

BEST MANAGEMENT PRACTICES FOR PESTICIDE STEWARDSHIP IN CORN PRODUCTION IN THE LOWER MISSISSIPPI VALLEY ALLUVIUM



FARMERS ADVOCATING RESOURCE MANAGEMENT



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Best Management Practices For Pesticide Stewardship in Corn Production in the Lower Mississippi Valley Alluvium

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Other sources for information used in this document came from:

- The First 40 Days
- Southern Region IPM Center
- Louisiana Master Farmer Program

Best Management Practices for Corn Production

Crop Rotation

During the short-term, some crop rotations reduce weed, disease, insect and nematode pressure and needed pesticide applications. Long-term benefits include improved soil quality, fertility and moisture retention. This may reduce N-P-K requirements over time. Some crop rotations can also be used as an excellent pesticide resistance management tool for Lower Mississippi Alluvial Valley (LMAV) weeds, insects and nematodes.

Residue Management

A general goal in the LMAV is to complete all seed bed preparation in the fall after harvest is complete when planning for corn production the following year. This requires fall tillage, but this can reduce the need for the fall applications of residual herbicides. This also accelerates the decomposition rate of crop residue in the fall, reducing the potential for disease and opportunity for insect pests to overwinter in crop residues. This, in turn, reduces the potential need for insecticide and fungicide applications at planting and during the early growing season.

Mixed Fertilizer Applications

Soil testing for P and K (often referred to as mixed fertilizer) is recommended by all LMVA state Extension Services, but is not used as often as needed. Fertilizer applications should be made AS NEEDED according to soil test values. This can be accomplished through precision soil sampling methodologies and using variable rate application techniques for mixed fertilizers. While these techniques may represent an added cost to producers, the investment could provide for a return in fertilizer savings or greater yields. Furthermore, some producers can receive cash incentives for these practices through EQIP and/or CSP, both administered by the USDA Natural Resources Conservation Service. In general, good soil fertility makes for healthy plants that typically do not require as many pesticide applications (primarily herbicides and insecticides).

Spring Burn Down

Spring herbicide applications, commonly known as the “burn down” application, are first used to control winter and spring weeds and prepare clean seed beds for planting without using spring tillage. But spring burn down applications do much more than just control weeds. By removing winter and spring weeds, you also remove the host plants needed by numerous LMAV pests like cut worms and other insects. Without these host plants, the pest are not able to survive and transition to newly emerged corn seedlings. The “spring burn down” ultimately reduces the potential need for early season insecticide applications.

Pesticide Application Methods

Various practices, techniques and technologies should be incorporated into all pesticide applications (insecticide, herbicide, foliar fungicide, etc...). The following should be considered:

- Ground Application is typically better than aerial applications for insect control
- Time applications when weather conditions are favorable.
- Tank mixes should only be used when necessary, not as an automatic or insurance application to potentially save a trip across the field later.
- Droplet Size should be optimum for each different product, chemistry and volume needed.

Resistance Management

Multiple chemistries and approaches should be taken when managing pests of any kind.

Optimize Planting Times

Optimum planting dates for corn in the LMAV vary from March 5 to April 30, depending primarily upon latitude, soil temperatures and proper moisture. But general consensus among professionals suggests that planting should occur as early as possible within regional, state and varietal guidelines. This is the first critical step in producing a crop that is ready to harvest as early in the growing season as possible. Early harvest reduces irrigation needs and risks associated with late season pests (corn borers, corn ear worms, stink bugs & southern rust) and weather (hurricanes). By eliminating the potential for late season pests, late season insecticide and late season foliar fungicide applications are completely avoided in the LMAV.

Seed Treatments

Fungicide and insecticide seed treatments should almost always be used on corn seed in the LMAV. The treatments greatly improve germination. Current seed treatment chemistry and technologies can replace the need for organophosphates and/or carbamate insecticide applications at planting.

Split Nitrogen Applications

“One shot” applications of nitrogen save a trip across the field, but adverse weather conditions may dilute soil nitrogen concentrations before the corn plant can completely use the applied fertilizer. “One shot” applications may also create a weakened plant that is much more susceptible to diseases and insect pests that require additional pesticide applications under some conditions. The second application of N in a split application system ensures the bulk of the N is available to the corn plant at the most critical time in its development. This makes for a healthier, more pest resistant plant. Splitting nitrogen applications does cost more (primarily fuel & labor), but some producers can receive cash incentives for split applications through EQIP and/or CSP, both administered by the USDA Natural Resources Conservation Service.

Variety Selection

Proper hybrid variety selection is critical. The following characteristics should be considered:

- Stalk strength
- Tight shucks reduce the probability of aflatoxin and potentially reduce insecticide and foliar fungicide applications.
- Genetics package that reduces the total number pesticide application that would be normally needed when using conventional varieties or replaces the use of higher risk pesticides.
- Early maturity reduces the potential for late season pests reducing the need for late season insecticide and foliar fungicide applications.
- Drought tolerance reduces plant stress and encourages a healthier, more pest resistant plant.

Irrigation

Unlike the Mid-West, high corn yields can only be sustained in the LMAV with irrigation. Timing, duration, frequency and volume of irrigation are critical to foster rapid and healthy plant growth through maturity. Healthy plants are much more resistant to pest pressure and can often go without pesticide applications when non-irrigated, drought stressed plants require applications.

Independent Crop Consultants

Crop consultants can help producers identify alternative pest management strategies if they are called upon to do so. However, complete and comprehensive pest management must begin before seeds are planted. Historically, consultants are only engaged or hired by producers in the LMAV to “scout for pests” and to advise producers on treatments from crop emergence through maturity. If more crop consultants were engaged earlier in the year, and allowed to work with the producers from a comprehensive approach, many pest issues could be avoided all together. This includes advisement of BMPs like fall residue management, tillage practices, spring burn down applications, variety selection and fertility. Crop consultants must be engaged throughout the entire year to best advise producers on proper economic and environmentally sound pest management practices. Crop consultants also have the greatest potential to reduce or stop the use of unjustified “automatic” pesticide applications.