

BASIC SEED CLEANING

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Basic is defined by the dictionary as "essential" or "fundamental" and surely basic seed cleaning is the fundamental or essential step in preparing seeds for market or for additional specialized processing. Management must not be neglected at any point in the processing job.

Some management factors are concurrent with basic cleaning are:

1. Identification of the seed lot
2. Prevention of mechanical mixtures
3. Identification of the processing problem

These must be accomplished before we can tackle the nuts and bolts problem of seed handling.

After we have identified the problem, only then are we prepared to do even the most rudimentary basic cleaning. Now we are ready to attempt removal of trash, weed seeds, other crop seeds and inferior seeds of the same crop.

Obviously it is time to more clearly define basic cleaning. As the communists insist that all men are equal but by their actions they declare that some are more equal than others, so some cleaning processes are more basic than others. For the purpose of our discussion let us define basic cleaning as ending with the air-screen cleaner and a basic processing plant as one having an air-screen cleaner and such accessory equipment as is necessary for proper operation. We realize that there are special plants that do not have an air screen cleaner, but this machine is the basic machine in the majority of operations.

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For most of us this is an acceptable premise for basic seed cleaning and we have belabored the point of fundamental and essential steps. This concept, while suggesting a minimum process, does not necessarily mean inadequate cleaning. Your ability to do an adequate job of cleaning with the basic machines will be related to:

1. The processing problem
2. The capabilities of the equipment
3. The capabilities of the operator
4. Economics

Basic seed cleaning must not mean poor or sloppy seed cleaning. Sometimes operators have a tendency to say "oh, what the heck! What I miss here the next machines will take care of." You can't hope for others to "Bail you out." Aside from the fact that such an attitude will be apparent all through the processing plant if it is allowed at this point, sloppy ineffective cleaning can leave trash, sticks, pods, weed seeds, etc., in the seeds which may prevent subsequent cleaning and sizing machinery from doing the job they were designed for. Even if such material did not prevent effective performance of the other machinery the mere presence of the additional material that should have been removed will reduce the capacity of the processing line by forcing these machines to handle material that should never have reached that point.

To do the job of cleaning with the basic machines that will be required to meet the competition of the 70's it will be necessary for the operator to know the components of his equipment in detail and be able to operate these components so that they complement each other in obtaining the most efficient separation and capacity.

Let us look at some of the equipment in the basic processing line and comment on their function and operation.

Scalper

The scalper is very useful in a precleaning operation to remove excess trash, sticks, straw, etc. This machine usually has only a top screen and may or may not have an air system. The scalper's main function is to enhance the flowability of the seeds and reduce the bulk, thus helping increase the capacity of the air-screen machine. Of course the scalper is useful in removing the same materials before drying or storage if such steps are necessary.

Huller and Debearder

These are mentioned together since we do not have time to

elaborate on their detailed operation but simply to point out that their function is to change the physical characteristics of some part of the seed lot to make the air-screen separation possible or at least more effective. This also points up the fact that with basic cleaning as well as more elaborate processes it is important to identify the problem for a sound decision on the processing flow air-screen cleaner.

Air Screen Machine

The air-screen machine is manufactured in many sizes, capacities, and screen configurations. All are essentially the same in principle of operation so we will quickly review some of the salient points the operator must check for efficient operation. For our review we will assume that the cleaner has 4 screens and is equipped with top and bottom air.

Parts and Their Function

Feed hopper

Gives a uniform feed rate evenly distributed across the width of the screen. There are several specialized feed hoppers for specific feed problems.

Top air

As the seed are discharged from the feed hopper a blast of air is pulled through them to remove light chaff, hulls, etc. Any material that can be removed without removing good seed will aid in capacity because of reduction in bulk that would otherwise be handled by the screens. This is not an extremely precise separation since size is a factor and no sizing has been done as yet.

Top scalping screen (1st screen)

The function of this screen is to remove materials larger than the seeds such as pods, stems and sticks not removed by the top air. It further reduces bulk for more effective separation farther down the flow.

Top grader (2nd screen)

This screen removes the weed seeds and foreign material smaller than the good seeds. This screen has the smallest opening of any screen in the cleaner.

2nd Scalper (3rd screen)

This screen removes the material only slightly larger than the good seeds. In practical operation it is almost always necessary to accept loss of some of the largest good seed for an acceptable cleaning job.

2nd Grader (4th screen)

The openings in this screen are only slightly smaller than the good seeds as with the 2nd scalper it will almost always be necessary to lose some good small seed to get an acceptable cleaning job.

The manufacturers of air-screen cleaners offer an amazing array of screen perforation sizes and shapes as well as wire mesh screens. They also offer hand screens to help you work out your processing problem without too much disassembly and reassembly of equipment. Use of these aid in reducing down time since the screens can be selected for the next lot while one is running.

We have not even touched on such things as screen tilt adjustment, screen dams, clay crushing rolls, cross slot screens, etc., but it is important for an operator to be familiar with operating techniques and accessories to overcome problems as they arise in the processing plant.

A good job of balancing all the problems inherent in processing a seed lot to this point will often result in a finished product acceptable to the trade. However, there are limitations to all machines and it is essential to a profitable operation that you recognize these limitations. Some separations that are possible with the air screen machine may not be practical due to low capacity or excess loss of good seed while other machines can make the separation effectively.

Therefore, it is also important to a good efficient operation to know when to quit and let the next team take over.