

Fruit Pump Versus Elevator: Effect on Fruit Firmness



Photo: Brian Mauza

Factors Effecting Fruit Firmness

- Variety
- Maturity
- Disease
- Harrow vs. Rotary Beater
- Float Time
- Pump vs. Elevator
- Cleaning Lines
- Freezer Capacity



Variety



Variety



Variety - Maturity

Oregon August 19th



Disease



Harrow vs. Rotary Beater



Float Time



Pump



Pump



Pump



Elevator



Cleaning Lines



Freezer Capacity



Firmness Matters

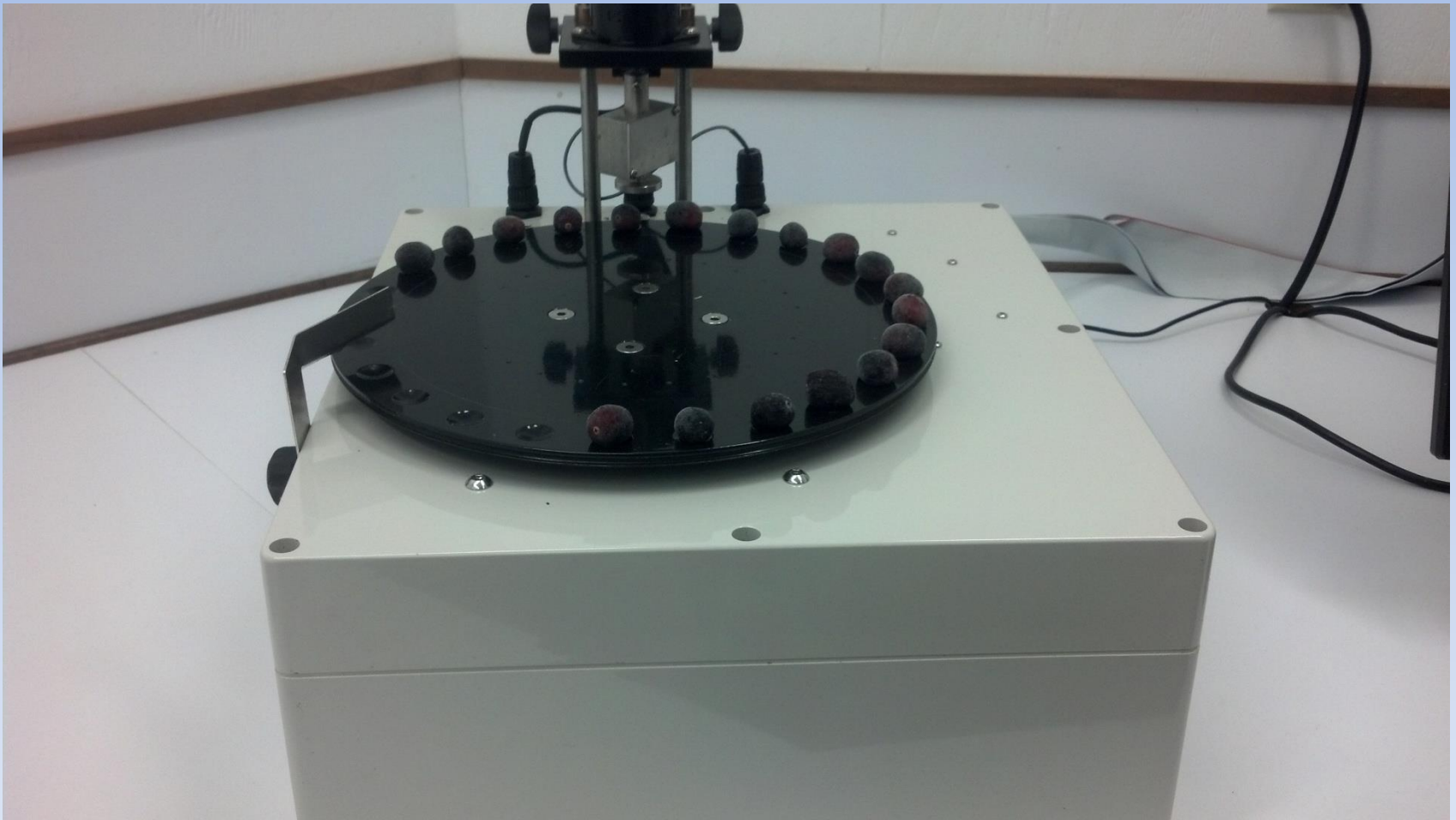
- **Sweet Dried Cranberries**
- Many factors contribute to the manufacturing efficiency of SDC products. One of these attributes is berry firmness; generally a higher average firmness results in a more efficient manufacturing process.

Firmness Matters

- **Juice Concentrate**
- **Soft fruit can crush under the weight of the load resulting in lost juice = weight for both the grower and handler.**



Firmness Measurement



Firmness Measurement

- Several growers participated in the collection of fruit samples for this project.
- Growers gathered a sample of fruit from the intake area of the loading equipment, i.e. pre-loader sample.
- As quickly as possible, a second sample was taken from the discharge area of the loading equipment, i.e. post-loader sample.
- The growers placed the samples into one gallon zip lock bags; which were identified with grower ID, bog ID, date and time information, the samples were then delivered to the receiving station.

Firmness Measurement

- Ten sample sets were gathered from both types of loading equipment for a total of twenty sample sets; ten sets from a fruit pump and ten sets from an elevator.
- The ten fruit pump sample sets were supplied by Sea Wind Farms. The ten elevator samples were supplied by Bob Donaldson (4) and Friday Farms (6).
- The samples were hand cleaned of any foreign material; i.e. leaves, stems, etc.
- 200 randomly chosen berries were processed through a Firmtech device to determine average berry firmness for each sample

Results

- The average reduction in firmness for the ten **pre and post** samples from the pump loader was 79 points.
- The average reduction in firmness for the ten **pre and post** samples from the elevator loader was 26 points.

Results

- The average reduction in firmness for the ten **pre flood** and post pump loader samples was 137 points.
- The average reduction in firmness for the ten **pre-flood** and post elevator loader samples was 100 points.