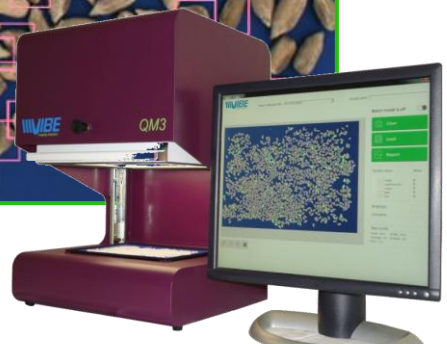


## SUNFLOWER Phenotyping



### Key Capabilities

- ✓ Absolute color characterization in Lab and RGB scales
- ✓ Grains counting
- ✓ Broken grains detection (%)
- ✓ 1,000 grains weight
- ✓ Grain and sample level dimensions and statistics:
  - ❖ Length
  - ❖ Width
  - ❖ Area
  - ❖ Length to Width ratio
- ✓ Color recognition:
  - ❖ Normal range
  - ❖ Damages
  - ❖ Abnormal colors
- ✓ Seeds grouping by size
- ✓ Results stored in Excel and SCV files for traceability and further analysis

### Additional Information

- ✓ Sample weight- up to 22 grams (~600 grains)
- ✓ 20 seconds analysis time
- ✓ 25 micron measurement accuracy
- ✓ 240 X 170 mm (9.5" X 6.7") Inspection area
- ✓ Advanced algorithm for high density sample
- ✓ 3,000 color pixels per grain
- ✓ High resolution industrial grade camera
- ✓ No minimum sample size

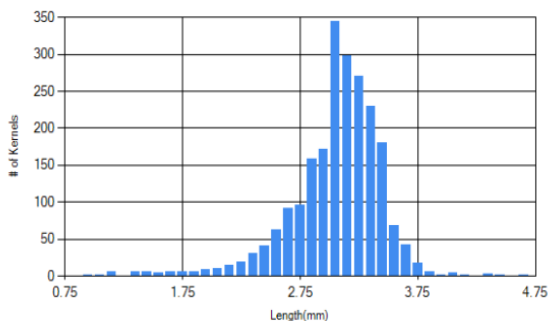
## User Main Report

Rice Type: Mixed (by LW Ratio)

|   | Type              | % Of Weight | % Of Kernels | # Of Kernels | % Of defined as fail | Min  | Max  |
|---|-------------------|-------------|--------------|--------------|----------------------|------|------|
| ▶ | Long              | 0.53        | 0.99         | 22           |                      | 3.00 | 8.00 |
|   | Medium            | 16.11       | 19.23        | 426          |                      | 1.90 | 3.00 |
|   | Short             | 81.50       | 76.79        | 1701         |                      | 1.00 | 1.90 |
|   | Broken            | 1.15        | 2.62         | 58           | 68                   |      |      |
|   | Size outlier      | 0.71        | 0.36         | 8            |                      |      |      |
|   | Total             | 100.00      | 100.00       | 2215         |                      |      |      |
|   | Total other types | 0.00        | 0.00         | 0            |                      |      |      |

Distribution

Length Width Area LW Ratio



Color Analysis

|   | Type            | % Of Weight | % Of Kernels | # Of kernels | % Of defined as fail | Min Threshold | Max Threshold |
|---|-----------------|-------------|--------------|--------------|----------------------|---------------|---------------|
| ▶ | Undefined Color | 0.33        | 0.36         | 8            | 80                   | 34            | 100           |
|   | White           | 0.31        | 0.27         | 6            | 40                   | 75            | 100           |
|   | Yellow          | 0.00        | 0.00         | 0            | 50                   | 88            | 119           |
|   | Red             | 0.03        | 0.05         | 1            | 30                   | 0             | 43            |
|   | Black           | 0.42        | 0.59         | 13           | 8                    | 0             | 46            |
|   | Green           | 0.00        | 0.00         | 0            | 20                   | 120           | 200           |

Dimentional Information

| Dimensional information        | Value |
|--------------------------------|-------|
| # Of kernels                   | 2215  |
| # Of whole kernels (WK)        | 2149  |
| % Whole kernels (WK)           | 97.02 |
| % Weight Of whole kernels (WK) | 98.14 |
| Average WK length (mm.)        | 3.00  |
| Average WK width (mm.)         | 1.81  |
| Average WK area (mm²)          | 4.05  |
| Average WK L/W ratio           | 1.71  |
| Weight 1,000 (gr.)             | 27.1  |
| Weight of sample (gr.)         | 6.00  |

## Statistical Report Per Sample

## Sample Report Per Grain

|    |                         |           |
|----|-------------------------|-----------|
| 1  | Date                    | 2018_3_11 |
| 2  | Time                    | 12:49:51  |
| 3  | InstrumentID            |           |
| 4  | ProductType             |           |
| 5  | CalibrationFile         |           |
| 6  | SWVersion               |           |
| 7  | SampleName              |           |
| 8  | SampleComments          |           |
| 9  | SampleError             |           |
| 10 | SampleWeight            |           |
| 11 | NumberOfParticles       |           |
| 12 | WKWeightPerc            |           |
| 13 | WKPerc                  | 97.02     |
| 14 | WKNumber                | 2149      |
| 15 | WeightOf1000Particles   | 2.71      |
| 16 | BrokenWeightPerc        | 1.15      |
| 17 | BrokenKernelsPerc       | 2.61851   |
| 18 | BrokenKernelsNumber     | 58        |
| 19 | BrokenThreshold         | 2.097481  |
| 20 | BrokenDefinedAsFailPerc | 68        |
| 21 | OutlierWeightPerc       | 1.861467  |
| 22 | OutlierKernelsPerc      | 2.979684  |
| 23 | OutlierNumber           | 8         |
| 24 | OutlierThresholdWidth   | 2.692867  |
| 25 | OutlierThresholdLength  | 4.152913  |
| 26 | OutlierThresholdArea    | 6.988145  |
| 27 | OutlierThresholdLW      | 2.603892  |
| 28 | SampleWidthAverage      | 1.775258  |
| 29 | SampleWidthMedian       | 1.840562  |
| 30 | SampleWidthSTDEV        | 0.288652  |
| 31 | SampleLengthAverage     | 3.053979  |

| ID | Size Class | Width    | Length   | LW       | Area     | EstimatedWeight | ModeRgbR | ModeRgbG | ModeRgbB |
|----|------------|----------|----------|----------|----------|-----------------|----------|----------|----------|
| 1  | WK         | 0.75     | 2.125    | 2.833333 | 1.184687 | 0.00156         | 142.44   | 104.59   | 70.00    |
| 2  | WK         | 1.625    | 2.5      | 1.538462 | 2.964375 | 0.003488        | 188.26   | 150.41   | 101.00   |
| 3  | WK         | 1.900669 | 3.046637 | 1.602929 | 4.136562 | 0.001665        | 196.23   | 160.37   | 101.00   |
| 4  | WK         | 1.728665 | 2.684521 | 1.552945 | 3.344063 | 0.005468        | 186.27   | 145.43   | 92.00    |
| 5  | WK         | 2.15343  | 3.161103 | 1.467939 | 4.672187 | 0.007422        | 188.26   | 154.39   | 118.00   |
| 6  | WK         | 1.8125   | 3.125    | 1.724138 | 4.036875 | 0.001625        | 200.21   | 163.36   | 101.00   |
| 7  | WK         | 1.850859 | 3.284942 | 1.77482  | 4.539375 | 0.007211        | 191.25   | 162.36   | 101.00   |
| 8  | WK         | 2.0625   | 3.1875   | 1.545455 | 4.854063 | 0.00771         | 200.21   | 164.36   | 101.00   |

## 3D Grain color distribution

