

**Progress Report: January 2010**

**Title: Practicality Evaluation of Grain Storage Techniques**

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**Crop(s):** Corn\Grain Sorghum

**Status:** Year 2 of 3

**Value to the Grower:** The increase in corn acreage has mandated that much of the annual crop be handled, dried, and stored on farm. There are a large number of on farm bins that are utilized for this. Corn bags and other potential storage options were utilized extensively in the last few years. General management procedures for on-farm handling, drying, and storing will help growers better manage their harvest options and capitalize on additional marketing alternatives.

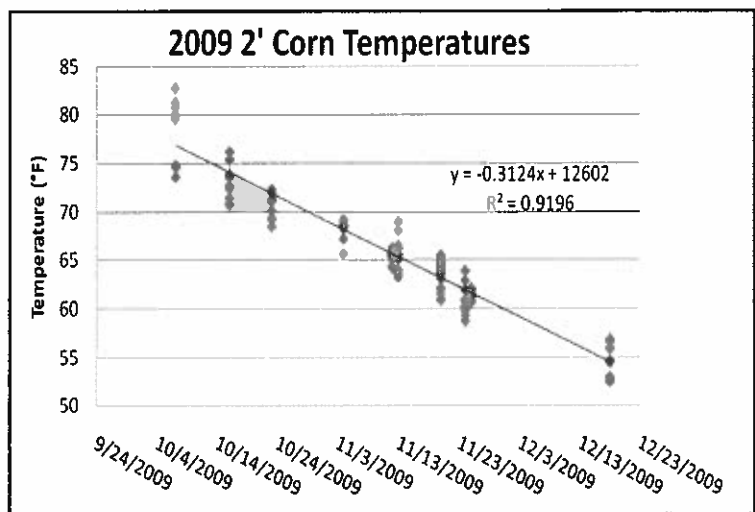
**Objectives:**

1. Study several corn bag storage operations to determine best operating practices.
  - County Agents and vendors identified cooperators for the 2009 crop data collection.
  - Supplies and materials for data collection were delivered. Supplies included; instructions, "fill in the blank" data sheets, 48" thermocouple probe and meter designed by us and Omega Engineering, sealing tape designed by us and MASCO Sales, scissors, markers, sling psychrometer, 60 ml distilled water for psychrometer, wipes, cleaning towels, ice pick and carry bag.
  - County staff has made weekly visits to monitor and collect data while bags in use.
  - Data gathering on 2009 grain nearly complete. Several late season and/or post storage debrief sessions with county staff are being conducted to finalize the data collection process.
2. Study several on-farm bin operations, particularly larger size bins, to develop some comparisons.
  - Identified two cooperators that have different types of large on-farm bin operations and have collected detailed data on drying facility usage and cost.
  - Collected 2008 data from Midway Grain Facility which includes grain weight, moisture, and farm ID.
  - Collected daily grain bids from ADM Grain Company for fall of 2008.
3. Develop a broad base of educational material to fully familiarize producers with options and management guidelines.
  - Several producer meetings have been held across the state to evaluate options for onsite grain storage.

- The dated publication “Rice drying on the Farm” and “Grain Drying using Psychrometric and Moisture Equilibrium Charts as Guides” are being updated.
- Publications and fact sheets from surrounding states concerning onsite grain drying and storage have been collected and will be considered when updating publications and fact sheets.
- Options to perform calculations for specific site conditions via web and/or computer technologies are being evaluated to supplement the publications being developed.

### Preliminary Results:

- No major problems with moisture buildup or overheating have been noted in the bags being evaluated.
- In bag corn temperature decreased on average between -0.25 and -0.43 °F per day over the 3 years. (See example chart for 2009 corn temperatures at the 2 foot depth)
- It should be noted that 80% of grain in the bags being evaluated was stored at moisture levels recommended for this type application – 15.5% MC or less.



### Additional Items for Inclusion in Future Educational Materials

We continue to receive comments from those using bags that will be useful in recommendations being developed, some current recommendations and warnings include:

- Water issues around the bag, especially ponding on the high side
- Animals of all sorts can and do produce holes in the bags. But these appear to be easily patched and managed.
- Vandalism and theft issues
- Overheating issues when proper moisture recommendations were not observed
- Equipment design issues – there have been changes since the first years use. As an example: the extractor tires are now located so they will track under the bag instead of along the sides. This area provides much firmer support than along the edge where the water from the bag accumulates.
- Filling issues and how to properly utilize the stretch marks on the bag(s) as a queue for adjusting the tension on the loading device.
- How to prepare a site to avoid water issues and stubble pricks in the bottom of bags.