water contamination.</p>
	<p>Monitor for diseases. If you find heavy infection rates of:</p> <ul style="list-style-type: none"> • Charcoal rot—note for next season’s management planning. • Fusarium stalk rot and Pythium stalk rot—consider crop rotation out of corn. • Fusarium ear rot, head smut or common smut—note for next year’s variety choices.
	<p>Other pests and damage you may see:</p> <ul style="list-style-type: none"> • Armyworms • Cucumber beetles • Corn earworm
	<p>If spider mite colonies are present, consider treating with Oberon at least 30 days before harvest.</p>
	<p>If more than ten percent of stalks have fallen over due to Pythium or Fusarium stalk rot, schedule an early harvest.</p>
	<p>Right before harvest, sample ears from different quadrants of the field. Check for damage to assess this year’s pest management and to plan for next year.</p> <ul style="list-style-type: none"> • No ears/poorly filled ears • Curved ears • Red leaves

✓ Done	<p>Harvest and postharvest Mitigate pesticide usage to minimize air and water contamination.</p>
	<p>In the San Joaquin Valley, harvest grain and silage corn:</p> <ul style="list-style-type: none"> • At the appropriate moisture level to prevent mold growth during storage. • By Oct. 31 to provide longest corn-free crop period possible for corn leafhopper.
	<p>Disc under crop residue and volunteer corn to control seedcorn maggot, Fusarium stalk rot, Pythium stalk rot, corn leafhopper, and corn stunt.</p>
	<p>Plan next season’s crop rotation.</p>

✓ 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> <p>Choose a pesticide from the UC IPM Pest Management Guidelines for the target pest considering:</p> <ul style="list-style-type: none"> ▪ Impact on natural enemies and honeybees [http://www.ipm.ucdavis.edu/PMG/r604900111.html]. ▪ Potential for water quality problems and impact on aquatic invertebrates using the UC IPM WaterTox database [http://www.ipm.ucdavis.edu/TOX/simplewatertox.html]. (See Pesticide Choice publication [http://anrcatalog.ucdavis.edu/pdf/8161.pdf] for impact on aquatic invertebrates.) ▪ Chemical mode of action if pesticide resistance is an issue. <p>Before an application:</p> <ul style="list-style-type: none"> ▪ Choose sprayers and application procedures that keep pesticides on target. ▪ Identify and take special care to protect sensitive areas (for example, waterways or riparian areas) surrounding your application site. ▪ Review and follow pesticide labeling for handling, storage, and disposal guidelines. ▪ Check and follow restricted entry intervals (REI) and preharvest intervals (PHI). <p>After an application:</p> <ul style="list-style-type: none"> ▪ Record application date, product used, rate, and location of application. ▪ Follow up to confirm that treatment was effective. ▪ Consider water management practices that reduce pesticide movement off-site: ▪ Install an irrigation recirculation or storage and reuse system (See Mitigating Pesticide Hazards: Irrigation Recirculation and Reuse http://www.ipm.ucdavis.edu/mitigation/water_reuse.html.) ▪ Use drip rather than furrow irrigation. ▪ Limit irrigation to amount required using soil moisture monitoring. ▪ Consider vegetative filter strips http://www.ipm.ucdavis.edu/mitigation/veg_filtering.html ▪ Install sediment traps. ▪ Use polyacrylamide (PAM) tablets in furrows to prevent offsite movement of sediments. ▪ Redesign inlets and outlets into tailwater ditches to reduce erosion. <p>Consider management practices that reduce air quality problems:</p> <ul style="list-style-type: none"> ▪ When possible, choose pesticides that are not emulsifiable concentrate (EC) formulations, which release volatile organic compounds (VOCs) http://www.ipm.ucdavis.edu/mitigation/reducing_voc.html. VOCs react with sunlight to form ozone, a major air pollutant. ▪ Use the Department of Pesticide Regulation calculators to determine VOC emission rates from fumigant and nonfumigant pesticides.

More information about topics mentioned on this checklist is available at the website:
<http://www.ipm.ucdavis.edu/PMG/selectnewpest.corn.html>.

For more about mitigating the effects of pesticides, see <http://www.ipm.ucdavis.edu/mitigation/>.