Parameters for Optimal Seed Harvesting

by

R. Kenneth Matthes

The seedbed was carefully prepared in the spring, a high quality foundation seed was planted, the weeds and insects were controlled and the seed are ready for harvest. The success of the crop now depends on whether it is harvested properly. During harvesting the seedsman has many decisions to make which will determine the quality of the seed in the bins.

Optimum Harvest Time

Time of harvest is one of the most important factors affecting the harvesting yield from seed crops. This is particularly true for small seeded legume and grass seed crops since these seed have shattered to the ground by the time the crop has matured to its optimum harvestable yield.

Actually the optimum time of harvest is when the seed is fully mature, when weather damage has just begun and the seed is easily harvested and cleaned resulting in minimum losses. At early harvest there has been no weather damage but the seed are high in moisture, not completely mature and difficult to combine with relatively high cleaning and threshing losses. At late harvest the seed are low in moisture, completely mature and easy to combine with low threshing and cleaning losses; however, excessive weather damage has probably taken place. Thus optimum harvest time occurs somewhere between these extremes. This is very well illustrated in Figure 1.

Although many varieties of soybeans, sorghum, and corn have been developed for the grain to withstand considerable amounts of severe weather subsequent to maturity, the seed is susceptible to weather damage. In recent studies at the Mississippi Seed Technology Laboratory the germination of hand harvested soybean seed dropped from 93% for seed harvested on October 9 to 48% for seed harvested on December 11. The mechanically sound seed (total minus cracked, shriveled, and rotten seed) also decreased from 97% on November 24 (first frost) to 65.5% on January 6. Similar results also occur for corn and sorghum subsequent to maturity.

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The weather is an important factor to consider when deciding to harvest a seed crop especially grass and clover seed. For these types a rain subsequent to the crop reaching maturity will result in shattering about 30% of the seed to the ground. Therefore, it is wise to harvest the crop while about 5 to 10% of the seed have not matured for small acreage which can be harvested in a day or so. However, if acreage is large and two or three weeks will be required for harvesting, it is advisable to start when about 15 to 20% of the seed are immature. Harvesting should not begin when more than 20% of the seed are immature for several reasons: yields are low, combine losses are high, germination may be low and moisture content high which can cause heating in storage.

Moisture content is a good indication of the optimum time to harvest most seed crops. Combines do not operate well above 15% seed moisture. If an exact time can be chosen when to harvest soybeans, it should be when they are mature - that date is when the seed moisture is first at 13%.

For wheat the optimum seed moisture content for harvesting is 15 to 17%. Figure 2 shows how the moisture content of wheat decreases as the seed matures until it reaches approximately 28% then the moisture content of the seed is dependent upon the relative humidity of the plant environment. Figure 3 shows that the drop in germination increases rapidly when the moisture content exceeds 17% at the time of harvest. Table 1 shows similar results for the effect of seed moisture content on the split seed found in a harvested sample of wheat seed. From the standpoint of minimizing mechanical seed damage, harvesting must be limited to moisture contents below 20 percent (3).

TABLE 1. Split Seed Found in Samples Harvested At Various Moisture Contents

<table>
<thead>
<tr>
<th>% Seed Moisture as Threshed</th>
<th>% of Seed Split by Weight</th>
</tr>
</thead>
<tbody>
<tr>
<td>33.4</td>
<td>10.3</td>
</tr>
<tr>
<td>29.4</td>
<td>7.3</td>
</tr>
<tr>
<td>23.4</td>
<td>2.7</td>
</tr>
<tr>
<td>20.3</td>
<td>1.0</td>
</tr>
<tr>
<td>18.4</td>
<td>1.0</td>
</tr>
<tr>
<td>15.8</td>
<td>0</td>
</tr>
</tbody>
</table>
FIG. 1 Seed production as affected by harvesting date.

FIG. 2 Wheat seed moisture content.
FIG. 3 Wheat seed germination as affected by moisture content at harvest.

FIG. 4 Cylinder design from three different types of combines: (a) spiketooth, (b) raspbar, and (c) anglebar.
For grasses the time to harvest varies with the kind of grass and the type of equipment you use. Keep in mind that the stages in development of grass seed are milk, soft dough, hard dough, and vitreous, the same as grain crops. Grass seed harvested in the milk or soft-dough stage shrivels and is low in germination. Harvested in the hard dough or vitreous stage, the seed are plump, well developed, and more likely to be high in germination.

If corn is picked and dried on the ear it can be harvested as high as 30% moisture, dried to about 16% and shelled. If corn is combined the moisture content should not exceed 20%.

Harvest soybeans as near the maturity date as possible, which is when the seed moisture initially reaches 13%. Seed moisture may be at 13% moisture beyond this date but shatter loss will increase due to plant deterioration. Soybeans should not be harvested when the seed moisture exceeds 15% for difficulty will be experienced in threshing the soybeans due to the high straw moisture. Soybeans should not be harvested when the seed moisture is less than 10% due to a high percentage of crackage and mechanical damage in the seed. Soybeans change moisture content rapidly depending upon the relative humidity of the plant environment. In some cases it is necessary to harvest soybeans during early morning, late afternoon, and at night under extremely dry conditions, and in some cases it is necessary to harvest during the middle of the day under extremely wet conditions.

Type of Harvesting

For small seeded legumes and grasses, there are two generally acceptable methods for harvesting. One is by direct combining and the other is by cutting and raking the straw into a windrow or swaths allowing them to dry and then harvesting with the combine from the windrow or swaths. In areas having a weather hazard such as the southeast, a better alternative is to cut the crop with a mower, leaving it in a practically undisturbed swath for drying. Often after a rain, a swath would be dry while windrows would still be very wet and harvested yields were generally higher from swaths than from windrows.

In a number of tests conducted in small seed legume and grass seed crops, the relative merits of direct combines were studied as compared to windrow or swath harvesting in the southeast, and direct combining appeared in general to be preferable.
However, both methods have advantages and particular situations and the results vary considerably from year to year because of different crop and weather conditions.

Mechanical shattering losses were always greater from swath or windrow harvesting than from direct combining. These differences were very small in some cases and very large in others depending on field conditions, equipment, and methods used in forming and picking up and timing of mowing or harvesting (5).

Weather shatter losses were invariably higher in a standing crop than in a swath or windrow. This difference was often quite large when the standing crop had been badly shattered by rain or wind.

Relative harvested yields from direct combining as compared to windrow or swath harvesting depends primarily on whether mechanical shattering or weather shattering is of greatest importance. After a crop is fully matured and appreciably shattered by weather, windrow or swath harvesting resulted in greater harvested yields than did direct combining unless windrow or pickup loss was excessive. The difference in favor of windrow or swath harvesting is generally quite large, particularly after considerable weather shattering has occurred in the field.

This comparison of harvesting methods also depends on crop conditions and weather in addition to the above mentioned factors. For example, windrowing gives roughly better results in a non-uniform field or in one which tends to retain green foliage and matures slowly in a field which reaches a complete uniform and rapid maturity. Windrow or swath harvesting is also preferable in crops which continue growth during and after seed harvesting.

After the optimum yield date is past direct combine yields decrease much more rapidly than swath combine yields. This decrease results from greater weather shatter loss in the standing crop. If rain occurs this difference will be even greater; therefore, any acreage which must be harvested late will normally produce a considerably larger harvesting yield if it is mowed at the proper time and then harvested from the swath.

The effect on seed quality is also important when comparing direct combining with windrow or swath harvesting. Seed harvested from a swath or windrow normally has a much lower moisture content than the direct combine on the same date, especially during the early part of the harvest season. This lower moisture reduces
considerably the possibility of heating in storage and generally improves storage conditions. Consequently, the germination and quality of stored seed is often better from swath and windrow harvested seed provided it was not cut before physiologically mature. In most field conditions there is a very short time when the above advantage will be realized. There are generally a few days between the time of the swath which was not prematurely cut and the time when the standing crop is dry enough to direct combine without storage problems.

Direct combined seed will normally contain less total trash than swath or windrow combined seeds. It will contain much more green trash to cause storage problems. Therefore, in the fields which are weedy or have much green foliage, storage can be improved by mowing.

Considering all factors which affect the choice of direct combining versus windrow and swath harvesting, it appears that the current practice of direct combining is generally best, especially for the southeast. (5).

For harvesting wheat and soybeans the question is not whether to combine or not, but what type of combine should be used?. There are three types of combines in use: (a) the spiketooth, (b) the raspbar and (c) the angle bar cylinder. These combines differ in the construction of the cylinder and concaves. Figure 4 illustrates these differences.

The spiketooth combine is the most popular for grain producers because it has a higher capacity, particularly in weed infested fields. However, the seed producer should not be concerned about this for he will have a clean field if he is growing a high quality seed crop.

The raspbar combine is the recommended type for most types of seed harvesting including soybeans, wheat, corn, and clovers. The seed harvested in a raspbar combine generally have a lower mechanical damage than those through a spiketooth combine. However, this is not a proven fact and either type can do a good job of harvesting if the operator is qualified and is sensitive to the product entering the hopper.

Rubber covers are available for the concaves of the raspbar combine. This is particularly helpful in reducing mechanical damage when harvesting small seed such as clover.
Essential Units of a Combine Harvester -

1. **Header and feeder** - consists of a sickle for cutting the stems and an elevator to move crop from sickle bar to threshing cylinder or a pickup attachment instead of sickle-bar if crop has been windrowed or swathed.

2. **Threshing unit** - consists of a revolvable cylinder with bars of pegs on its periphery and a stationary set of bars called concave with variable clearance between the cylinder and concave. This portion of the machine removes the seeds from the heads, pods, and other protective covering.

3. **Straw carrier** - consists of a oscillating rack that separates the shelled seeds, and unthreshed heads or pods and chaff from straw.

4. **Shoe** - consists of a fan and a combination of two or three screening elements and delivery means to transfer the cleaned seeds to the seed hopper or bag and a second delivery means to return unthreshed heads or pods to the shelling cylinder for rethreshing.

The path of a seed can be seen in Figure 5. The lower part of the plant moves into the cutter bar as the combine moves to the left. The stalk is toppled into the header auger by the reel which has a peripheral speed approximately 25% faster than the ground speed of the combine. The seed heads and stalks are fed into the cylinder by the feeder conveyor where the seeds are rubbed from the head between the cylinder and concave in a raspbar combine and beat from the head by the cylinder in a spiketooth or angle bar combine. The seed drops through the concaves or the grid grate into the grain pan and the straw is carried up the straw walker and out of the combine. From the grain pan the seed is carried to a type of two-screen air cleaner where the large material is carried over the chaffer out of the combine, the seed drops through this screen onto the shoe sieve and the small material drops through the shoe sieve and is blown out of the combine by the fan. On the shoe sieve the clean seed is carried down the screen into the clean grain elevator trough and the larger unthreshed heads or pods are carried up the sieve and returned to the cylinder for rethreshing.
FIG. 5 A cut-away view of a combine.
Sources of Seed Losses During Harvest

A. Cutter-bar loss consists of seed shattered or heads or pods missed by the cutter-bar and seed shattered or heads or pods thrown out by the reel. (Shattering and heads of pods broken off before the combine enters the field are not counted as cutter-bar loss).

B. Cylinder loss is the unthreshed seed remaining in the straw after passing thru the combine.

C. Straw-rack loss is loose seeds which has not been separated from the straw as it passes over the straw rack and is carried out of the machine with the straw.

D. Shoe loss is loose seed which passes over the chaffer onto the ground.

Estimating Seed Loss

Combining is a dynamic process; therefore, it is necessary that the adjustments on a combine remain in a rather flexible status in order that they may be changed as conditions demand.

In order to know how much loss you are having it is necessary to determine the loss occurring at various points in the combining operation.

Measuring the amount of loss at each of the four sources listed above is the first step in determining what machine adjustments are required. Any material collected from the machine to determine these losses will of necessity have to be collected from a given area in order to compute per acre losses. Table 2 will assist you in determining the loss per acre.

Cutter-bar loss can be found by stopping the combine and counting the number of seeds on a representative square foot of ground under the machine. Count shattered seed and also unthreshed grain. Subtract from this the shattered seed and seed in heads or pods on one square foot of ground in the standing crop ahead of cutter-bar.

Cylinder loss can be determined by catching in a box or canvas all the material leaving the back end of the machine.
Rack loss can be found by catching only the material leaving the cleaning shoe.

There are several combining variables which affect the efficiency of the harvesting operation. These are moisture content, cutter-bar height, reel speed, cylinder speed, cylinder clearance, ground speed and cleaner air.

Although moisture content is not a variable which can be changed by turning a dial, it is so important on the final outcome that it is justified to repeat. The moisture content can be controlled somewhat by the time of harvest since the crop dries as it reaches maturity and also what time during the day harvesting takes place. Figure 6 shows how the moisture content affects the cutter-bar loss of seed which increases as the moisture content decreases. Figures 7 and 8 show that the machine loss and total loss of seed increase rapidly as the moisture content increases for a rather wide cylinder clearance of 1/2 inch. No such loss increase is experienced for a closer cylinder clearance of 1/4 inch.

The optimum height of the cutterbar is when a maximum amount of seed is harvested and a minimum amount of straw. For clovers and grasses this is very close to the ground, for soybeans the height can be adjusted 6 to 12 inches and sometimes higher depending on the variety, for small grains and grain sorghum the height should be just below the head for minimum straw intake, and for corn the height should be low enough to harvest the lower ear of the stalk.

The reel speed should be adjusted to the minimum speed which will topple the plant into the header. This is usually about 1.25 times as fast as the ground speed. In some cases particularly in soybeans it is not necessary to use the reel at all since the momentum of the cutterbar on the lower portion of the plant is sufficient to topple the plant into the combine. Observing the action of the plant will indicate what to do with the reel.

The cylinder speed is an important factor in how well the seed are harvested as indicated by Figures 9 and 10. Crops that are difficult to combine require an increase in cylinder speed, and as the cylinder speed is increased the mechanical damage is increased resulting in a loss in germination (Figure 11). Thus an optimum cylinder speed results in maximum threshing and minimum mechanical damage.
TABLE 2 Estimating seed loss from a sample area.

<table>
<thead>
<tr>
<th>Crop</th>
<th>No. of seeds per lb.</th>
<th>lb./bu.</th>
<th>Seeds/sq. ft. if 1 bu. were spread over 1 acre</th>
<th>Seeds/sq. ft. if 1 lb. were spread over 1 acre</th>
</tr>
</thead>
<tbody>
<tr>
<td>Barley</td>
<td>13,600</td>
<td>48</td>
<td>15</td>
<td>——*</td>
</tr>
<tr>
<td>Clover-Crimson</td>
<td>149,000</td>
<td>60</td>
<td>205</td>
<td>3.4</td>
</tr>
<tr>
<td>Clover-Ladino</td>
<td>816,000</td>
<td>60</td>
<td>1,208</td>
<td>20.0</td>
</tr>
<tr>
<td>Crotalaria</td>
<td>84,000</td>
<td>60</td>
<td>115</td>
<td>1.9</td>
</tr>
<tr>
<td>Fescue-Tall</td>
<td>237,000</td>
<td>24</td>
<td>1,235</td>
<td>5.2</td>
</tr>
<tr>
<td>Lespedeza-Kobe</td>
<td>200,000</td>
<td>25</td>
<td>1,115</td>
<td>4.6</td>
</tr>
<tr>
<td>Lespedeza-Korean</td>
<td>238,000</td>
<td>25</td>
<td>136</td>
<td>5.4</td>
</tr>
<tr>
<td>Lespedeza-Sericea</td>
<td>372,000</td>
<td>60</td>
<td>512</td>
<td>8.5</td>
</tr>
<tr>
<td>Lupine-Blue</td>
<td>2,750</td>
<td>60</td>
<td>3.8</td>
<td>——*</td>
</tr>
<tr>
<td>Oats</td>
<td>12,700</td>
<td>32</td>
<td>9.3</td>
<td>——*</td>
</tr>
<tr>
<td>Orchard Grass</td>
<td>650,000</td>
<td>14</td>
<td>209</td>
<td>14.9</td>
</tr>
<tr>
<td>Peas-Cow</td>
<td>3,630</td>
<td>60</td>
<td>5</td>
<td>——*</td>
</tr>
<tr>
<td>Peas-Combine</td>
<td>6,750</td>
<td>60</td>
<td>9.3</td>
<td>——*</td>
</tr>
<tr>
<td>Rescue</td>
<td>62,000</td>
<td>30</td>
<td>42.7</td>
<td>1.4</td>
</tr>
<tr>
<td>Rye</td>
<td>18,100</td>
<td>56</td>
<td>23</td>
<td>——*</td>
</tr>
<tr>
<td>Rye Grass</td>
<td>223,000</td>
<td>24</td>
<td>123</td>
<td>5.1</td>
</tr>
<tr>
<td>Sesame</td>
<td>160,000</td>
<td>60</td>
<td>220</td>
<td>3.7</td>
</tr>
<tr>
<td>Sorghum-Grain</td>
<td>23,800</td>
<td>56</td>
<td>31</td>
<td>——*</td>
</tr>
<tr>
<td>Soybeans-Small</td>
<td>5,900</td>
<td>58</td>
<td>7.8</td>
<td>——*</td>
</tr>
<tr>
<td>Soybeans—Large</td>
<td>2,720</td>
<td>58</td>
<td>3.6</td>
<td>——*</td>
</tr>
<tr>
<td>Wheat</td>
<td>15,900</td>
<td>60</td>
<td>21.8</td>
<td>——*</td>
</tr>
</tbody>
</table>

*—Less than one seed per square foot.

FIG. 6 Cutterbar loss versus seed moisture.
FIG. 7 Machine loss versus seed moisture.

FIG. 8 Total loss versus seed moisture.
FIG. 9 Yield harvested versus cylinder speed.

FIG. 10 Seed loss versus cylinder speed.
The cylinder clearance is set according to the size of seed and the difficulty in threshing. The closer the clearance the less the unthreshed seed and the higher the mechanical damage of the seed (Figure 12).

The main effect of the ground speed is that it determines the rate of material flow through the combine. The faster the ground speed the higher rate of material flow and the less threshing action. The cylinder speed and ground speed are highly related in threshing efficiency. A threshing index has been developed for harvesting soybeans which combines these two factors and makes recommendations for specific models of combines (4).

The cleaner air serves a similar purpose to the lower air on an air-screen cleaner. If the cleaned seed are excessively trashy the air should be increased. Care should be taken not to increase to the extent that good seed are blown out of the combine.

Recommendations for Loss Reduction of Soybeans

The shatter loss is usually the greatest loss when harvesting soybeans. This is a gathering unit loss. There are some things that can be done to reduce them. If this can be done without increasing the other losses, it is an improved situation.

1. Use the reel only where needed to get the cut soybean plant onto the platform and moving along the platform auger. Maintain contact with the plant only to accomplish this purpose. To do this the reel axle usually will not be less than 12" ahead of the cutter bar and contacting not more than the top 1/2 of the soybean plant. Many soybeans can be cut without or with little use of the reel.

   a. When the reel is used the speed should be approximately 1 1/4 times the ground speed. For a 42" diameter reel multiply the ground speed in miles per hour by 10 for the approximately correct reel speed. Usually the correct reel speed cannot be maintained if the combine is operated over a wide range of ground speeds.
FIG. 11  Seed germination versus cylinder speed.

FIG. 12  Seed loss versus cylinder clearance.
2. Harvest the soybeans as near the maturity date as possible. (Date when kernel moisture is first at 13% moisture.) Kernel moisture may be at 13% moisture beyond this date but shatter loss will increase due to plant deterioration.

3. The ground speed should not be over 3.0 m.p.h. Usually a ground speed of 2.5 - 3.0 m.p.h. should be maintained. There will be conditions which prohibit maintaining this ground speed. Such as excessive shattering and lodged loss.

4. The cutter bar should be maintained in good condition similar to a sickle type mowing machine. If this is done the vibration of the soybean plant is a minimum. Further reduction of the vibration of the plant may be accomplished by cutting close to the ground.

Lodged Loss

1. Usually the ground speed will need to be reduced in a lodged situation. The speed should be determined by the severity of the losses, both shattering and lodged; i.e. reducing the ground speed to fit the situation.

2. A cam action reel with pick up tines can be used to help move the lodged soybean stalks onto the platform auger. The more severe the lodged condition the further in front of the cutter bar the reel axle should be to be effective with minimum shattering. Maintain as high a contact with the stalks as possible to be effective. The more contact that the reel makes with the stalks, however, the more shattering there will be. Often a decision has to be made between more or less use of the reel. Where more use increases the shatter loss and less use increases the lodged loss. If the pick up reel speed is maintained at 1 1/4 the ground speed, the tine tip speed is 1.9 the ground speed at the bottom of its travel path.

3. Grain lifters fitted onto the guards of the cutter bar will aid lifting the lodged stalks high enough to be cut by the cutter bar. Usually they should be spaced 10 to 14 inches on each side of the drill depending upon the row width and the lodged situation, i.e. space them so they are effective in the operating situation.
Often the ground speed will need reducing in severely lodged situations, otherwise the cutter bar tends to ride over the lodged stalks. The lodged loss can be high when harvesting a branching variety and grain lifters on the guards are not used. Further contribution to the loss in a lodged situation is high seed beds and delayed harvest beyond maturity. For the next crop low seed beds should be maintained.

Stubble Loss

1. Cut the stalks as low as they can be cut. Usually an automatic header control will aid in reducing the stubble loss.
2. Maintain a ground speed at 3 m.p.h. or less
3. For the next crop maintain low and level seed beds, level within rows and across the rows.

Cylinder Loss

At the time most soybeans are harvested, they are relatively easy to thresh. In most operations the soybeans are being over threshed. The result of this is cracked kernels and overloading of the cleaning section. The spike tooth threshing cylinder is most commonly used on combines to thresh soybeans.

Heretofore, the considered factors affecting the threshing action for any given situation are the speed of the cylinder and the clearance between the concave and the rotating cylinder. During the 1969 Soybean Harvest Study, it was concluded that this does not adequately describe the total threshing effort. For these two factors do not account for the differences in construction of the cylinders nor the difference in the rate of feeding of the cylinder, rows being harvested and the ground speed. A method was devised to consider the construction of the spike tooth cylinder and the rate of feeding is called the Threshing Index.

Strawrack Loss

The separating section is comprised of the beater and the strawrack. Usually there is little loss from this section when
harvesting soybeans. If there is excessive machine loss and it is determined that it is due to the strawrack, it is probably a result of a clogged grate. In which case it must be unstopped. Usually the basic speed is adequate for separating soybeans.

Chaffer and Shoe Sieve Loss

The cleaning section is comprised of the chaffer and shoe along with the fan (Figure 5). Usually the chaffer and shoe are adjustable fin type sieves. The chaffer has an extension where the unthreshed pods drop through and are returned to the cylinder for rethreshing. If a check behind the combine shows an excessive loss of beans and unthreshed pods that have passed through the combine, usually it will be a cleaning section loss. If it cannot be determined where the unthreshed pods are coming from, stop the combine when fully loaded. Check the chaffer to determine if there is an excessive amount of unthreshed pods mixed with the chaff on top. (Scarring of the pods indicate they have passed through the combine.) To prevent and correct this loss, observe the following:

1. Operate the fan at 3/4 full capacity, directed more toward the front of the sieves than the back. (More losses will occur with too little air blast than too much.)

2. Open the chaffer sieve to 3/4 and then shoe sieve to 1/2 full open. If too much trash goes to the grain tank, close both sieves a little.

3. Maintain the correct threshing index range for the operational ground speed of the particular combine. This will prevent overthreshing and overloading of the chaffer and shoe sieves with fines.

4. If there is an excessive amount of unthreshed pods on the chaffer, maintain the correct threshing index but close the concave. (Decrease the clearance.)

Threshing Index

The threshing index defines the threshing effort being exerted upon a cut crop segment being harvested. Mathematically it has no units but expresses the feet flail exerted to the crop per foot of cut segment.
To arrive at the threshing index for a spike tooth type threshing cylinder, the total flail in feet per revolution is taken instead of peripheral speed. The flail is derived by adding the length in feet of all the spikes on the cylinder bars plus the length in feet of all the spike bars and is given by equation 1.

\[ \text{Total Flail (ft./rev.)} = \frac{\text{spike } L \text{(in) } \times \text{No.} + \text{spike bar } L \text{(in) } \times \text{No.}}{12} \quad [1] \]

The rate at which the flail is exerted in the threshing effort is given by equation 2.

\[ \text{Total Flail Rate (ft./sec.)} = \text{cyl. speed (rev./sec.) } \times \text{total flail (ft./rev.)} \quad [2] \]

The ground speed is converted to the units of feet per second and the threshing index is given by equation 3.

\[ \text{Threshing Index} = \frac{\text{total flail (ft./sec.)}}{\text{ground speed (ft./sec.)}} \quad [3] \]

By using equation 3 a definite relationship can be established to describe the threshing effort being exerted to any given cut crop segment. It also can be used to describe the change in threshing effort as ground speed and cylinder speed change, separately or collectively. In addition, it can serve as a useful guide for regulating the concave (spike tip) clearance to fit a particular threshing task. Use of the threshing index is of greater importance to the seed producer than to the commercial soybean producer.

If you are interested in using the threshing index to improve the combining of soybeans request the publication "Harvesting Soybeans" by Lee Miller from the Mississippi Cooperative Extension Service, State College, Mississippi.

Summary

To optimize your harvesting results you must make the proper decisions about when to harvest and how to harvest. The indicator for determining when to harvest is the seed moisture content. The best indication of good harvesting methods are good seed coming from the combine. Keep check on your product and be sure that your combine is doing the best job it can do under many different situations.


