

A decorative pattern of white-outlined squares of various sizes is scattered across the dark blue background. Some squares are solid dark blue, while others are hollow white outlines. They are arranged in a non-uniform, abstract pattern.

Report on CSITC RT Trash Results

James Knowlton
USDA, AMS, Cotton Program

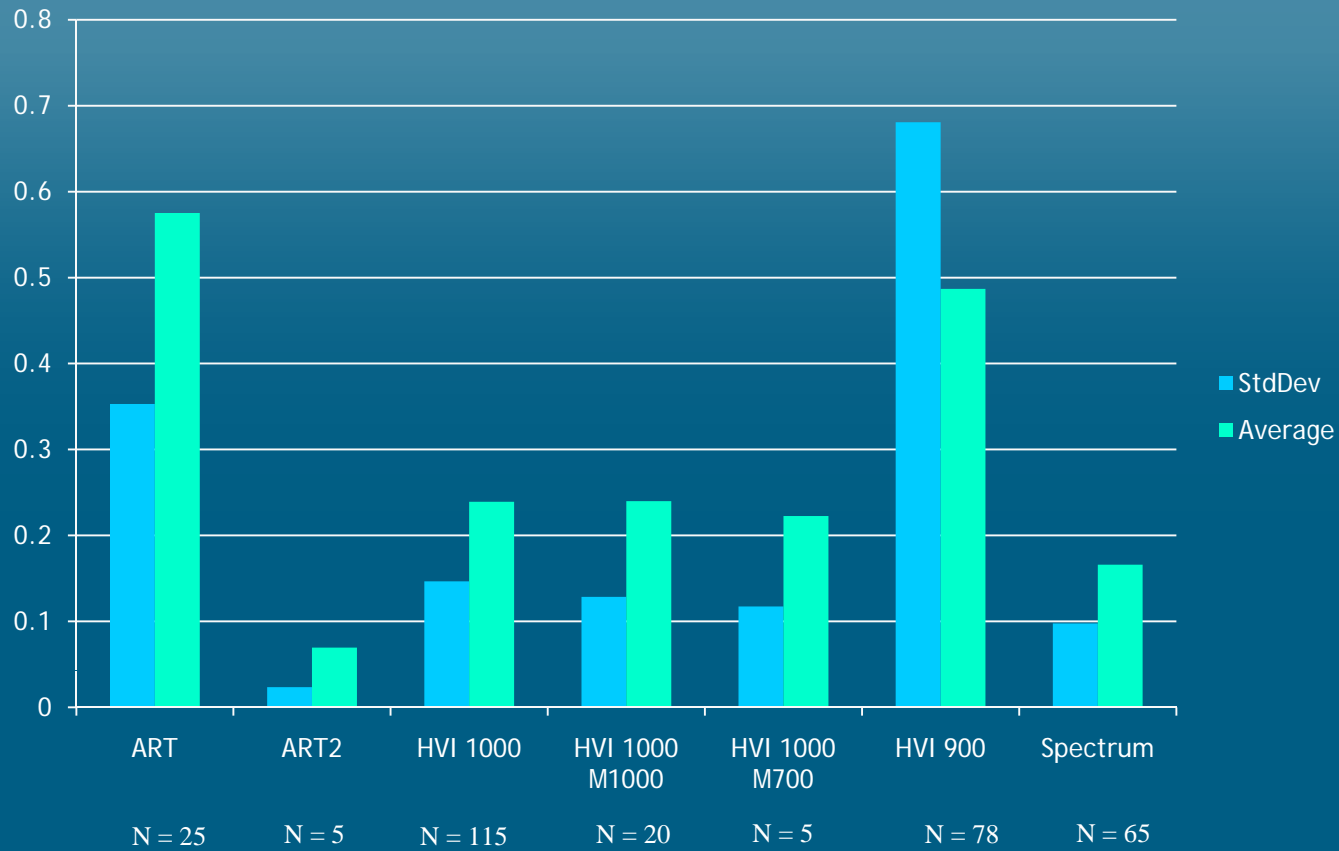
Overall Trash Results (2011-1)

| Trash Count | | | | | | | | |
|--|--|------|----------|----------|----------|----------|--------------|----------|
| | | | Cotton 1 | Cotton 2 | Cotton 3 | Cotton 4 | Average | Cotton 5 |
| Average of Instruments (Grubbs) | | | 13.694 | 14.077 | 24.253 | 13.927 | | 17.052 |
| Number Of Instruments | | | 72 | 72 | 72 | 72 | 72 | 72 |
| Inter-Instrument Variation | based on 30 tests | SD | 6.416 | 7.147 | 9.661 | 6.558 | 7.445 | 8.031 |
| | | CV % | 46.9 | 50.8 | 39.8 | 47.1 | 46.1 | 47.1 |
| | | SD | 6.490 | 7.465 | 10.075 | 6.827 | 7.714 | 8.111 |
| | based on 6 tests | CV % | 47.4 | 53.0 | 41.5 | 49.0 | 47.8 | 47.6 |
| | | SD | 6.834 | 7.858 | 10.650 | 7.112 | 8.138 | 8.445 |
| | based on single tests | CV % | 49.9 | 55.8 | 43.9 | 51.8 | 50.4 | 49.6 |
| Typical within-instrument Variation (Median) | between different days with each 6 tests | SD | 1.721 | 1.831 | 2.417 | 1.629 | 1.900 | 1.788 |
| | | CV % | 12.6 | 13.0 | 10.0 | 11.7 | 11.8 | 10.2 |
| | between single tests on one day | SD | 2.430 | 2.222 | 3.610 | 2.414 | 2.674 | 2.911 |
| | | CV % | 17.7 | 15.8 | 14.9 | 17.5 | 16.5 | 16.5 |
| | between all tests on different days | SD | 3.087 | 3.352 | 4.726 | 3.189 | 3.588 | 3.421 |
| | | CV % | 22.5 | 23.8 | 19.5 | 22.9 | 22.2 | 20.1 |

| Trash Area | | | | | | | | |
|--|--|------|----------|----------|----------|----------|--------------|----------|
| | | | Cotton 1 | Cotton 2 | Cotton 3 | Cotton 4 | Average | Cotton 5 |
| Average of Instruments (Grubbs) | | | 0.173 | 0.143 | 0.315 | 0.149 | | 0.199 |
| Number Of Instruments | | | 72 | 72 | 72 | 72 | 72 | 72 |
| Inter-Instrument Variation | based on 30 tests | SD | 0.054 | 0.044 | 0.083 | 0.058 | 0.055 | 0.059 |
| | | CV % | 31.5 | 30.7 | 26.3 | 25.5 | 28.5 | 29.4 |
| | | SD | 0.056 | 0.046 | 0.097 | 0.045 | 0.061 | 0.063 |
| | based on 6 tests | CV % | 32.1 | 32.2 | 30.6 | 29.9 | 31.2 | 31.8 |
| | | SD | 0.065 | 0.055 | 0.117 | 0.056 | 0.073 | 0.077 |
| | based on single tests | CV % | 37.9 | 38.4 | 37.0 | 37.3 | 37.6 | 36.5 |
| Typical within-instrument Variation (Median) | between different days with each 6 tests | SD | 0.033 | 0.028 | 0.051 | 0.026 | 0.035 | 0.032 |
| | | CV % | 19.1 | 19.7 | 16.3 | 17.1 | 18.0 | 16.3 |
| | between single tests on one day | SD | 0.049 | 0.030 | 0.077 | 0.033 | 0.047 | 0.051 |
| | | CV % | 28.3 | 21.2 | 24.3 | 22.4 | 24.1 | 26.7 |
| | between all tests on different days | SD | 0.065 | 0.046 | 0.093 | 0.048 | 0.063 | 0.065 |
| | | CV % | 37.8 | 31.9 | 29.5 | 32.5 | 32.9 | 32.5 |

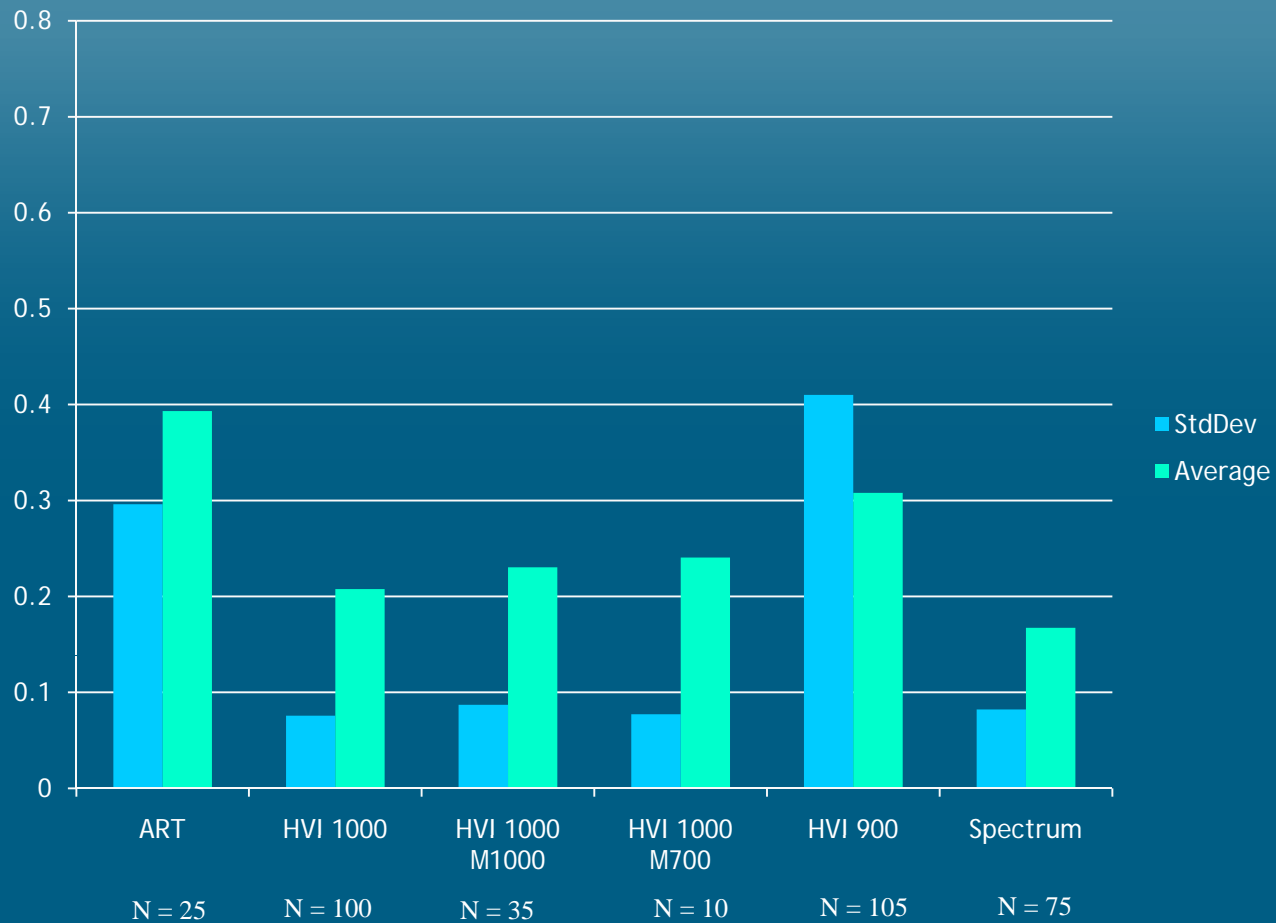
CSITC RT 2010-4

Trash Percent Area Results



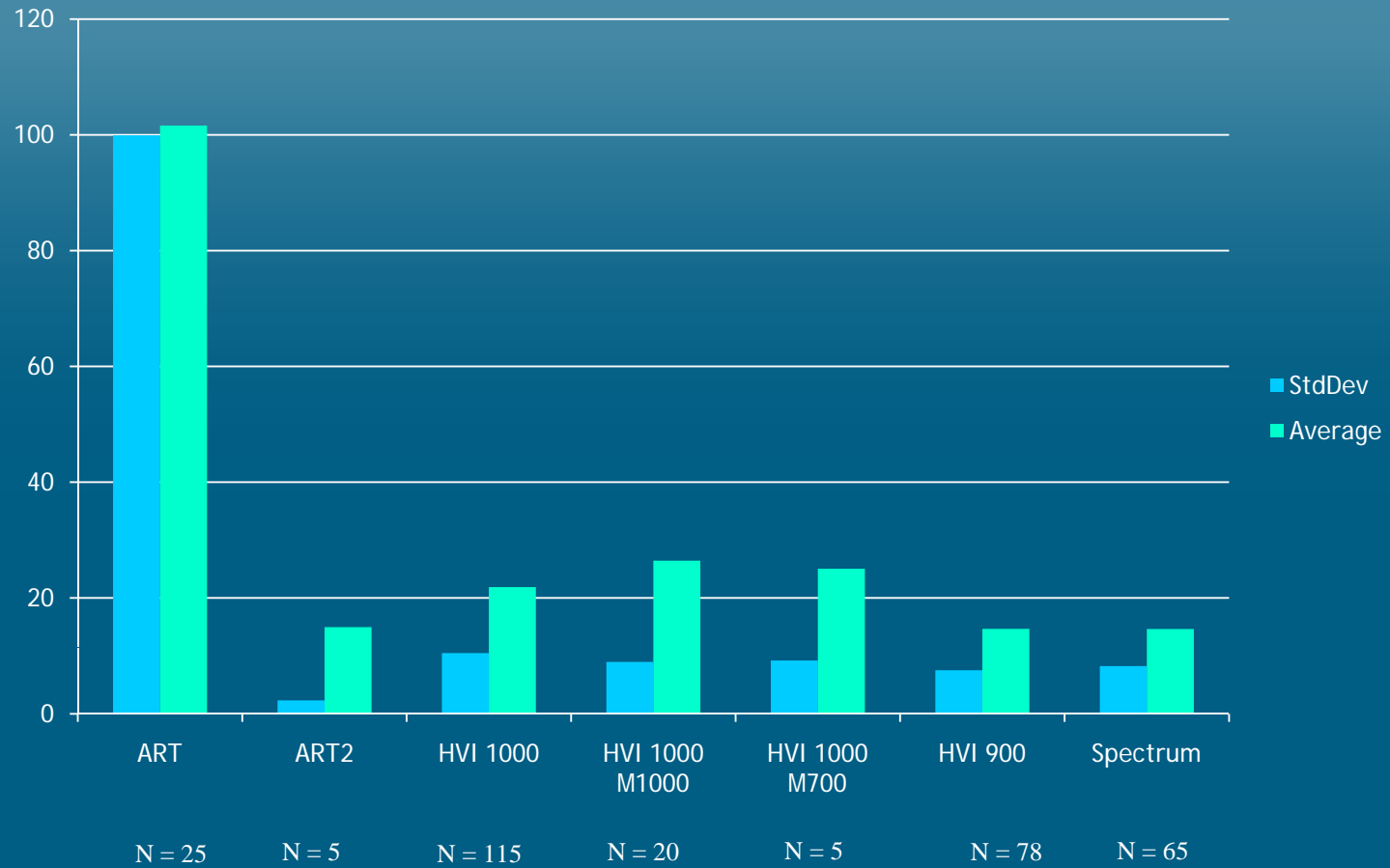
CSITC RT 2011-1

Trash Percent Area Results



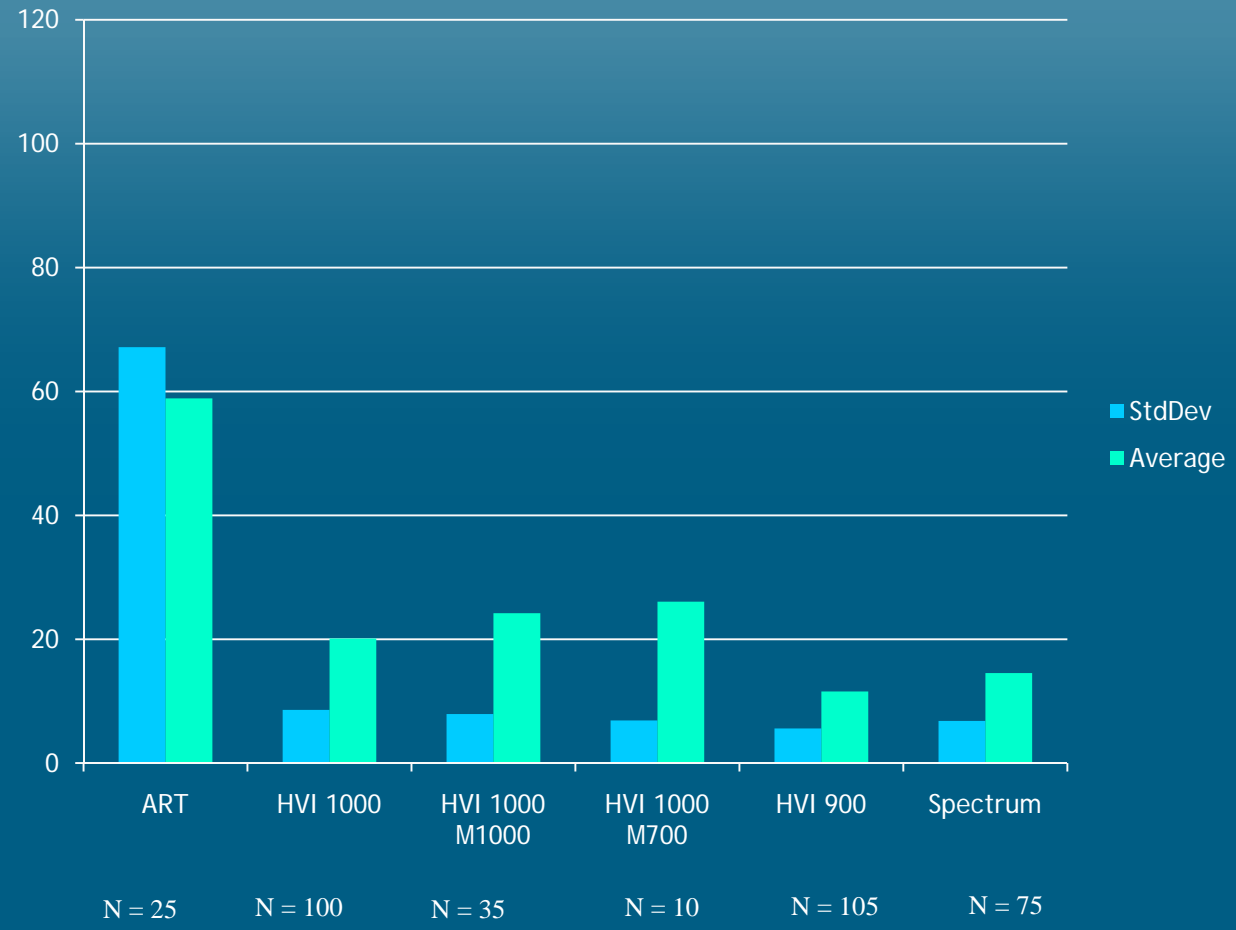
CSITC RT 2010-4

Trash Particle Count Results



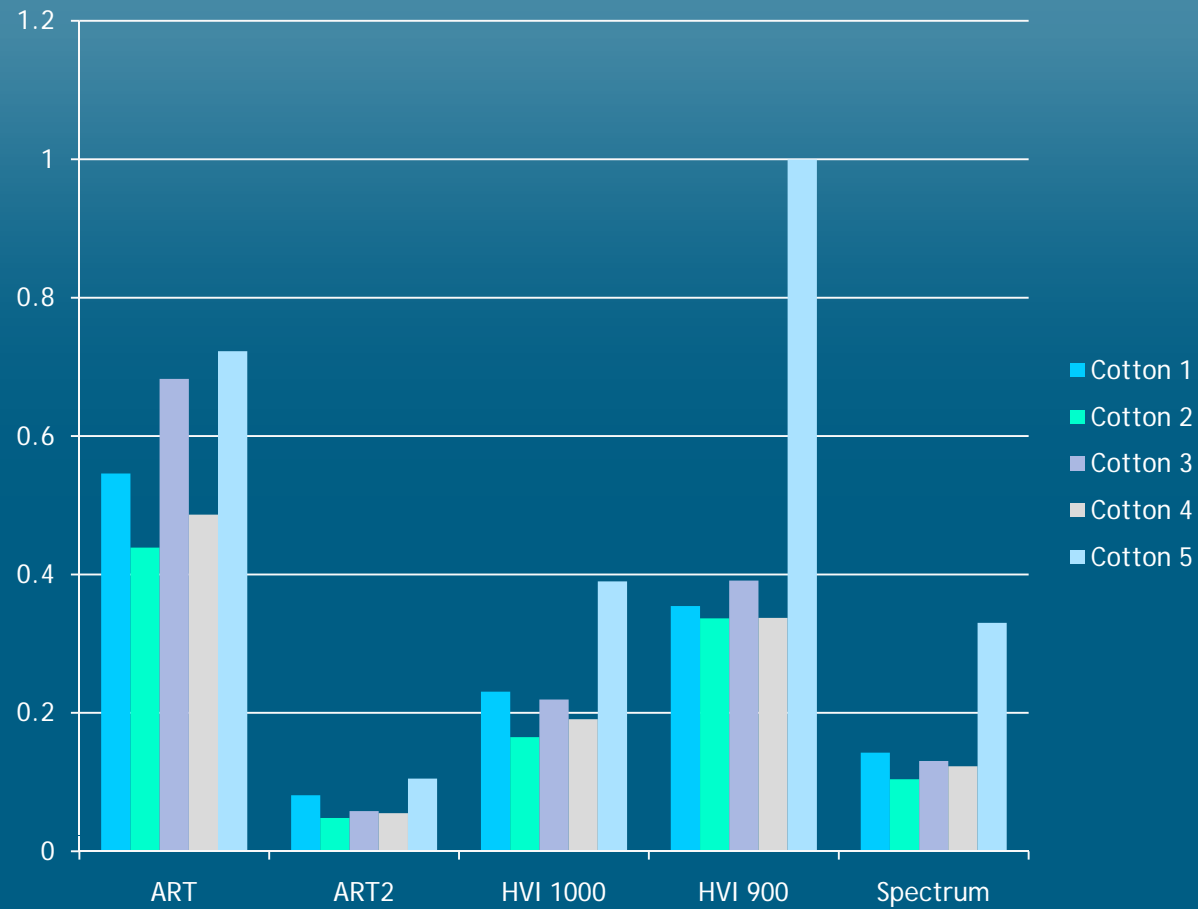
CSITC RT 2011-1

Trash Particle Count Results



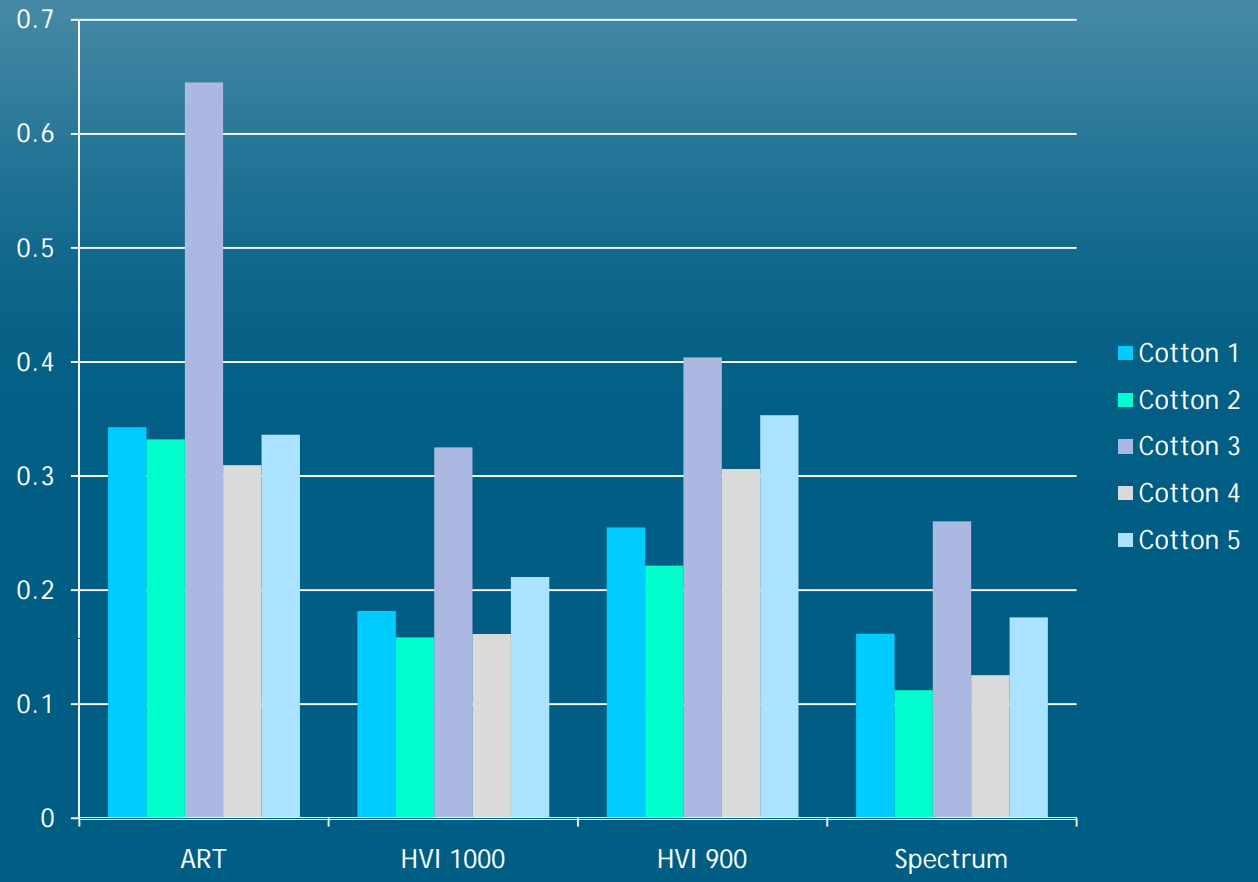
CSITC RT 2010-4

Trash Percent Area Results



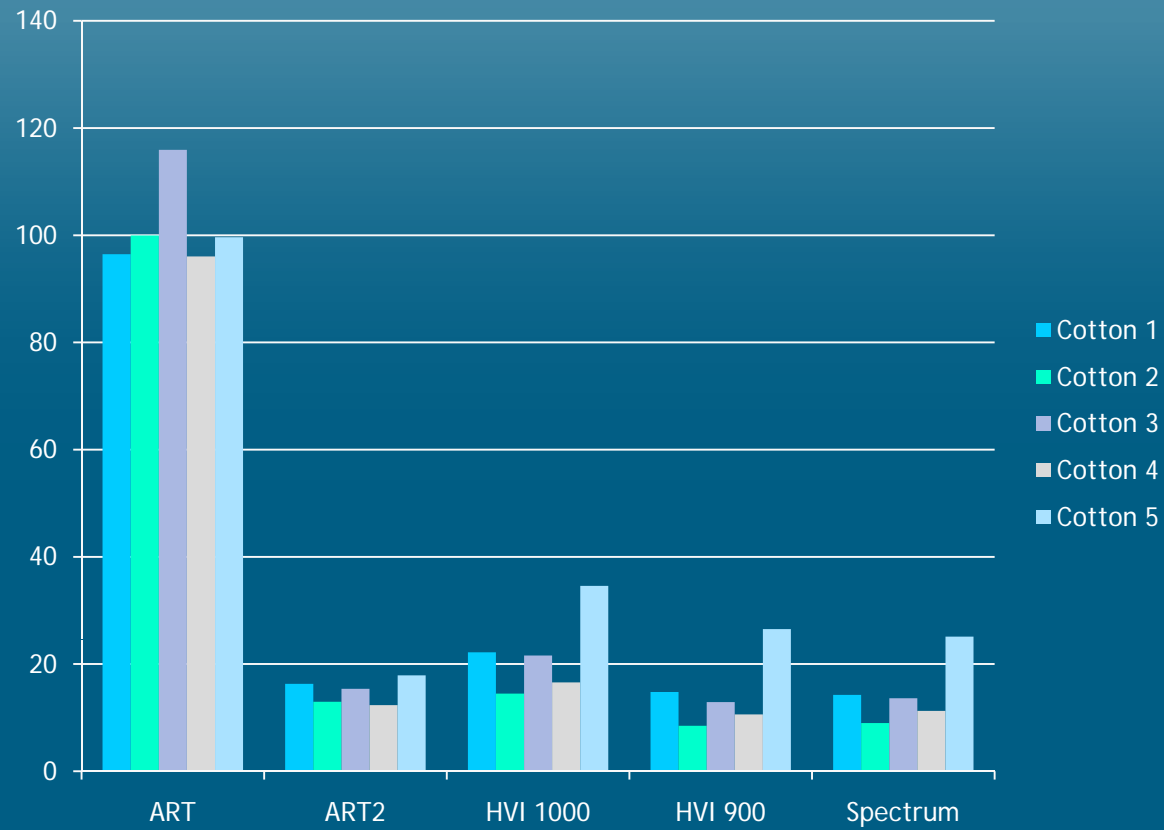
CSITC RT 2011-1

Trash Percent Area Results



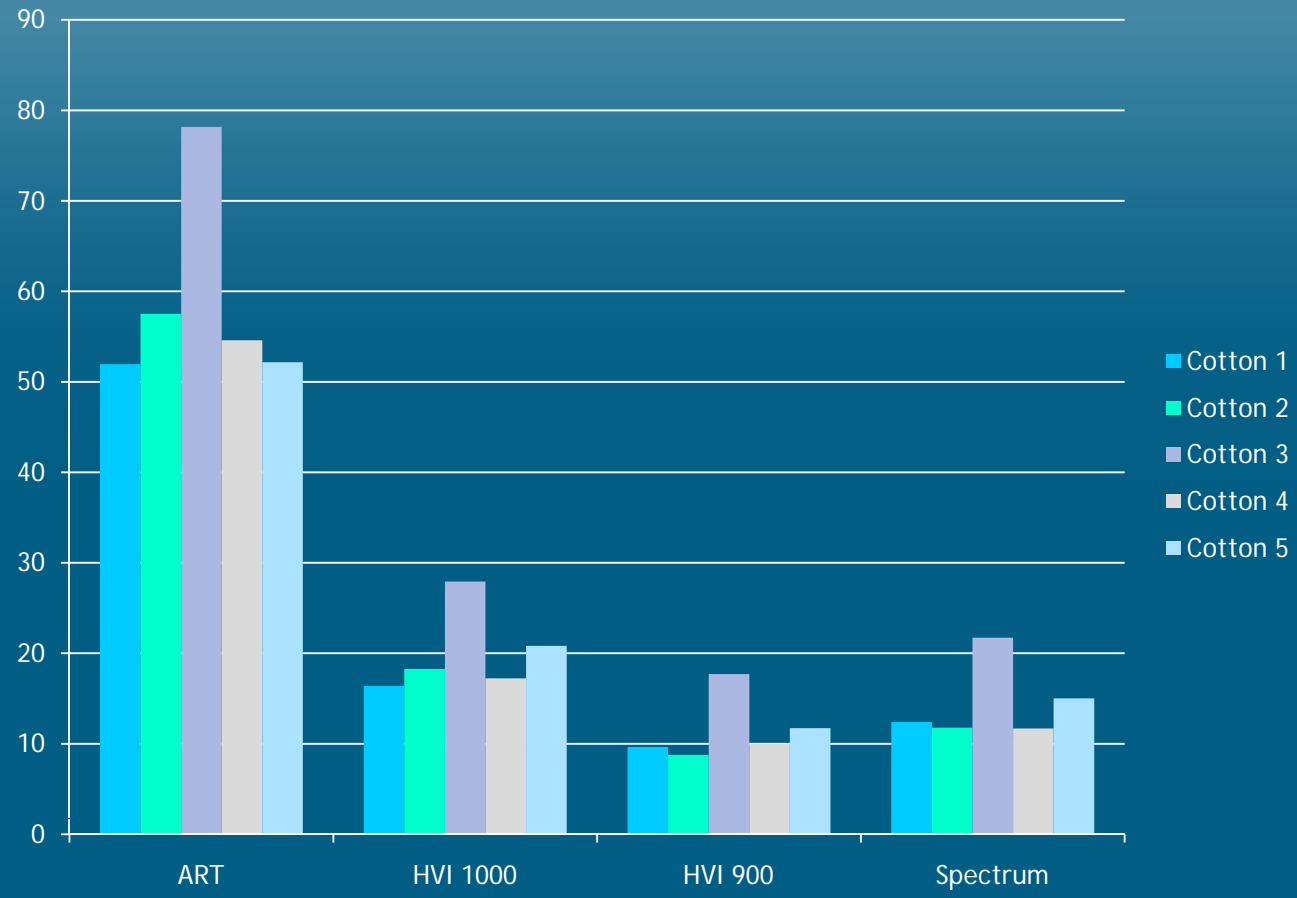
CSITC RT 2010-4

Trash Particle Count Results



CSITC RT 2011-1

Trash Particle Count Results





USDA Trash Tolerances

- Extreme range of trash measurements requires a floating tolerance
 - Area Tol. = $\text{Area} * 0.235 + 0.031$
 - Count Tol. = $\text{Count} * 0.22 + 3.2$
 - Overall USDA Trash Reproducibility for 2010 Crop
 - Area: 87%
 - Count: 92%

Results Relative to USDA Trash Tolerances (RT 2010-4)

Trash Percent Area

| | Average | Std Dev | USDA Tolerance |
|----------|---------|---------|----------------|
| ART | 0.575 | 0.353 | 0.166 |
| ART2 | 0.069 | 0.023 | 0.047 |
| HVI 1000 | 0.239 | 0.147 | 0.087 |
| HVI 900 | 0.487 | 0.681 | 0.145 |
| Spectrum | 0.166 | 0.098 | 0.070 |

Trash Particle Count

| | Average | Std Dev | USDA Tolerance |
|----------|---------|---------|----------------|
| ART | 101.6 | 99.9 | 25.6 |
| ART2 | 15.0 | 2.3 | 6.5 |
| HVI 1000 | 21.9 | 10.5 | 8.0 |
| HVI 900 | 14.7 | 7.5 | 6.4 |
| Spectrum | 14.6 | 8.2 | 6.4 |

Results Relative to USDA Trash Tolerances (RT 2011-1)

Trash Percent Area

| | Average | Std Dev | USDA Tolerance |
|----------|---------|---------|----------------|
| ART | 0.393 | 0.296 | 0.123 |
| HVI 1000 | 0.208 | 0.076 | 0.080 |
| HVI 900 | 0.308 | 0.410 | 0.103 |
| Spectrum | 0.167 | 0.082 | 0.070 |

Trash Particle Count

| | Average | Std Dev | USDA Tolerance |
|----------|---------|---------|----------------|
| ART | 58.9 | 67.2 | 16.2 |
| HVI 1000 | 20.1 | 8.6 | 7.6 |
| HVI 900 | 11.6 | 5.6 | 5.7 |
| Spectrum | 14.5 | 6.8 | 6.4 |