

SEED CUTTING PRINCIPLES

by
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Potato Production is directly related to the potato seed and also seed cutting. When planning seed purchases, it is important to consider the cutting equipment that is to be used. The right or wrong seed can make or break the profitable seed cutting operation. When buying seed potatoes, the lowest price is not always the least expensive. When poor seed pieces are produced and skips are found in the field after the planting operation, profits can drastically be reduced through poor yields and loss of production. Seed costs can be controlled by purchasing quality seed and using a properly adjusted modern potato seed cutter.

When planning potato seed cutting equipment purchases, it is also important to consider the quantity and type of seed to be cut. When a planting operation only calls for 1000 cwt. of cut seed per day, the equipment to cut that amount of seed each day is much different than an operation which requires 4000 cwt. or 5000 cwt. of cut seed per day. The time factor also has much to do with the amount of seed needed and the equipment used to produce quality seed pieces in the proper quantity to supply the seed planting operation. It is not always the least expensive cutting equipment that produces the most productive and cost effective seed pieces.

When contemplating seed purchases, the following factors should be considered:

1. Size of potato to be cut.
 2. Type or shape of potato.
 3. Size of seed pieces desired.
 4. Quantity of seed to be cut.
 5. The amount of seed needed each day for planting.
 6. Do you prefer pre-cut seed or fresh cut seed?
1. When seed is small, there are usually more one drops and single cuts making more small seed pieces. When the seed potato is large, there are generally more large sets, depending on variety and type of potato being cut. Some varieties have few eyes and therefore can produce blank seed pieces with no eyes. When large potatoes are cut, the seed pieces can be difficult to plant in some of the modern planters. Generally the most desirable seed pieces come from potatoes 6 ounce to 12 ounce in size and are usually more uniform. When selecting seed potatoes there is generally less waste and less chips with seed in the 6 ounce to 12 ounce size. Also, there is less waste in potatoes that are not off-type and crooked.

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2. When selecting seed potatoes it is important to consider the type and variety of potato to be cut. When round or blocky potatoes are cut, the end product is different from those that are long and slender. When cutting round and blocky potatoes, the sets are usually more uniform and or more consistant size. The seed pieces from long slender potatoes are sometimes very irregular and generally require more hand cutting and trimming. The long slender potatoes act differently in the sizer and therefore do not always enter the cutting knives in the proper area. When cutting mis-shaped potatoes or those with knobs, it is difficult to align the potatoes in the cutter so that they contact the cutter blades square and are not cut at off angles. This will cause more chips and more hand cutting is required to give the desired seed piece size and quality.
3. When selecting seed potatoes there are many factors to consider. One important consideration is the size of seed piece desired. Most growers prefer a seed piece from 1-3/4 ounce to 2-1/4 ounce in size. When cutting small potatoes, it is sometimes hard to get the desired seed piece size. Even with a properly adjusted cutter it is hard to cut a 4 ounce potato exactly in the center giving two- 2 ounce seed pieces or to cut a 6 ounce potato and get three - 2 ounce seed pieces. It is also difficult to cut 18 ounce or 20 ounce potatoes and get all good uniform seed pieces. Generally seed potatoes from 6 ounce to 12 ounce give the most consistant and uniform seed pieces. In order to obtain a 1-3/4 ounce or 2-1/4 ounce seed piece size, the seed needs to be fairly uniform in size and shape. In most cutting operations, the goal is to obtain 75% to 80% seed pieces between 1-3/4 ounce to 2-1/4 ounce. This can be accomplished with most varieties and shapes of potatoes with a properly adjusted modern seed cutter.
4. The quantity of seed to be cut is an important factor when the seed cutting operation is being planned. Another important factor is the amount of time needed to cut the required seed needed for the planting operation. The number of acres and the amount of seed per acre. The time factor will also determine the size cutter needed for your cutting operation. In some areas with proper storage, seed potatoes can be pre-cut to extend the cutting operation. When pre-cutting, the seed pieces have time to dry off and suberize. In many applications this makes planting faster and easier. Most planters will work better with dry seed than fresh cut seed. Labor may be a very important factor to consider with a pre-cutting operation.
5. When selecting seed for your planting operation, it is important to consider the amount of seed that needs to be cut. When cutting large potatoes, the capacity of the seed cutter is usually reduced to retain quality seed piece production. This will also produce less seed pieces per hour not only because the flow is restricted in the cutter, but the seed pieces are also larger and less 1-3/4 ounce to 2-1/4 ounce seed pieces per 100 cwt. of seed potatoes are produced.

Crooked or knobby potatoes are harder to align in the cutter and more mis-cuts are made. This cuts down the quantity as well as the quality of seed pieces being produced. It also increases labor costs for trimming and increases seed cost because of waste. The amount of seed produced each day can, to some extent, be controlled by the seed and the way it is cut.

6. In some potato growing areas it has been found that pre-cut seed has many advantages. When cup planters are used the dust used to treat the seed pieces will build up in the cups. When seed is pre-cut and dry, this problem is not so prevalent. If a grower plants large acreages and pre-cuts his seed, he can usually save time while planting by avoiding lost time waiting for seed to be cut. When seed is pre-cut and suberized, the cutting operation can be extended and accomplished at a more opportune time. This can also save labor and investment in key people. Transportation time is also a factor that has some merit for consideration. Pre-cut seed can be readily transferred from one area to another, even over great distances. Some time can be saved here when planting seasons are varied and short. When the planting operation requires many planters and enormous amounts of seed, it is hard to cut the amount of seed needed each day with only one or two cutters. Machinery investment can be reduced by pre-cutting some of the seed required in an operation such as this.

From 100 pounds of seed potatoes, there are only a portion which meet the goal of exact size seed pieces preferred by the growers. As machines have been improved and changes made, the percentage of preferred seed pieces has become more and quality increased.

From 100 pounds or 1600 oz. of seed: (approximate results)

- 75% - 1-3/4 oz. to 2-1/4 oz. or 570 seed pieces
- 15% - 1-1/2 oz. to 1-3/4 oz. or 114 seed pieces
- 05% - 2-1/4 oz. to 2-1/2 oz. seed pieces and approximately 05% chips.

From a possible 800 2 ounce seed pieces, we get approximately 760, or more, if the seed potatoes are uniform in size from 6 ounce to 12 ounce and the cutter is adjusted properly.

The investment in an evenflo type feeding system for the cutter can pay great dividends in seed cost and non-productive time for almost any cutting operation. The Evenflo Tub insures even feeding to the cutter and gives ample time to clean up or change trucks before the tub runs empty. It is very important to feed the cutter evenly at all times to obtain quality seed pieces and still maintain high volume.

Another consideration is the ability to clean and disinfect the equipment used in the cutting operation when cutting seed for certification. It is hard to be too clean and sometimes it is very difficult to clean and disinfect porous material. Sponge drums should be replaced when the outer cover is ruptured or damaged to insure cleanliness and control spread of disease. All surfaces should be cleaned between knives and rollers as residue accumulates and therefore should be disinfected to prevent bacteria from growing and spreading in those areas.

Any machine will work better when it is properly serviced and adjusted to obtain the most from your seed investment. When properly suited for a particular application and adjusted for the potatoes being cut, a good seed cutter can increase yield and profit. . .