

# Sizing and Texture/Surface Separation

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# Sizing and Texture/Surface Separation

- Size between different crops and seed quality

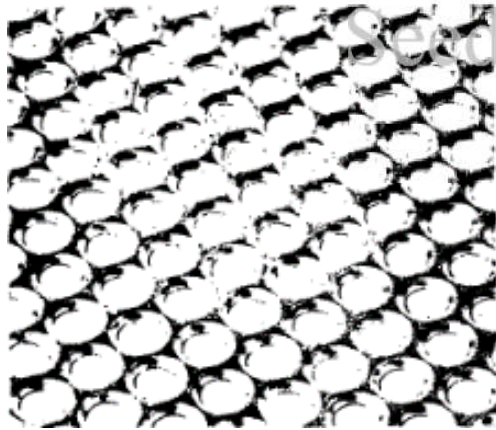


- Texture/surface difference of good and bad seeds



# Sizing – Width and Thickness

- Width and thickness separators are commonly referred to as ‘graders’ or ‘sizers’
- The separation is similar to, but generally more accurate than, the separation performed on the screens in Air-Screen Cleaner
- Two principles apply:
  - Seeds are sized for width by using round-hole screen openings
  - Seeds are sized for thickness by using slotted screen openings

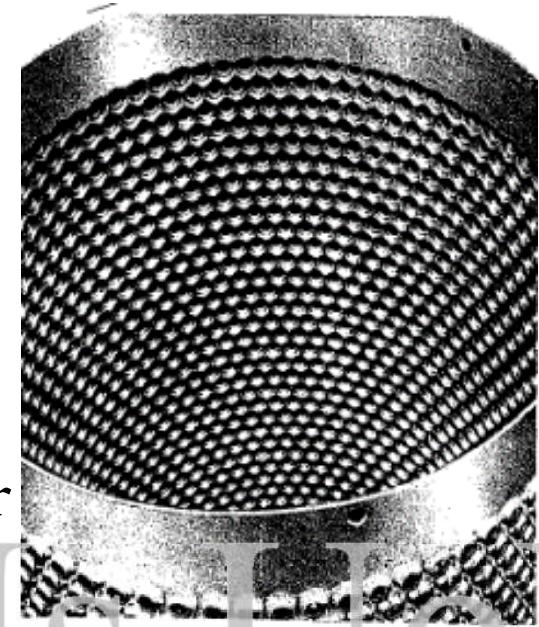


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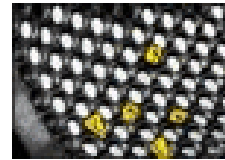
# Sizing – Width Separator

- The indented round hole screen is used for width sizing, and differs from the perforated round hole screens used in air-screen cleaner in that the hole is ringed by a ‘seat’. Why?
- If the seed is narrower than the diameter of the hole, it passes through and is termed a ‘through’. Conversely, the wider seed is termed ‘over’
- Machine fraction and total fraction:
  - $\text{Through \%} = 100 * \text{Through} / \text{Total}$
  - $\text{Through (Size) \% of Total}$



# Sizing – Width Separator

Flat Screen Separator - Vibration

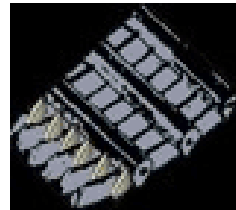


Cylindrical Screen Separator - Rotation



# Sizing – Thickness Separator

Flat Screen Separator - Vibration

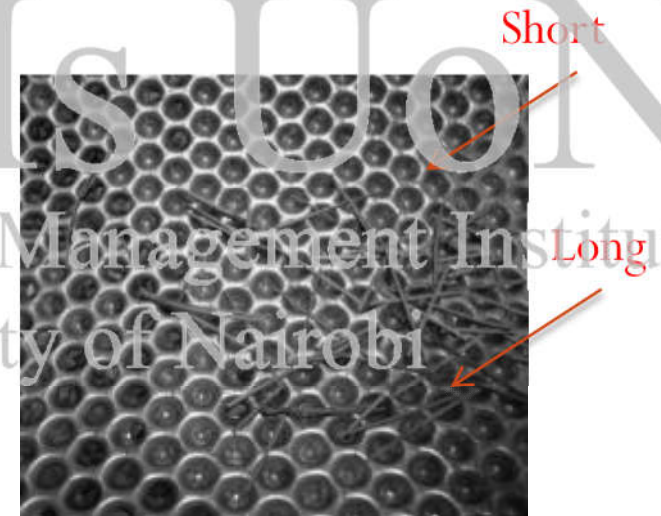
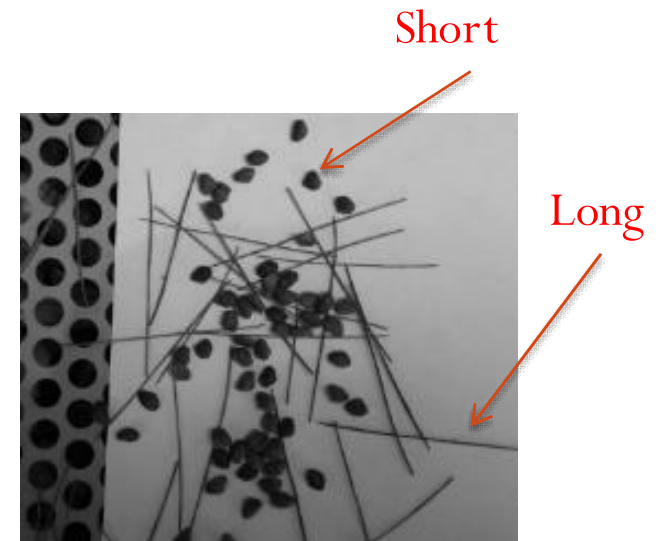


Cylindrical Screen Separator - Rotation



# Sizing – Length Separator

- Length separators are specifically designed to effect separations of particles differing in length
- Cylinder and disk separators are machines to separate seed on a pure length difference basis
- Both machines effect this separation by lifting the short particles out of a mixture containing both long and short particles
- Efficiency of length separation?





# Sizing – Length Separator/Cylinder

long rejected material out of the cylinder. Interior surface of cylinder is shown at right.

A: Indented Cylinder

B: Short

C: Long

D: Mixture

Indent sizes are listed in 64ths of an inch and come in a wide range. For example, a cylinder designated by the number 22 has indents 22/64th inch in diameter. There are no other figures or letters used to describe the indents. Also, there is no way to determine the shape or depth of the indent from the number. Examples of cylinder sizes used for some separations are given in an accompanying table.

Receiving trough: The receiving trough is a device to receive the liftings. The configuration of the receiving trough varies from machine to machine, but its function remains the same.





# Sizing – Length Separator/Disk

DISC  
SEPARATOR

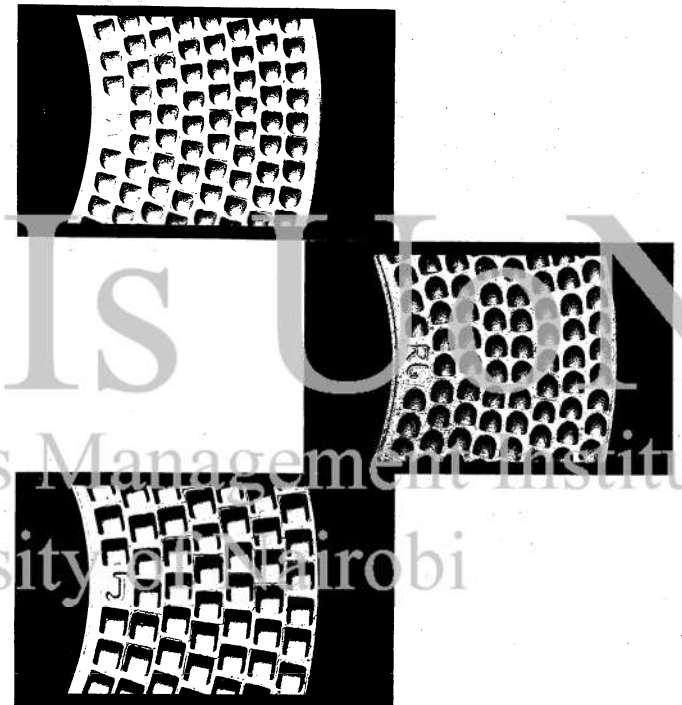


SECTION

Figure D15. Face and cross-section of a single disc.

lifting edge of the pocket (the bottom of the pocket is cup-shaped) so they tip out of the pocket.

The letter designation "V" is always followed by a number, such as V4, V5 1/2 or V6. The number indicates the width dimension in millimeters, i.e., a pocket designated as V4 is a pocket with a round lifting edge which is 4 mm. wide. "V" pockets seldom exceed 6 millimeters in width.



Type of disc pockets: V, R, and S

# Texture/Surface Separation

- Texture separator will separate mixtures of crop seed and contaminants that differ in surface texture
- Rough-surfaced, irregular contaminants – seed or inert material – are separated from the mass of smooth surfaced, regular shaped crop seed
- Roller or belt covered with velvet fabric can be used

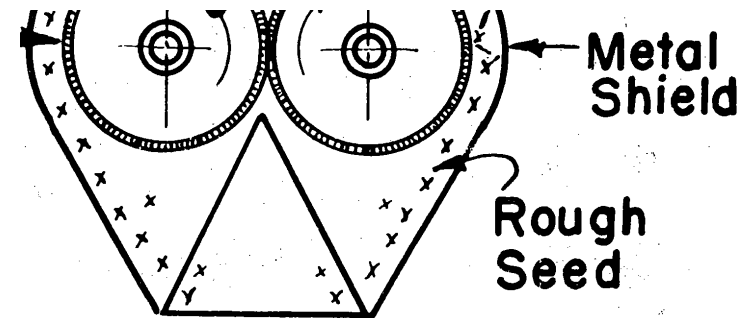


Figure F4. Cross-section of a pair of rolls illustrating movement of rough seed over rolls.

Seed must contact the velvet so all rough seed can be of the mixture. Over-feeding will flood the rolls, or crowd between the rolls and the shield and interfere with free movement of individual particles. This reduces the percentage of rough seed

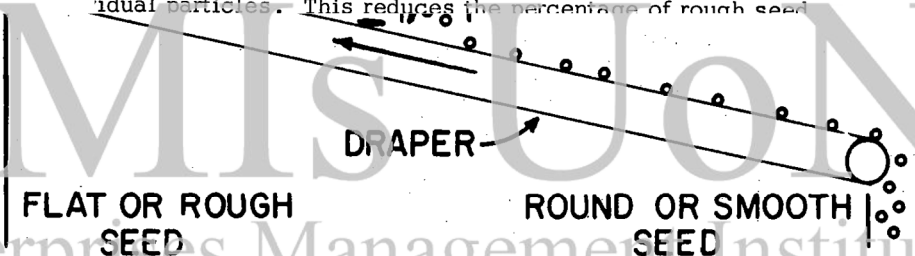


Figure F8. Schematic view of inclined draper illustrating principle of separation.

ing device which distributes seed in a thin layer across the of the moving inclined draper belt at a point near the center of its dimension. As the belt travels up-hill, the round or smooth seed

# Texture/Surface Separation

- Texture separator is a finishing machine and shall be used on seed that have already been processed on air-screen cleaner or other machines.
- There are used to clean smooth seed such as clovers, alfalfa and beans that are contaminated with rough surface weed seed, immature seeds that are wrinkled or shriveled, broken, chipped or damaged seed that have irregular surfaces, and rough and irregular shaped inert material.
- Examples of some separations made on texture separator:

## Crop Seed

Crimson Clover  
Alsike Clover  
Whole Seed  
Beans  
Vetch  
Hulled Lespedeza  
Clovers

## Contaminant Removed by Roll Mill

Cutleaf Cranesbill, Dock  
Timothy  
Broken Seed  
Dirt Clods  
Wild Winter Peas  
Unhulled Lespedeza  
Sorrel, Peppergrass, Foxtail  
Catchfly, Mustard, Cockle,  
Wild Carrot

# Questions?



OneLifeToEat

<http://onelifetoeat.com>

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