



Q₂ System

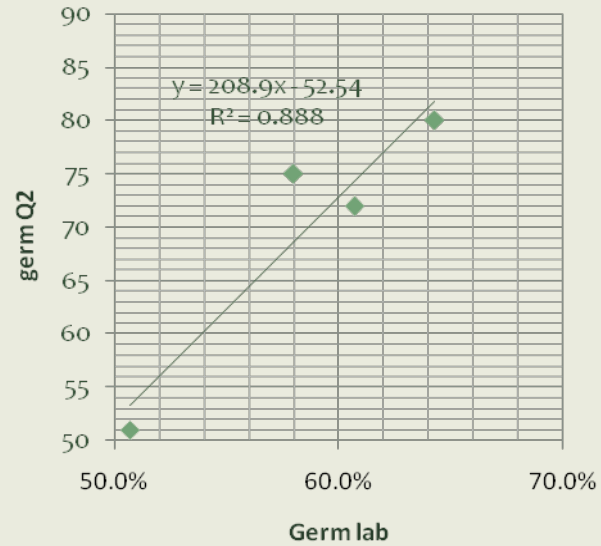
RR Analytical



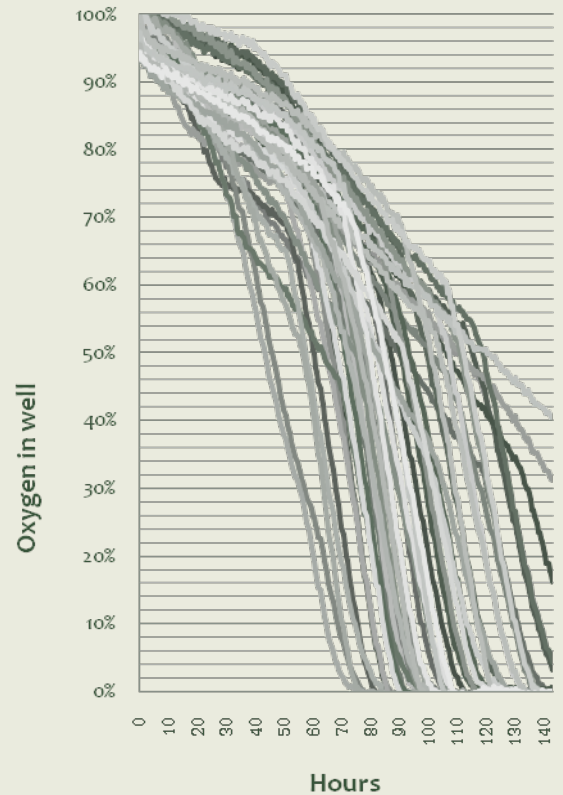
An example on 4 rice samples

	Lot A	Lot B	Lot C	Lot D
Q2 LOT information				
lot #	PH09-154/1	PH09-154/5	PH09-182/1	PH09-182/6
date test	12/6/2009	12/6/2009	12/7/2009	12/7/2009
lcm analyst	johan	johan	johan	johan
curveit analyst	ann	ann	ann	ann
rcm analyst	jva	jva	jva	jva
Q2 VIGOR analysis %				
germok	80	75	72	51
germlin	7	3	8	11
germincompl	1	3	10	30
germneglect	11	18	10	8
germination	100	99	100	99
dormant	0	0	0	1
dead	0	1	0	0
correct	80	75	72	51
usable	89	82	90	92
efficiency	78	70	72	65
Q2 VALUES analysis				
SMR				
average %	0.53	0.52	0.56	0.52
std dev %	0.27	0.15	0.62	0.31
count	147	131	131	93
max conf int %	0.62	0.57	0.78	0.65
min conf int %	0.44	0.46	0.35	0.4
IMT				
average	62.85	64.26	67.83	67.17
std dev	21.64	17.69	22.74	25.22
count	147	131	131	93
max conf int	69.85	70.45	75.65	77.43
min conf int	55.84	58.06	60	56.92
OMR				
average %	2.42	2.38	2.26	2.24
std dev %	0.35	0.44	0.4	0.33
count	147	131	131	93
max conf int %	2.54	2.53	2.39	2.37
min conf int %	2.31	2.23	2.12	2.11
COP				
average %	9.81	9.41	10.2	9.41
std dev %	3.87	4.14	3.93	3.73
count	147	131	131	93
max conf int %	11.06	10.85	11.55	10.93
min conf int %	8.55	7.97	8.86	7.9
RGT				
average	98	99.64	106.9	106.7
std dev	18.05	15.41	17.98	20.83
count	147	131	131	93
max conf int	103.8	105	113.1	115.1
min conf int	92.17	94.25	100.7	98.18
HOM				
value	18.05	15.41	17.98	20.83

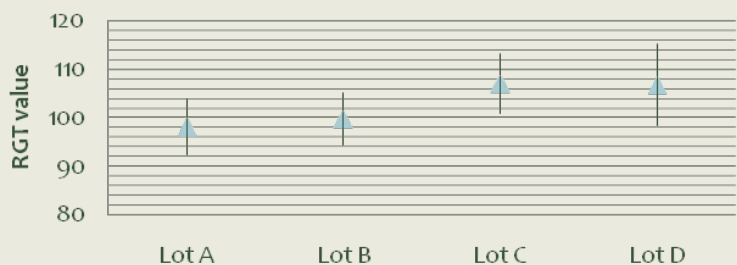
Correlation between germ and Q2 data

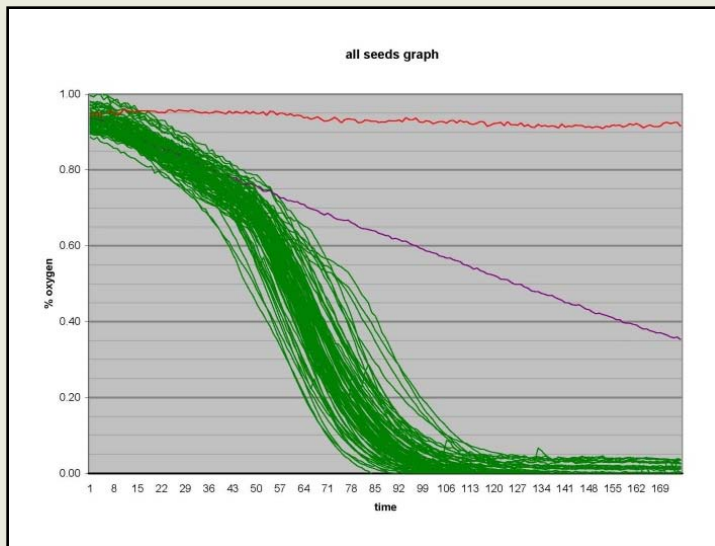


Graph of 1 rep



RGT value of the 4 samples (relative germ/time)





Different species have been thoroughly tested by Rhino Research and protocols as well as specific high-end trainings are available

A single seed oxygen consumption measurement system

- ✓ It has the possibility to compare different samples before and after storage, coating, priming, storage...
- ✓ It is an increasing stress test
Each molecule of oxygen that is consumed increases the stress factor.
Can be combined with other stress factors such as water stress, temperature stress, imbibition stress, chemical stress...
- ✓ It is a holistic view on vigor
A perfect way to measure the different aspects of vigor such as germination speed, stress tolerance, healthiness, yield potential.
- ✓ It is an extremely fast test
Results can be obtained from 24 hours till 3 to 4 days depending on the focus and the species.

**Developed by
TNO / Fytagoras**

**Engineered by
ASTEC Global**

**Mastered by
Rhino Research**



The Q2 is a single seed oxygen consumption system. Because oxygen consumption is directly related to energy production, this technology gives us a perfect view on different quality aspects of seeds such as imbibitions time, speed of germination, homogeneity and energy availability during the germination.

The Q2 system is thus a revolution in seed testing for basic research and commercial operations alike. It provides a fast and accurate measurement of different germination aspects of a seed lot.

In addition Q2 data is more robust and defining than traditional germination tests. You will easily determine dead, dormant or actively germinating seeds.

Although it currently does not provide specific details on seedling abnormalities, the Q2 data can give quicker and more accurate indications of the vigor and homogeneity of a seed lot.

