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### Reduce Grain Sorghum Harvest Losses

Cooperative Extension South Dakota State University

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# Reduce Grain



# Sorghum Harvest Losses

**COOPERATIVE EXTENSION SERVICE  
SOUTH DAKOTA STATE UNIVERSITY  
U. S. DEPARTMENT OF AGRICULTURE**

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# Reduce Grain Sorghum Harvest Losses

By G. R. Durland, Extension agricultural engineer, and Paul Turnquist, Professor of agricultural engineering

References in FS 605 and FS 606 on corn and sorghum harvesting under key numbers 25 and 26 have been combined in this FS 615. Key number 25 was Bulletin 542, Header attachments help save grain sorghum at harvest; and Key number 26 was Circular 172, Reduce shatter losses in your grain sorghum harvest. This fact sheet replaces those two publications.

Earlier harvesting and the use of header attachments can save grain sorghum at harvest time. Investigations show that harvesting of grain sorghum above 16 percent moisture content will help reduce shatter losses.

In a study conducted by agricultural engineers at South Dakota State University, the effect of the harvesting date on harvesting losses and moisture content was checked during the harvesting period. Figure 1 shows how the moisture content decreased through the season. The results of this study are shown in Table 1.

Figure 2 shows the losses that occurred during the different harvesting periods. Preharvest (field shattering) losses were negligible during the early part of the season and increased to 2.2 bushels per acre as the plants matured. The increased loss was caused by high winds blowing through the mature crop. The cutterbar and shoe losses stayed about the same through the harvesting period. The cylinder losses decreased as the grain became drier. These losses could probably have been reduced at the higher moisture content by increasing cylinder speed, but this would have increased crackage of the grain.

Reel losses were the highest single loss. Reel bat speed should be only about 25 percent faster than ground speed. The reel should be set high enough to avoid catching under the heads and throwing them out. A wider reel bat will help prevent this.

As indicated by Table 1, grain moisture content did not influence grain damage. Cylinder speed was

the most important factor affecting cracking of kernels. Operating at a cylinder speed of about 3,500 feet per minute will minimize seed damage.

The gathering losses in a standing crop are usually less at a forward speed of 2.5 to 3 mph, but this speed could overload the rack and shoe. If this happens, it is better to take a partial swath and maintain the optimum speed to prevent overloading.

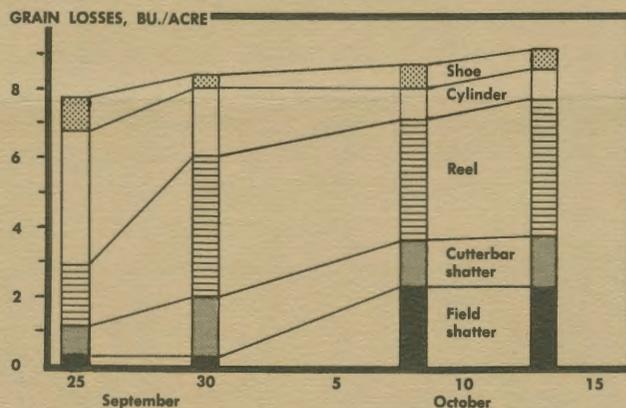


Fig. 2. Relationship between date of harvest and harvesting losses.

High moisture combining of mature grain sorghum has advantages and disadvantages. The advantages are: (1) Reduction of losses due to adverse weather conditions. (2) Better utilization of good harvesting weather. (3) Utilization of existing drying facilities. Disadvantages are: (1) Need for a dryer or making arrangements for drying. (2) Increased cylinder speed to reduce cylinder losses, which increases seed crackage and reduces germination. (3) Need for a recleaner to facilitate drying, particularly if weeds are present.

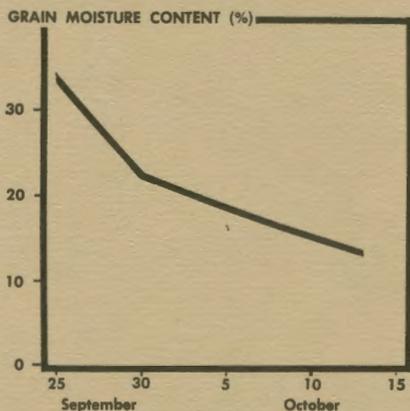
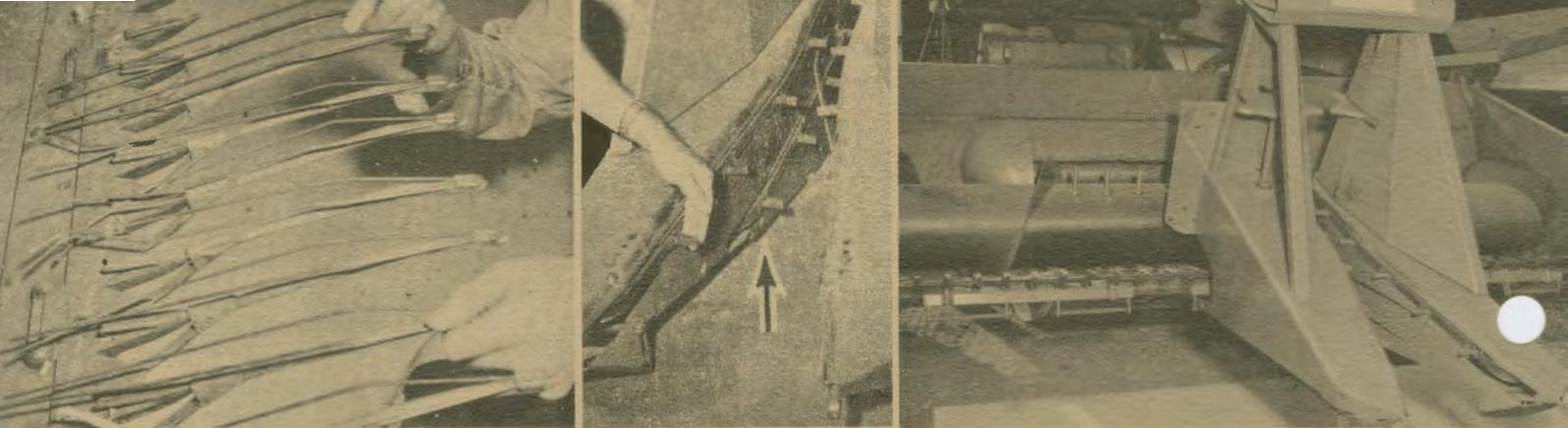


Fig. 1. Relationship between date in season and moisture content of grain.

TABLE 1

**GRAIN LOSSES IN BU/ACRE AND SEED CRACKAGE FOR DIFFERENT HARVESTING DATES**  
(All weights are adjusted to 12% moisture content, =76.9 Bu/Acre)

	Harvesting Date and Moisture Content			
	Sept. 25 (33.6%)	Sept. 30 (22.1%)	Oct. 8 (16.6%)	Oct. 13 (13.0%)
Field shatter loss, bu/ac	.1	.1	2.2	2.2
Cutter loss, bu/ac	1.0	1.9	1.5	1.5
Reel loss, bu/ac	1.8	4.0	3.3	4.0
Cylinder loss, bu/ac	3.7	1.9	.9	.8
Shoe loss, bu/ac	1.0	.3	.6	.6
<b>Total Loss, bu/ac</b>	<b>7.6</b>	<b>8.2</b>	<b>8.5</b>	<b>9.1</b>
% Seed damage due to harvesting	6	9	10	10



1. Rods that extend ahead and above guards help save standing heads. 2. Gathering lugs (arrow) on belts of row unit

help bring stalks into header. 3. One unit is mounted on conventional header for each row.

Header attachments will reduce harvesting losses considerably under standing and lodged conditions. These attachments are particularly valuable in lodged sorghum. The attachment fits in front of the grain header cutterbar and has gathering points, gathering chains and kicker wheels similar to a forage harvester head. Vertical finger cylinders and special gathering cones are also used in row-crop attachments.

Row spacings of 30 inches do not have the lodging problem of 38" or 40" rows, as adjacent plants are more likely to support the heads of broken stalks and keep them from settling to the ground.

Comparison of header loss in a field study between the conventional header and row harvester is shown in Figure 3.

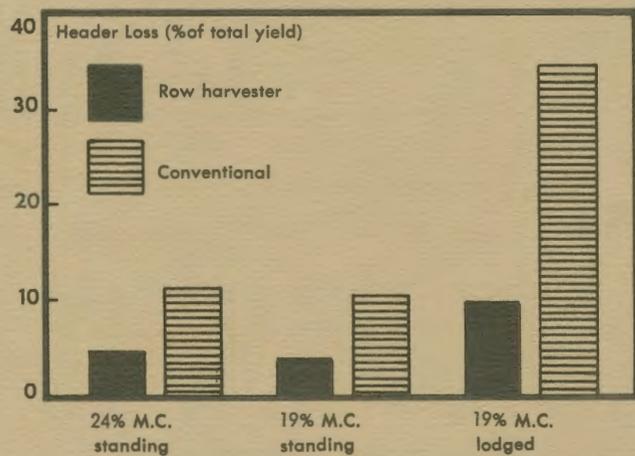


Fig. 3. Comparison of header loss between conventional header and row harvester.

Summary of harvesting recommendations to decrease field losses and seed damage:

1. Harvest early and dry artificially if possible.
2. Use row-crop attachments on grain header cutterbar.
3. Harvest at forward speed of 2.5 to 3 mph.
4. Set reel bat speed at about 25 percent faster than ground speed.
5. Run cylinder at peripheral speed of about 3,500 feet per minute.
6. Set concave clearance at about  $\frac{1}{2}$ " in front and  $\frac{1}{8}$ "- $\frac{3}{16}$ " at rear.
7. Set upper sieve  $\frac{1}{2}$  to  $\frac{2}{3}$  open and lower sieve  $\frac{1}{3}$  to  $\frac{1}{2}$  open.

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