



BoMill

Add value to your Grain

IQ Seed Sorter 1002

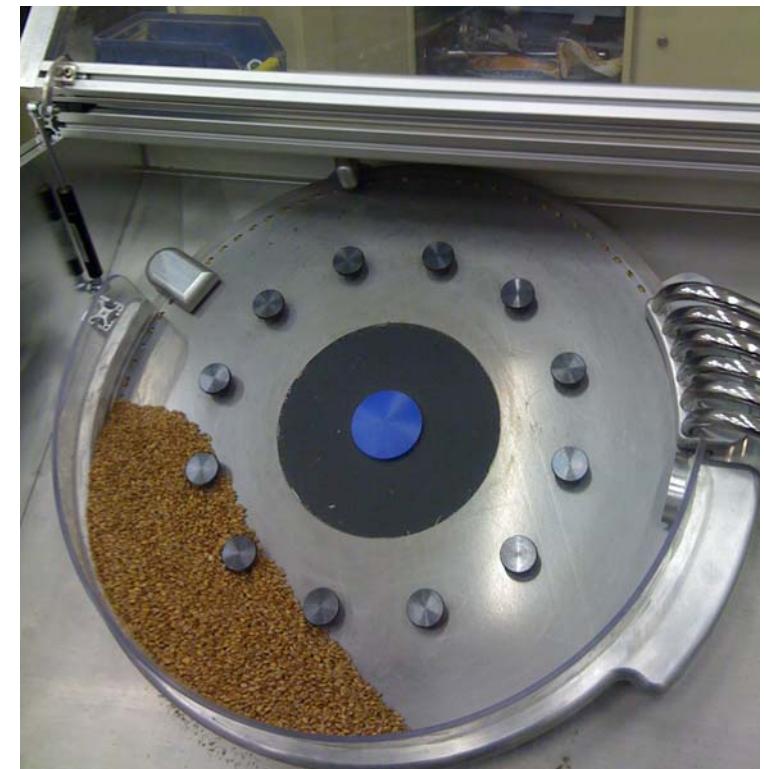
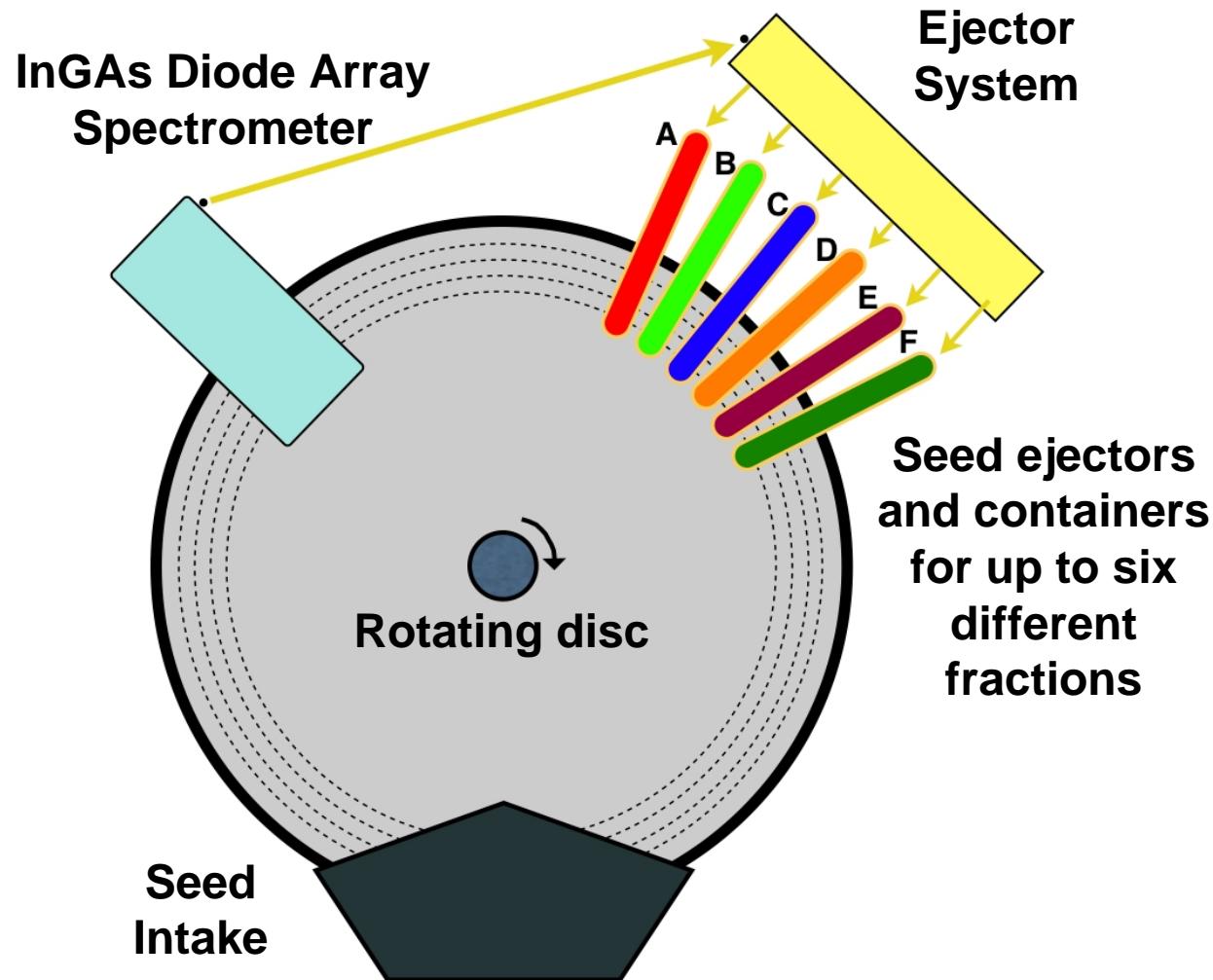
**Rotating disc for
singulation of the
seeds.**

**Capacity 1000+
kernels/min**

**6 different quality
fractions**

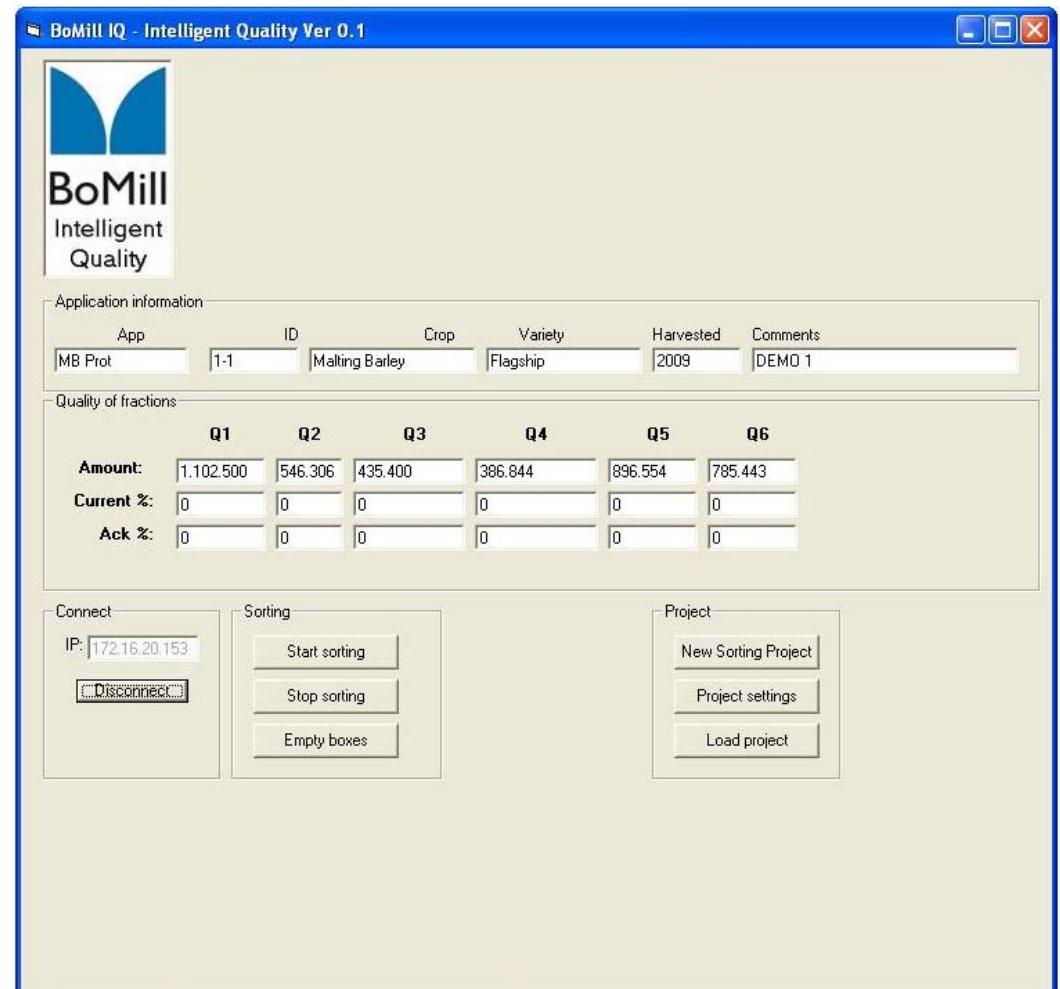
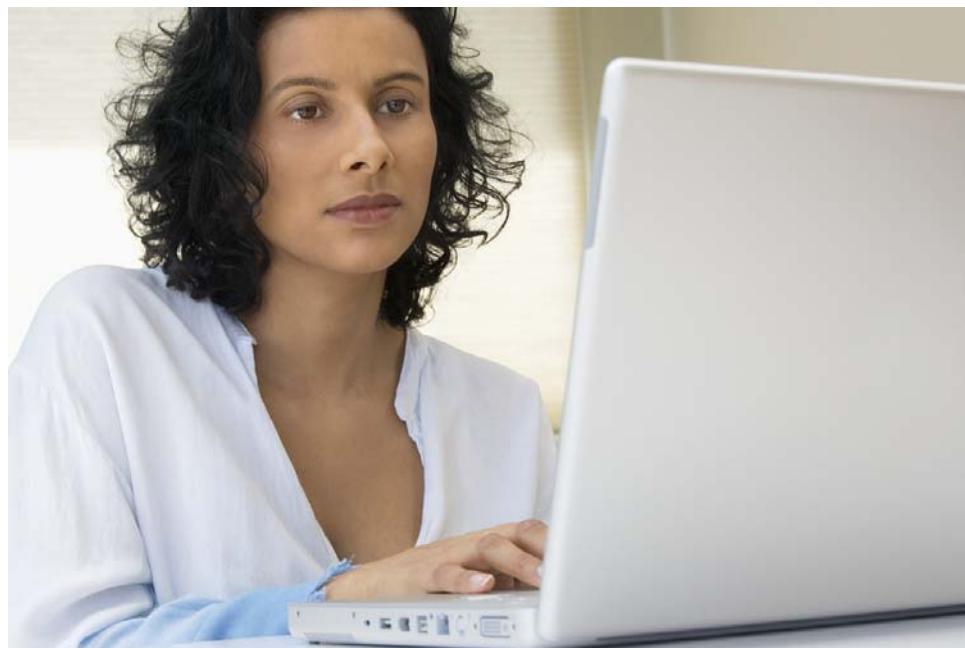
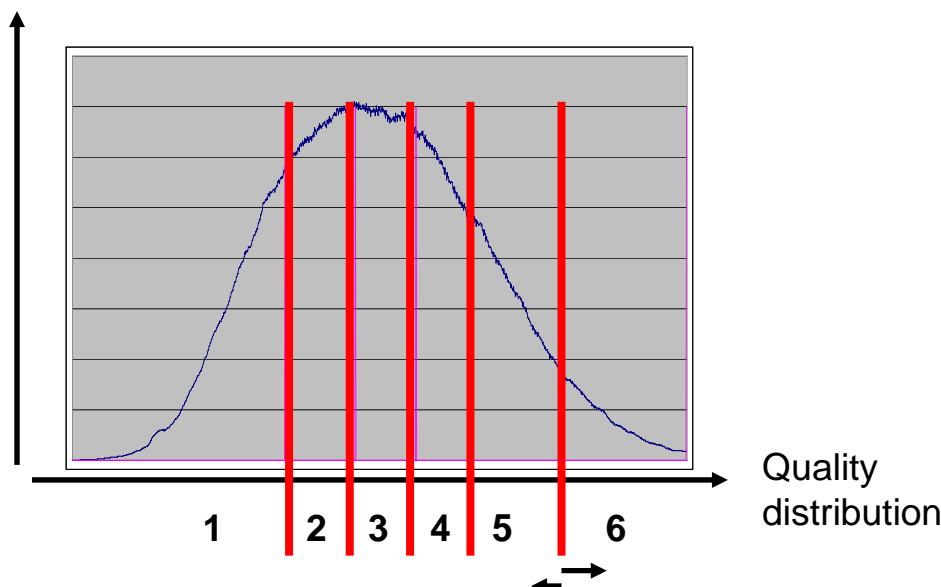


IQ Seed Sorter



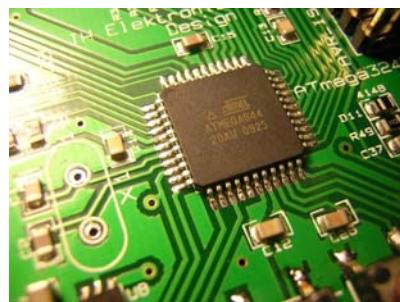
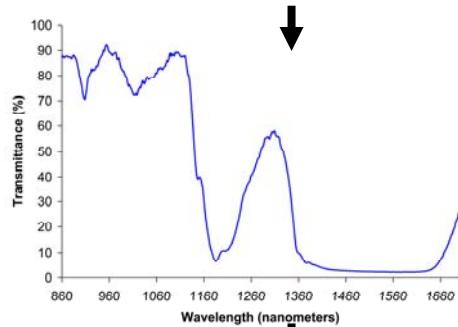
Easy and intuitive software

Number of kernels

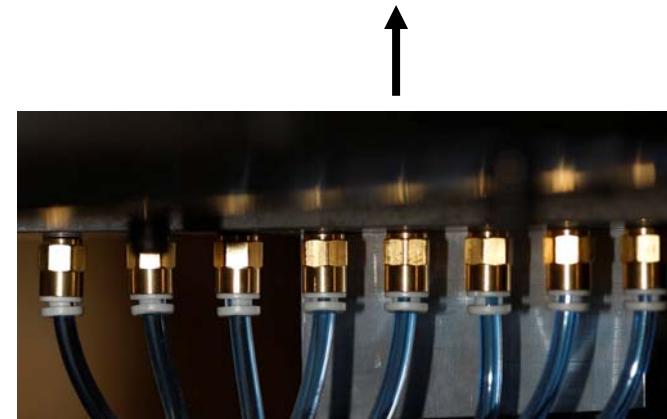


Singulation – Illumination – Spectra – Processor – Ejector – Sorting container

- Six (6) outlets for the different qualities



1

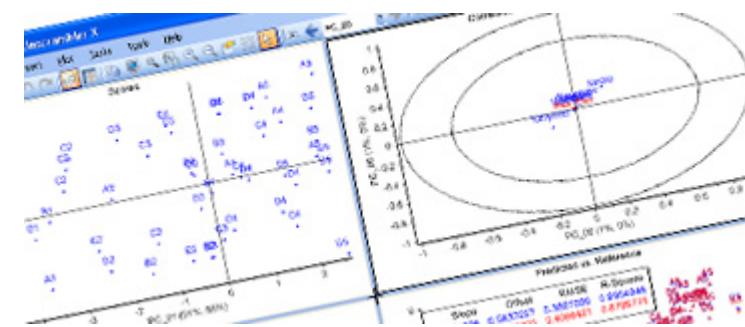
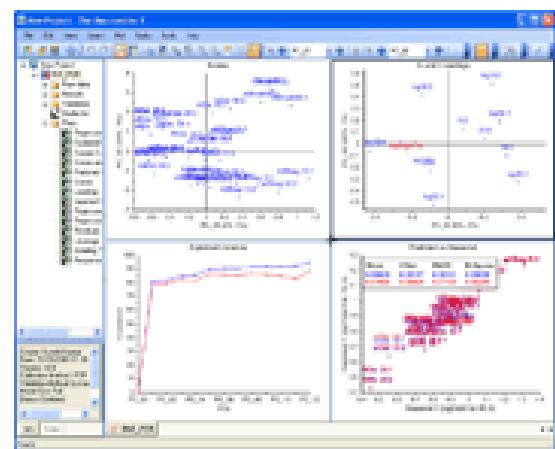
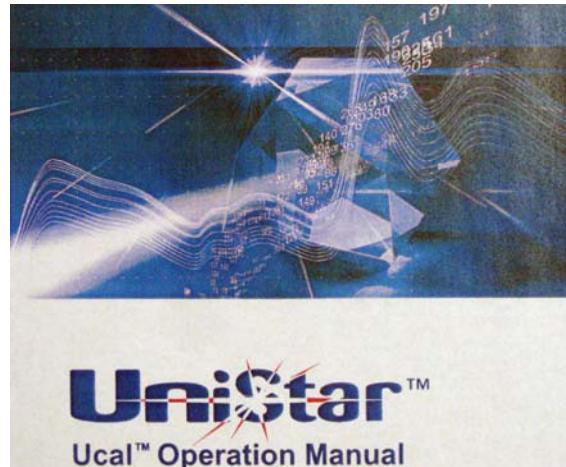


2

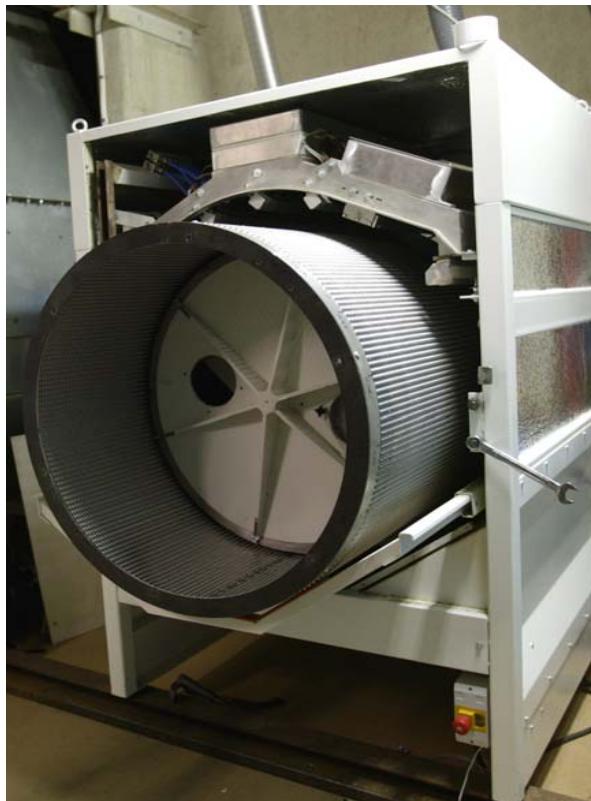


6

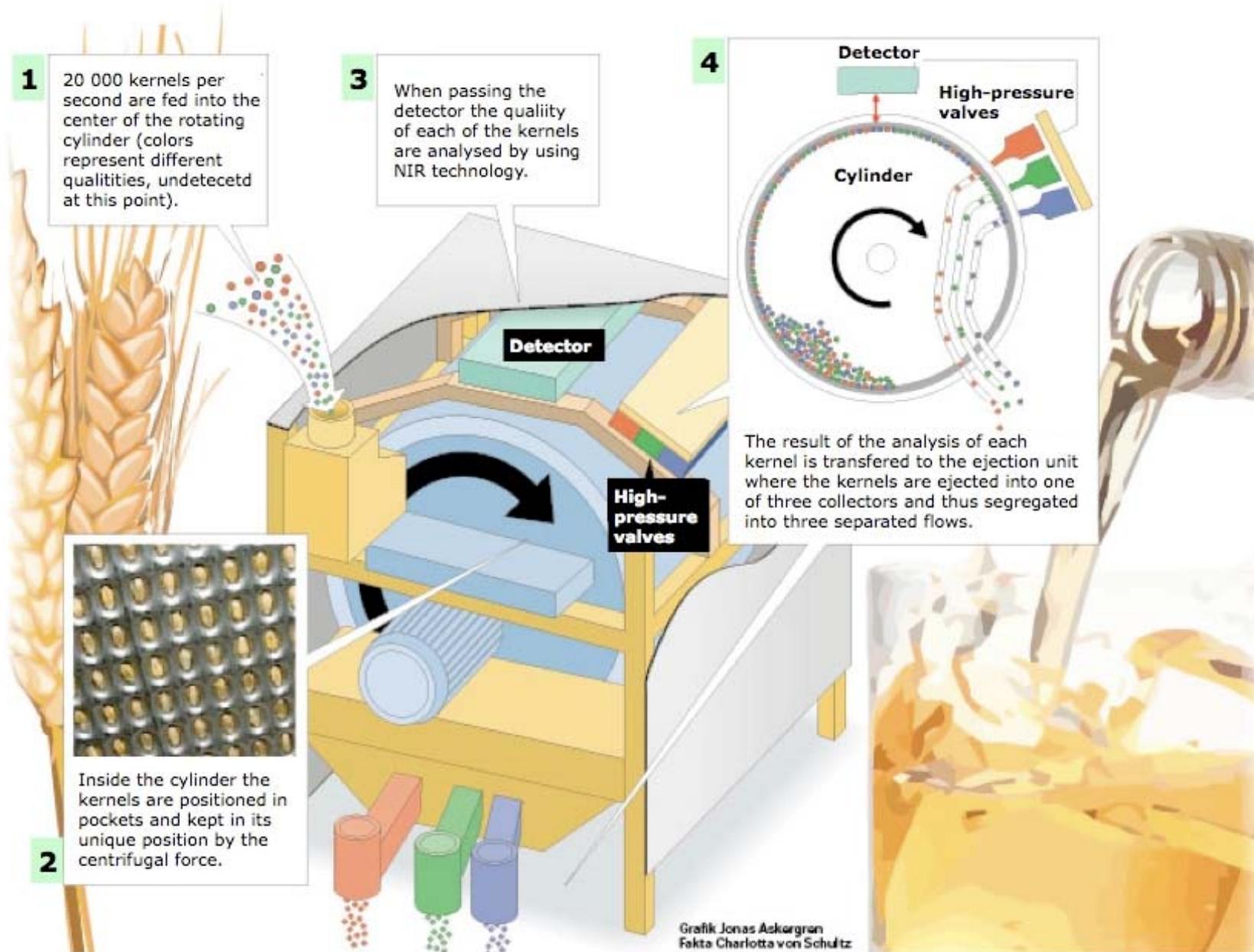
Applications from BoMill or by using commercial software like Unscrambler or U-Cal



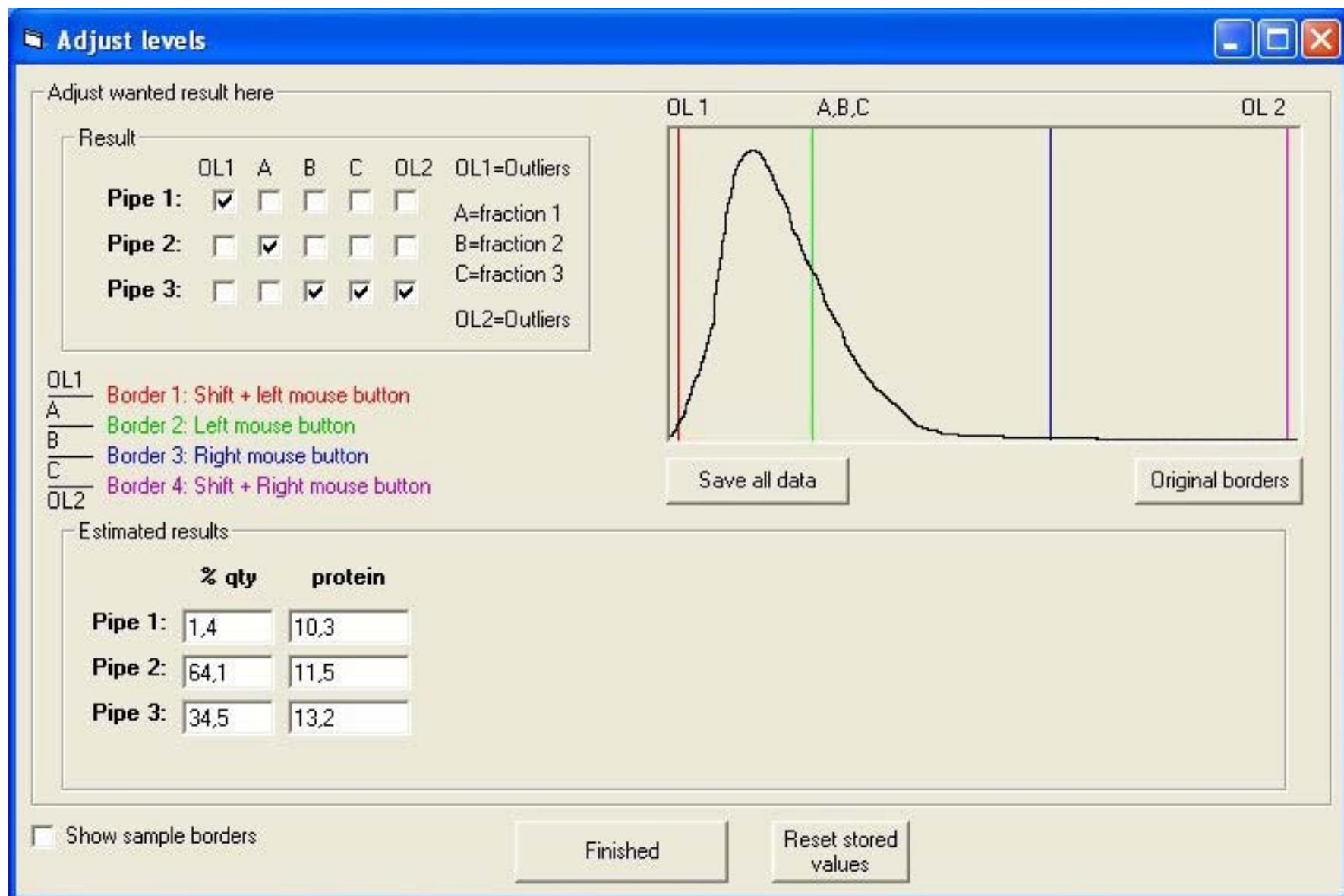
TriQ 30 sorting 3 ton/h



TriQ Sorting Machine



Setting the sorting criteria



Examples of applications within breeding

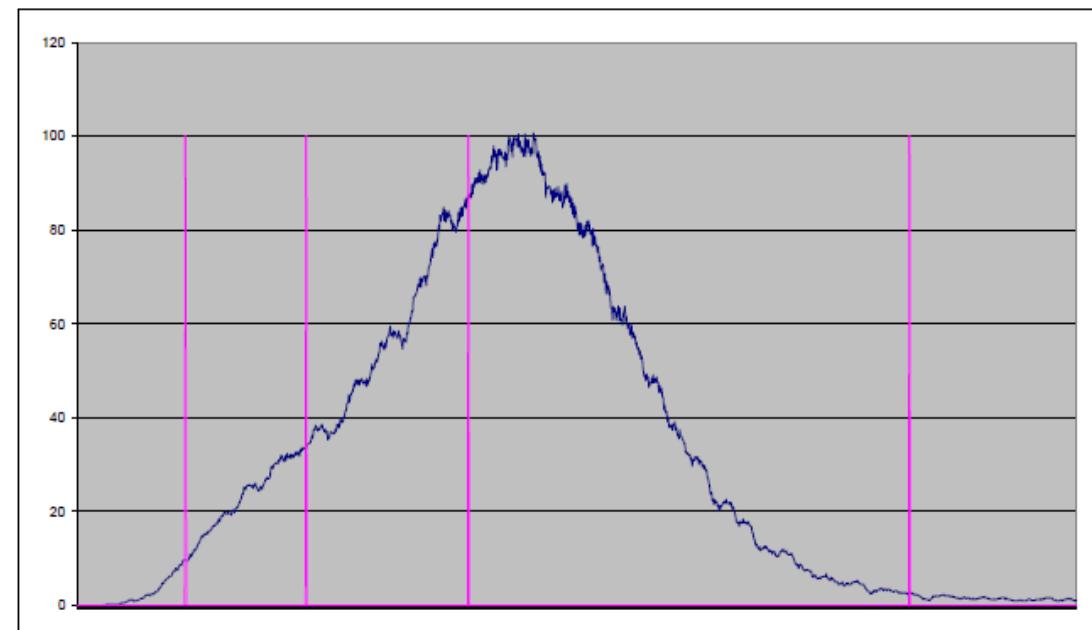
- Sort for fusarium resistance
- Sort for chemical composition
- Clean the seeds before official trial



Fusarium infected wheat



| | Protein (%) | DON PPB | Yield (%) |
|---------------|----------------|------------|--------------|
| Unsorted | 12.2 | 1470 | |
| Fraction 1 | 10.4 | 2710 | 1.9 |
| 2 | 10.7 | 570 | 13.7 |
| 3 | 12.0 | 240 | 33.8 |
| 4 | 12.9 | 120 | 50.5 |



ELISA Test RIDA Quick DON R-Biopharm AG
Infratec for protein determinations

TriQ sorting NIR spectra

| | Unsorted | Fraction 1 | Fraction 2 | Fraction 3 | Fraction 4 |
|---------------|----------|---------------|---------------|---------------|---------------|
| DON (ppb) | 1390 | 9600 | 1340 | 430 | 290 |
| TKW (gram) | 42.2 | 34.5 | 41.6 | 42.3 | 43.8 |
| Yield | - | 3% | 20% | 44% | 33% |



Homogenized Seed Winter Wheat (low germination)

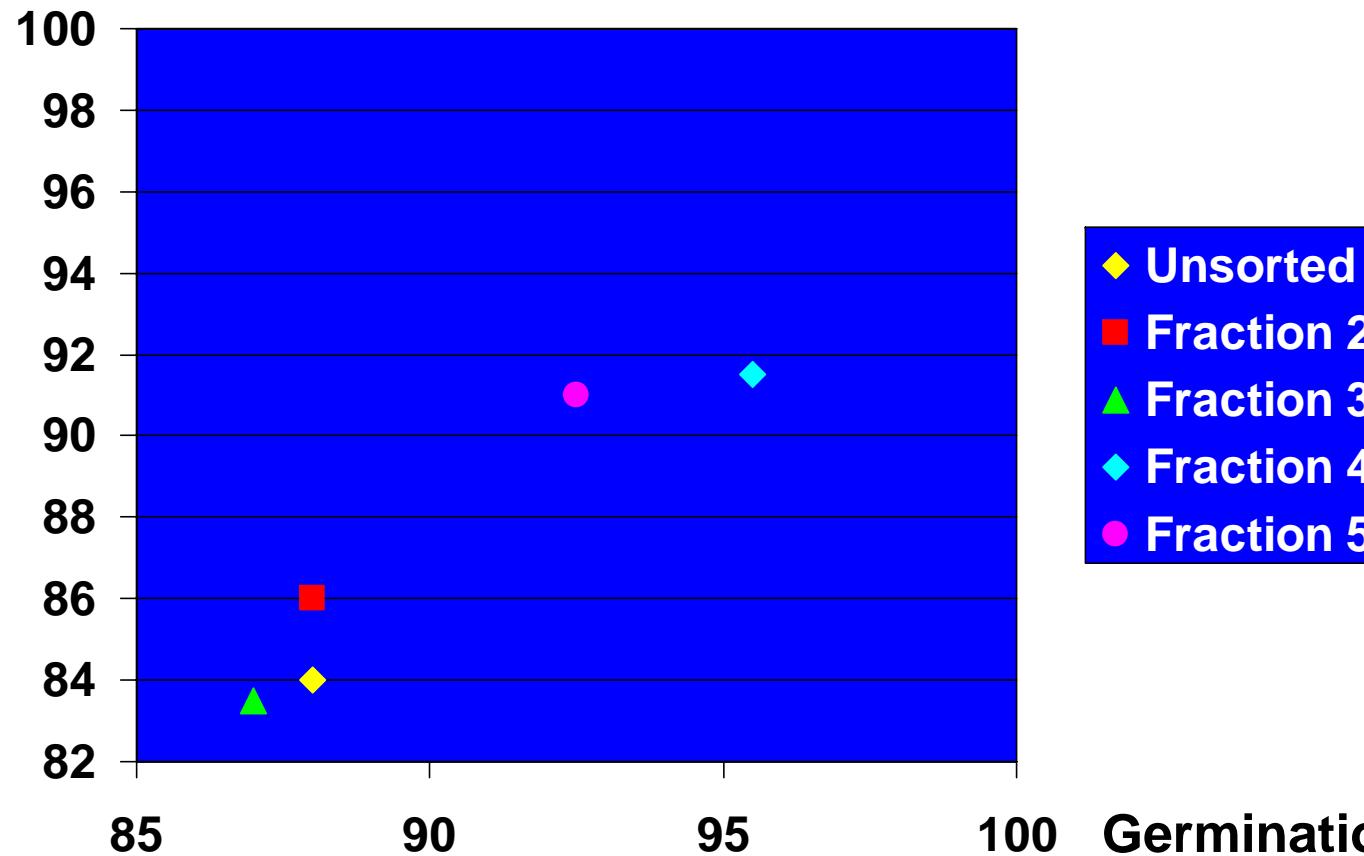
(Sorted on vitreousness, Agronom)

| | TKW | 72 h germination | 192 h germination | Vitreousness | Yield |
|---------------|------|---------------------|----------------------|--------------|-------|
| Unsorted | 42 | 84% | 88% | 80% | - |
| Fraction 1 | 35.6 | - | - | 51% | 1.3% |
| 2 | 40.1 | 86% | 88% | 56% | 7.3% |
| 3 | 42.5 | 83.5% | 87% | 63% | 25.7% |
| 4 | 44.1 | 91.5% | 95.5% | 81% | 48.2% |
| 5 | 43.1 | 91% | 92.5% | 90% | 17.5% |



Homogenized seed better seed capacity

Germination 72 h



Germination 192 h

Increase vigourness and viability

**Big difference
in vigourness**



**Some difference
in viability**

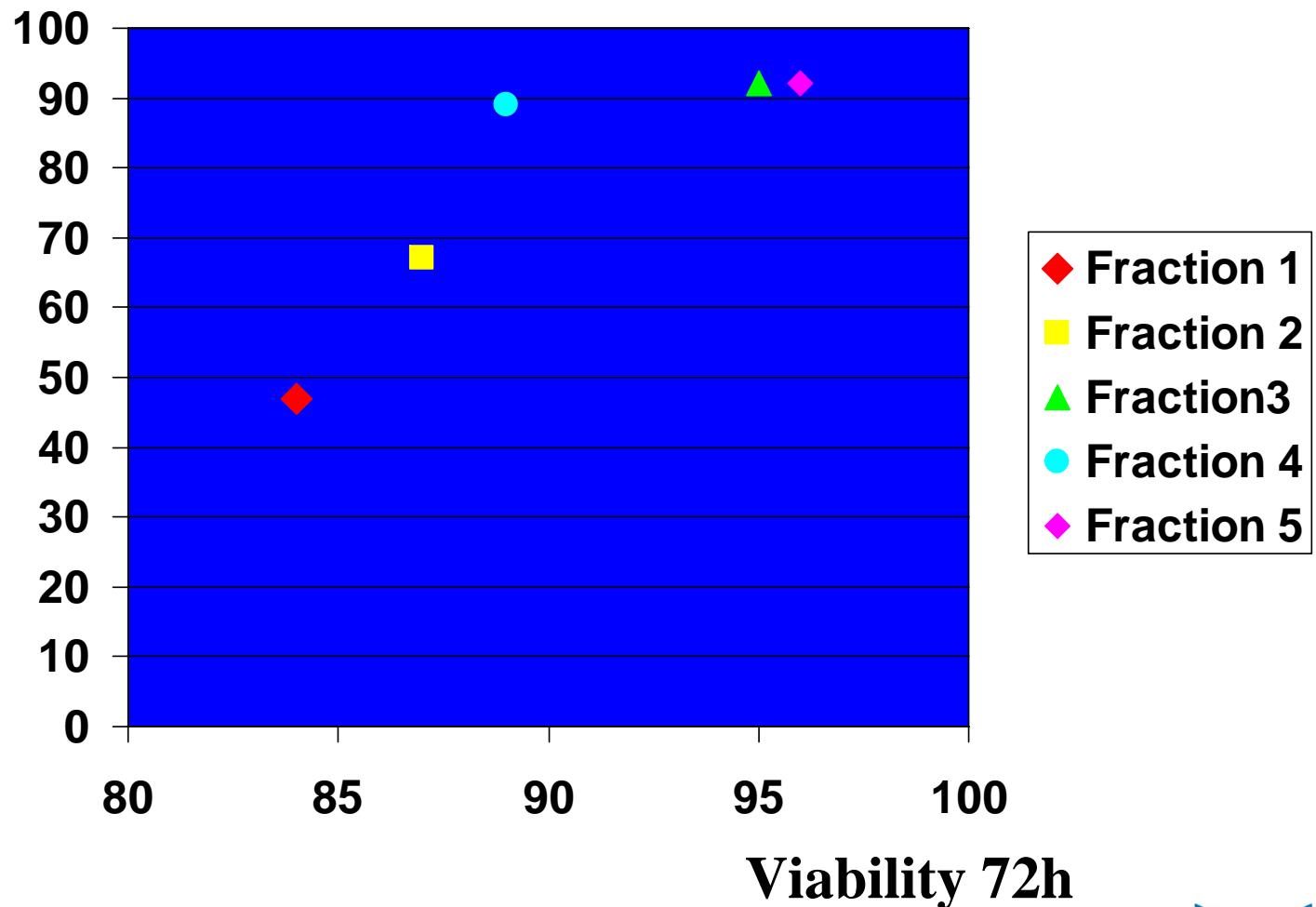


Germinative Quality through Vigourness and Viability

Extract goes up and β -glucan goes down

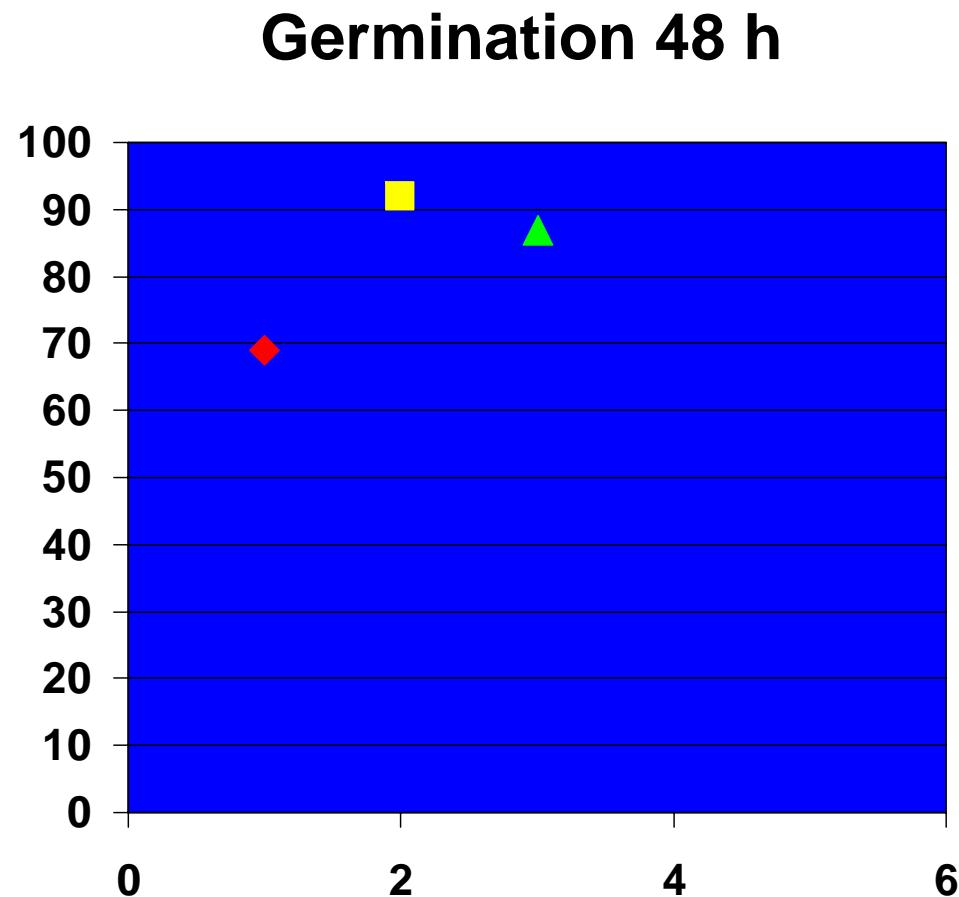
Vigourness 24h

| Fraction | Yield |
|----------|-------|
| 1 | 8% |
| 2 | 8% |
| 3 | 8% |
| 4 | 8% |
| 5 | 68% |



Viability 72h

Vigourness Sorting Swedish Spring Wheat



Fraction 1
Yield 20%



Fraction 2
Yield 70%



Fraction 3
Yield 10%

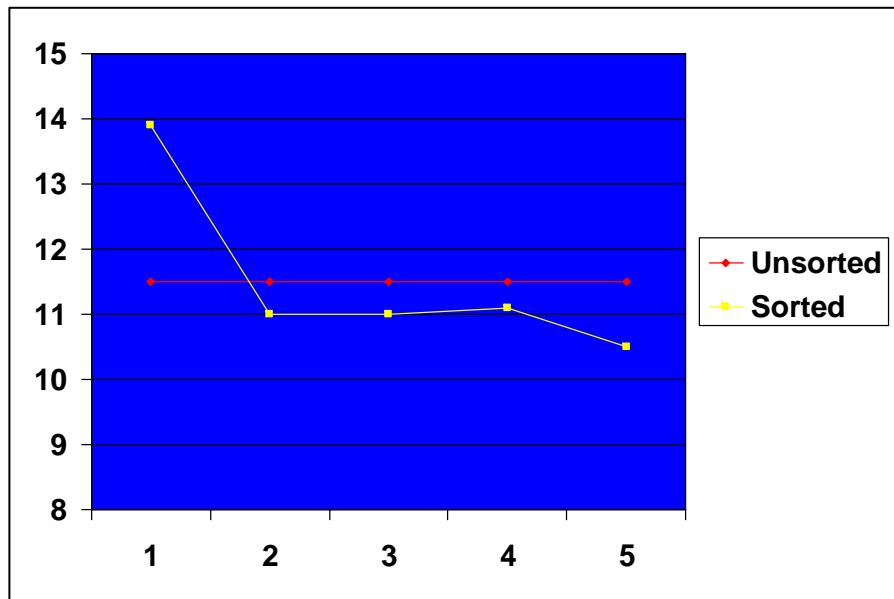
Seed for Organic Wheat & Barley

- High vigourness and viability improves the competitiveness with the weed seeds
- Vigourness and viability is correlated to seed borne diseases and infections

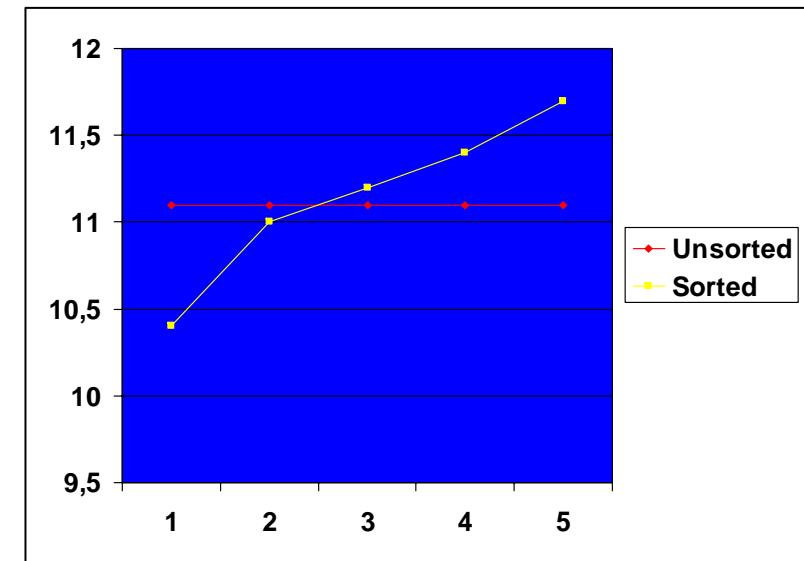


Different germination rate in the fractions (test at SW Seed, malting barley Tipple)

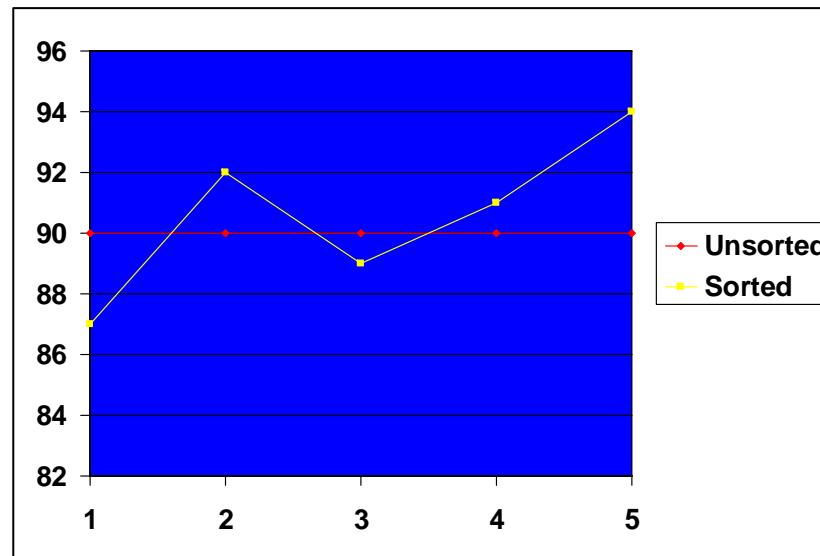
Ergosterol ppm



Protein %

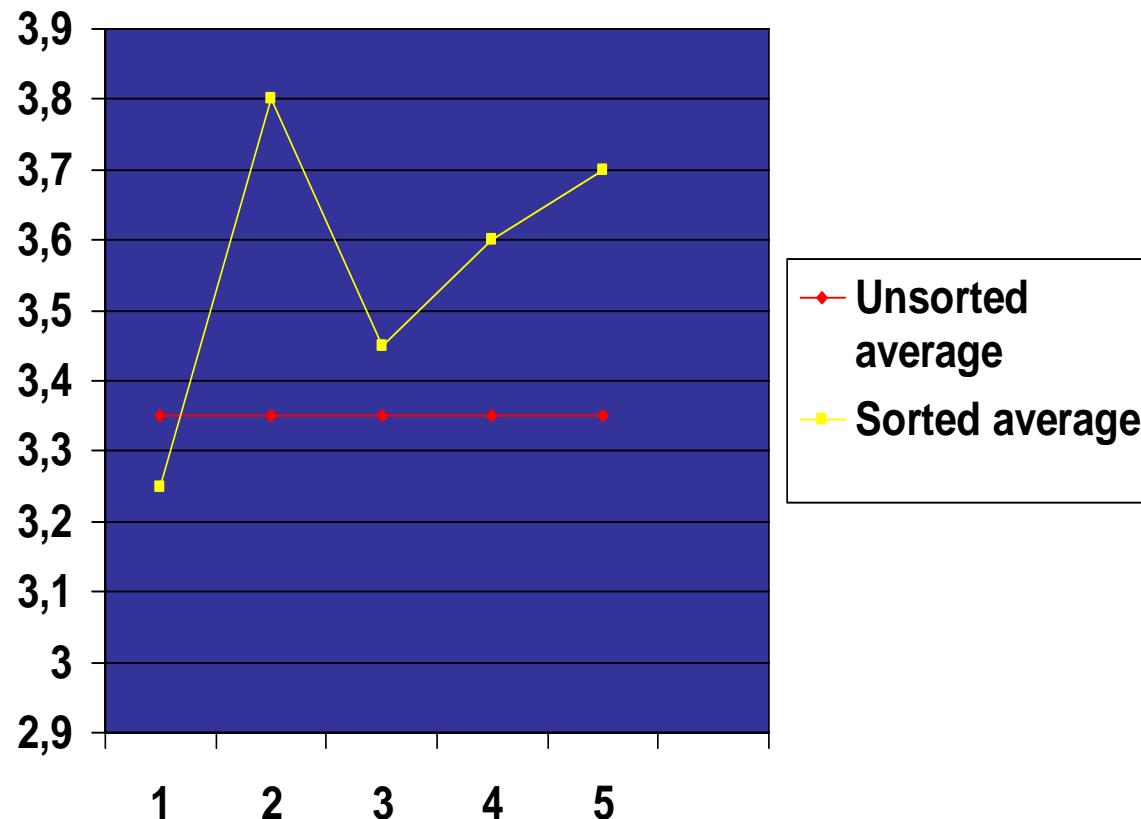


Germinated kernels, 3 days



Field yield is different in the fractions (average yield in three different parcells)

tonnes/ha



Expanded tests & evaluations 2011

- SW Seed: winter wheat, spring barley, spring wheat
- Sejet: spring wheat
- Nordic Seed: spring barley



- Sort on vigourousness & viability
- Evaluate field yield

Growing Season

- High protein kernels travelled business class
- Low protein kernels have had a hard time

Protein sorting gives:

- Better vitality
- Better germination
- Less fusarium
- Less diseases
- Higher TKW
- Higher field yield





BoMill

Add value to your Grain