# PUTTING IT ALL TOGETHER IN THE TEXAS HIGH PLAINS: A PRODUCER WORKSHOP

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## Abstract

Optimizing production is the main challenge facing cotton producers today. Considerable information and technology are available, and integration of all components into a profitable crop production strategy can be a formidable task. A model for production on highly erodible sandy soils using conservation tillage and low energy precision application (LEPA) center-pivot irrigation was presented as an example of a systems approach to management. Experts involved with the evolution of the Lamesa AGCARES facility and others were present to discuss the required inputs to obtain optimized production in such a system. A time line which described several critical producer challenges and appropriate responses encountered during a typical growing season was used. Small grains cover cropping has proven to be extremely valuable for reducing wind erosion and the effects of wind/sand damage to seedling plants in areas with highly erodible soils. Management of the cover crop to realize the full protection potential while minimizing excessive water use is essential. The upper limit to cotton yield can be dictated by the stand that is obtained. To insure obtaining an adequate stand, only high quality (vigor) seed should be planted. Producers should have their seed tested before planting each year.

Seedling disease seed and hopper-box treatments play an important role in achieving an adequate plant population under the stressful conditions generally encountered in the High Plains. Fall (August-November) soil sampling for assessing root knot nematode populations aids in the decision process for determining the proper Temik rate to apply for the next crop.

With the advent of new herbicide-resistant transgenic plants in stripper varieties, the variety selection process has become more critical. Use of Roundup-Ready, BXN, and other forthcoming systems for weed control are expected to complement an increasing array of other weed control tools. Fields with adequate populations of tough annual and perennial weeds are candidates for newly available transgenic weed control technologies. Preplant incorporated, preemergence, and post-directed herbicides are still required in many situations. Fertigation is a good means of delivering nitrogen fertilizer rates matched to crop uptake needs. Application costs are minimized, and in-season adjustments for yield potential are easily accomplished. Proper management of high-frequency LEPA irrigation results in full utilization of both limited groundwater and rainfall while providing high cotton yields. Crop irrigation requirements should be determined from regional potential evapotranspiration (PET) networks and local rainfall and heat unit accumulations. With its invasion of the High Plains beginning in 1991, the boll weevil has become the key pest around which all insect management practices are centered. Since the area's growing season is already short, there is no latitude to delay planting to maximize suicidal emergence of the boll weevil emerging from overwintering sites in the spring and early summer. Emerging overwintered boll weevils, should be managed using the pheromone trap index. If done correctly, there will be no need for additional boll weevil sprays until weevils begin moving between fields in late August and early September.

Thrips management is important to maintain earliness. The use of soil-applied systemic insecticides, especially Temik, has provided excellent protection from thrips damage and the loss of early squares. By planting into terminated small grains, cotton plants are not only protected from the effects of wind/sand but may also have lower thrips infestations. Early bollworm infestations should be controlled with insecticides other than pyrethroids to avoid flaring aphid populations. Heavier August infestations of bollworms should be controlled with pyrethroids, especially when boll weevils are present in damaging numbers. Aphid infestation increases should be expected if an aphicide is not added to this application.

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Agronomic practices such as fertility and irrigation should be managed in a manner such that all bolls that have a high probability of maturing will be boll weevil and bollworm safe by around September 1. The COTMAN model developed in Arkansas can be used to determine when bolls are insect safe and no further sprays are warranted. By terminating insecticide usage early, late aphid infestations that can cause a sticky cotton problem can often be avoided. There is also the option of using the irrigation system to wash off any honeydew residue. Harvest-aid chemical application during the first week of October should eliminate or reduce squares and small bolls needed by boll weevils to build up fat reserves necessary for successful overwintering. The addition of an insecticide to the application can reduce potential overwintering boll weevil numbers even further. Prior to crop termination, boll maturity should be assessed using a variety of methods including seed maturity and the nodes above cracked boll (NACB) method.

Proper stripper harvester adjustment is essential to reduce foreign matter and stick content in order to minimize leaf and bark contamination problems in seedcotton. Modifying brush/bat configuration and increasing combing pan spacing can result in significant reductions in foreign matter in harvested seedcotton. Stripper roll spacing can be increased in order to reduce the amount of sticks. Seedcotton and module fires can be reduced by using safe harvesting methods. Knowledge of these key seasonal challenges and appropriate responses should help provide producers with considerable insight for production of a successful crop in the Texas High Plains region.