The WHACK Experiment: Weed seed Harvest And Condense or Kill

On-Farm Harvest Weed Seed Control (HWSC) Protocol

Funding sources: NRCS On-farm CIG (Led by Muthu), Areawide (led by Mirsky)

Collaborators VA, LA, TX, DE, MD, IA, NC, IL, NE, MN, MO, WA, KS

Data Inventory Sheet

Data and Protocol is located in this Google Folder: **https://drive.google.com/drive/folders/1peQWtT2M7OTAq_9cVtF9F0KJtf-YOmrX?usp=sharing**

Contacts for questions:

Redekop Seed Control Units: Eric Schuler (eschuler@redekopmfg.com; 309-838-8927)

iHSD: Jud Wheatley (jud@debruingroup.com.au; +61 407 313 335) Please allow 1 business day to respond as they are 12 time zones away)

Protocol questions: Michael Flessner (flessner@vt.edu or 540-315-2954)

Part 3: Determine HWSC operating costs

Only applies to seed impact mills; not chaff lining.

Objective: Determine seed impact mill's influence on fuel use, travel speed, engine capacity, etc. in relation to grain yield, chaff moisture, and before/after killing frost.

Procedure: There are two options depending on whether the cooperator's combine logs data or not (see below). Well before the harvest season, make sure the combine records: fuel use (gal/hr); travel speed (MPH or km/hr), engine capacity (%), yield (bu/a), grain moisture (%).

Note on iHSD: Unlike the Redekop SCU, the iHSD does not have ON/OFF capabilities. There are two options (1) using two combines (one with iHSD and one without) or (2) disconnecting the drive belt AND removing chaff box doors. Note that if the mill is running, it must be covered to achieve a conventional (non-HWSC) harvest because if not the mill will have a powerful suction and some weeds will still be processed. So make sure to disconnect the drive belt. *Make sure to note which option you used in the data sheet.*

Option 1: Combine logs data automatically- Make each plot a field in the combine's system and record the field name so we can match each plot to its data. Do not start recording while combine is at idle; only record while harvesting. Keep a log of the date/time when the mill is ON vs. OFF. Make sure the farmer/combine operator does this. Download the data at the end of the season and annotate with the mill log. Also take chaff samples for moisture determination (see below).

Option 2: Combine does not log data automatically- have a person ride in the combine's jump seat during harvest and manually record data for each plot (record the average for the plot as best you can). Also take chaff samples for moisture determination (see below).

Chaff moisture determination- Collect these data regardless of option 1 or 2 above. Take one sample of chaff exiting the mill during harvest from each plot that has HWSC. Take samples using an insect sweep net and proper PPE (see picture below). Put each sample in a paper bag, weigh immediately, and write the weight on the bag. Dry in a forage drier or similar and weigh again. Enter data into the shared google sheet [link to shared google sheet set up to enter data]

