



THE EXTENSION SPECIALIST points to a sample of clean sorghum grain (left) ← and to a sample of trashy seed, resulting from maladjustment of the combine.

Combining Sorghum For Maximum Seed And Minimum Trash

By Marshall M. Machado

The purpose of any harvesting and threshing operation is to recover the maximum amount of seed, free from foreign material, with a minimum of seed loss and seed damage. Proper combine adjustments affect both the quantity and quality of harvested grain.

Adjustments affecting sorghum seed loss and trash content are (1) cutter bar and reel settings, (2) cylinder speed, (3) cylinder-concave clearances, and (4) sieve adjustments.

Checking Seed Losses

Seed losses can occur at the cutter bar, cylinder, straw walkers and sieves. Losses at the cutter bar result from heads of grain falling to the ground after being cut by the knife and from grain being knocked to the ground by an improperly adjusted reel. Unthreshed heads of sorghum carried over the rear of the straw walkers are considered cylinder losses. Overloading the straw walkers may also cause loose grain to be discharged with the straw.

Overthreshing or overloading creates a heavy mat of leaves, stalks and grain over the chaffer and sieve, causing grain to be carried out the rear of the combine. Excessive trash reaches the grain bin when the combine operator attempts to retrieve all of the grain by opening the chaffer and sieves too wide.

The operator should check each of the potential seed loss areas frequently and observe the amount of trash reaching the grain bin. By making adjustments of the combine and controlling the feeding rate, the operator can harvest the maximum

The author is an Extension Service agricultural engineer.

By Robert E. Dennis

Arizona growers have a reputation for producing sorghum grain of high quality. Kernels are plump and full, and foreign material is usually at a minimum. Arizona sorghum grain takes roller crushing treatment well and, when free from foreign material, is excellent for use in the new cooked rations for livestock.

The yield per acre of sorghum grain in the state has more than doubled in the last 20 years. The acreage used for sorghum grain tripled during the same period.

Arizona growers should be congratulated for the quality product they have been producing, but in recent years 10 to 15 percent of the total harvested sorghum grain has contained excessive stalks and leaves. This trash is creating a marketing problem for Arizona-grown sorghum.

Sorghum grain with excessive stalks and leaves does not store well, and is unsatisfactory for use in cooked rations. Trash accumulates in the storage pile or bin, forming barriers to the free movement of air. Moisture collects around the trash, causing grain to mold. Cooked grain with excessive amounts of trash sours after processing.

Dr. Dennis is an agronomist in the Extension Service.

amount of grain with a minimum of trash.

Adjusting the Combine

Cutter bar height is usually determined by the density of stand. The cutter bar should be set low for thin stands of sorghum and relatively high in dense stands. Setting the cutter bar too low in dense stands overloads the machine. More trash will be found in the grain bin and losses of grain over the chaffer and sieve may result from excess straw.

Peripheral speed of the reel should be 1.0 to 1.2 times the forward speed of the machine to prevent shattering of the grain. Raise the reel and/or fill the area between the center of the reel and the reel slat with canvas or a similar material when the reel is throwing cut grain.

Rasp bar, angle bar, or spike tooth cylinders may be used. Cylinder peripheral speed should be 4000 to 5000 feet per minute. This will be about 700 to 875 rpm when using a 22-inch diameter cylinder. Check the operator's manual since the rpm required for the given peripheral speed will vary with cylinder diameter. Use the faster speeds if many unthreshed heads of grain are found. Excessive cylinder speed causes over threshing and increases damage to seed.

Cylinder-concave clearances should be approximately $\frac{1}{2}$ inch in front and $\frac{1}{4}$ inch at the rear. Decreasing the clearances may be necessary if many unthreshed heads are found. However, decreasing the clearance has the same effect as overloading the machine since the sorghum straw is badly broken and can plug the chaffer and sieves. Increasing the cylinder

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GROWERS SHOULD CAUTION operators against excessive speed of the combine which, in many cases, is cause of overloading and a poor threshing operation.



Visitors at High School Senior Day



HIGH SCHOOL SENIOR day on the U of A campus each fall brings visitors from a multitude of Arizona high schools. Agriculture, it was interesting to note, attracted as many girls as boys. Here Dean Myers looks on approvingly as some of the distaff visitors register.

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speed has less tendency to break straw than decreasing cylinder-concave clearances.

Fan speeds should be sufficient to keep chaff "floating" over the sieves to facilitate separation of the seed from the trash. Excessive fan speeds will blow seed out the rear of the machine or into the tailings auger where damage to the seed may occur. The blast of air should be directed toward the front of the sieves.

Check for Overloading

The chaffer (upper sieve) should be set $\frac{1}{2}$ to $\frac{2}{3}$ open and lower sieve $\frac{1}{3}$ to $\frac{1}{2}$ open. Both sieves should be set level or tilted slightly forward. *If excessive amounts of straw and chaff are reaching the grain bin it may be necessary to close the sieve setting. Before adjusting the sieves check for overloading and/or overthreshing. Overloading results from too much material being taken into the machine, and overthreshing from*

cylinder-concave clearances being set too close and excessive cylinder speeds.

Both overloading and overthreshing increase the amount of trash entering the grain bin. Increasing the cylinder-concave clearance and decreasing forward motion of the combine will reduce overthreshing and overloading problems. Grain can be more easily separated and cleaned by increasing the cylinder concave-clearance and decreasing the forward motion of the harvester when weeds and/or green stalks are a problem.

Constant observation of the condition of harvested grain is necessary to determine the proper combine adjustments. Adjustments will vary depending on the condition of the grain and the area of maximum grain loss within the machine. Operators should make adjustments to meet individual crop conditions. Arizona growers may preserve their reputation for high quality sorghum grain by reducing overloading and overthreshing problems at harvest.

62 YOUNG SIRES IN GAIN TESTS AT UA STATION

While pudgy people worry about gaining too much weight, 62 young beef bulls are going to school at The University of Arizona, trying to prove how fast they can gain weight.

The 62 are enrolled in the sixth annual gain-test trials at the U of A River Road Farm in Tucson. The current test started Oct. 21, 1966 and will terminate Feb. 28, 1967. (Five of the animals actually began the test last Oct. 10, to meet the 140-day period required by Performance Registry International).

Three breeds are represented in the tests this year — 7 Angus, 7 Brangus and 48 Hereford, the latter group including 9 polled Herefords. Animals come from four states.

Breeds, and the number of animals entered by each breeder, include:

Angus — A. F. Flint & Sons, Bard, N.Mex. — 4; University of Arizona, Tucson — 3.

Brangus — Las Delicias Ranch, Tumacacori — 4; Floyd Robbs, Willcox — 3.

Polled Hereford — R. F. Burnett & Sons, Elfrida — 3; Jack Oleson, Avon, Colo. — 6.

Hereford — Stephen L. Bixby, Globe — 1; Theo. L. Cairns, Lindsay, Calif. — 3; Cowden Herefords, Phoenix — 3; Elgin Hereford Ranch, Elgin — 3; E Z Ranch, Tucson — 2; Heady Ashburn Ranch, Patagonia — 4; I V Bar Ranch, Bisbee — 4; Norman Hodgkin, Tucson — 1; Hooper Hereford Ranch, Springerville — 2; Jay Six Ranch, Benson — 3; Las Vegas Ranch, Prescott — 2; C. C. Mathews, Willcox — 3; Walter W. Meyer, Florence — 1; Thurber Hereford Ranch, Sonoita — 3; University of Arizona, Tucson — 2; Wayne G. Wallace, Sanders — 2.

Animals consist of two groups, seniors being those born between Sept. 1 and Dec. 15, 1965, and juniors born between Dec. 16, 1965, and March 1, 1966.

Specific requirements, with all animals fed the same growing ration and housed and handled under like conditions, require that to pass the test an animal must gain an average of 2.3 pounds per day, yearling weight of 825 pounds or more, and a minimum grade or conformation score of Low Choice.

The annual grade-gain tests are directed by Dr. Bruce R. Taylor, head of the Animal Science Department.