



Extension Agronomy Department of Soil and Crop Sciences



Management Options for Late-Season Hail Damaged Stripper Harvested Cotton Fields

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Late-season severe weather can result in significant hail damage to immature cotton fields (Figure 1). Because of this, questions arise concerning the use of harvest aid products on these fields. This is a very difficult decision. When hail damage occurs, depending upon the level of defoliation and boll maturity, low micronaire should be expected. Low gin turnout and bark contamination are also very likely due to increased foreign material (sticks, stems) in stripper harvested cotton.



Figure 1. Late Season Hail Damaged Field

It is suggested that producers sample the affected field in several areas. Cut whole plants from a few row feet (keep track of how many row-ft) and pull all bolls from the plants. Then use a very sharp knife or razor box cutter (BE CAREFUL - one might want to wear a thick leather glove on the hand holding the bolls) and start cutting bolls. Perform a cross-section slice through the center of each boll. Start out with a single pile and begin making judgments on boll maturity (Figure 2). We are looking for three distinctly different boll maturity classes.



Figure 2. Boll Sample from Hail Damaged Field.

Bolls that are very easily sliced and have poorly developed cotyledons in the seed, or which have gelatinous centers in the seeds are probably not going to produce harvestable lint when a harvest aid chemical is applied. Put all of these bolls in one pile - the "doomed pile" (Figures 3 and 4.)

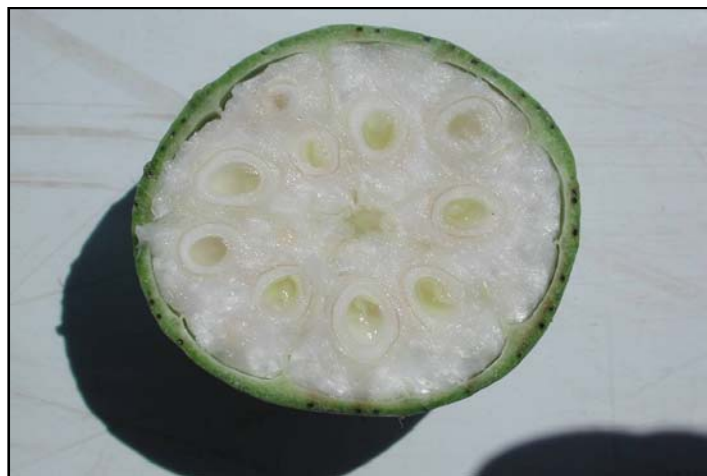


Figure 3. Poorly Developed Cotyledons.



Figure 4. Cotyledons Still Not Fully Developed (Jelly Present).



Figure 5. Well Developed Cotyledons and Seed Coats Darkening.

Then, take all the bolls that have well-formed cotyledons and darkening seed coats and put them into another pile (these can be termed the "questionable" bolls, Figure 5).

Take the remaining bolls with seeds that show excellent cotyledon development and seed coat color from tan to dark brown and put them into another pile (these are difficult to cut with a sharp knife and are nearly mature or mature bolls, Figure 6).



Figure 6. Mature Boll.



Figure 7. Hail Damaged Boll.

One should generally categorize bolls with badly damaged locks (due to hail stone impact) into the "doomed pile" as these may not exert and properly open (Figure 7).

If one can count 12 to 15 mature bolls per row-ft in 40-inch rows (or 9 to 11 per row-ft in 30-inch rows), then the field is likely going to produce about a bale per acre of lint yield. The number of "questionable" bolls may contribute to final yield, but remember, these will likely be very low micronaire, and may not "fluff" properly even after harvest-aid chemicals are applied.

The producer should consider the options at hand. These can be broadly categorized into two areas:

1. Do nothing and leave the field to the freeze and harvest the cotton that opens. This may be the best option for some management units, after the yield level and the maturity of the field are assessed. Late-planted fields may have few bolls that could even be considered for harvest aid treatment. Application to these type fields will not likely result in a reasonable return on harvest aid expenditures. Based on potential insurance payments and the yield coverage, doing nothing may not be a wrong answer. With this option, no additional money is spent on the crop, and harvesting after the freeze and taking what is left to the gin may actually result in a better financial position after insurance payments are considered.

2. Apply harvest-aid chemicals and get the crop harvested. Once this decision has been made, the choice of what harvest-aid product to use can then be addressed. How much can a producer afford to spend on a harvest aid for this hailed-on crop?

A. If a lot of "mature bolls" exist, then an ethephon based "boll opener" product (e.g. Prep, Finish 6 Pro, FirstPick, SuperBoll, Boll'd, Ethephon 6, etc.) is probably a good selection, as this will open most mature or near mature bolls quickly if sunshine and warm temperatures are encountered after application. Coverage will be important. Make a thorough application and make sure the bolls get coverage with the ethephon. If substantial leaves remain on the plants, then a defoliant such as Ginstar (thidiazuron + diuron) or one of the newer PPO inhibitor products such as Aim (carfentrazone-ethyl), ET (pyraflufen-ethyl), Resource (flumiclorac-pentyl), and Blizzard (fluthiacet-methyl) may be tank mixed with ethephon. One should include crop oil concentrate (COC) at the recommended rate with the PPO inhibitor chemicals. The inclusion of defoliant products will significantly increase total application cost. The addition of Ginstar may also reduce regrowth potential. If temperatures stay warm, and the plants have plenty of moisture, one should expect regrowth potential to be high. It is suggested that Def/Folex (tribufos) may not be a good choice due to higher regrowth potential after application, especially if conditions remain very warm. A follow-up application of a paraquat product such as Gramoxone Inteon or Firestorm may be necessary to complete crop dry-down for proper stripping. Do not forget to use at least 0.50% volume/volume non-ionic surfactant with the paraquat. If significant regrowth pressure is encountered, it is suggested that paraquat applications be made late in the day if possible, as this will result in the best desiccation of residual leaves and regrowth. The newer PPO inhibitor products mentioned above, in many years when soil moisture is high, also generally perform very well with regard to regrowth desiccation.

- B. A two-stage application of paraquat may also be an effective program, if only a few bolls are immature. Applications of paraquat generally desiccate better if applied late in the day. If the field had considerable open bolls, paraquat may be the inexpensive route to take, but this product may "freeze" some immature bolls. PPO inhibitor products may also fit into this application scenario.

Juvenile tissue will likely be hard to kill, even with high rates of paraquat or when using PPO inhibitor chemicals. If regrowth is encountered, if possible reduce the aggressiveness of the stripper rolls in order to not "gather up" the regrowth (for more information refer to the High Plains and Northern Rolling Plains Cotton Harvest-Aid Guide). Ginning the cotton quickly will probably help grade-wise, and may be a necessity if the harvested cotton contains a lot of fruiting branches, green bolls, mainstems, leaves, or other foreign material. This may result in module "heating" which can be detrimental to fiber quality. Coordinate with your ginners prior to harvesting to make sure they can accommodate your needs.

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