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More Efficient Soybean Separation

By A. H. BOYD¹

In recent years the increased occurrence of purple moon flower², also referred to as giant morning glory, has caused seedsmen to install spiral separators to remove this seed from soybean planting seed.

The spiral separator takes advantage of difference in shape to accomplish a separation. The purple moon flower seed has two flattened surfaces like as a section of orange as opposed to the nearly spherical shape of the soybean. As the seeds roll down the inner flights of the spiral the round shape of the soybeans allow them to attain enough velocity to roll over the edge and be caught by the outer flight. The flatter seeds of purple moon flower along with split and damaged soybeans tend to slide rather than roll and do not attain enough velocity to roll off the flight, thus remaining to pass through a reject chute.

The spiral separator does an excellent job of removing these seeds under most conditions. However seedsmen have observed, and tests have confirmed, that 1 to 3% of the purple moon flower seeds were not removed. With low concentrations this is acceptable but this level of efficiency has resulted in some badly contaminated lots being sold for oil purposes rather than seed.

On close observation of the spirals in operation it was obvious that most of the soybeans were going over the edge of the flight by the completion of the first turn with the flatter seed sliding the remaining four turns before reaching the reject chute. What was needed was some means of slowing the seeds enough that the very flat seeds that were attaining escape velocity would not go over the side of the flight without causing excessive loss of good seeds.

To accomplish this 6" strips of wood ¼" thick and ¾" wide were clipped to the flights with clothes-pins as shown in the accompanying photo. There are three per flight plus one clothespin without a wood strip. They are attached in the following manner:

1. Measure around the outer edge of a flight 22" from the point where seed enter that flight. Lay wood strip across the flight so that it deflects the seeds toward the center post of the spiral. Be sure that the end of the strip is at least 1½ inches from the center post so that

the seeds can flow freely, clip the wood strip in place with an ordinary spring type clothes-pin.

2. Attach a second strip one turn of the spiral down on the same flight.

3. Attach a third strip one turn below the second.

4. Attach a clothes-pin **without a wood strip** but at an angle to deflect seed to the center one turn below the third strip.

5. Repeat the above procedure on the other 4 flights around the center post.

6. Since spiral separators are built in pairs, the same procedure from 1 through 5 must be followed on the other set of flights.

Material requirements are 40 clothes-pins and 15 feet of ¼ inch lathing per spiral pair.

Tests in the Seed Technology Laboratory indicated that 99.9% of the



Clothes pins and wooden strips slow the passage of seed through the spiral separator, resulting in cleaner soybean seed.

purple moon flower were removed with a seed loss of 3.0%. This is 1.1% greater than the seed loss without the strips attached.

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² *Convolvulus muricatum*.