



INTERNATIONAL SEED TESTING ASSOCIATION (ISTA)

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Session 4 – The importance of quality seed in agriculture

Maintaining capacity in seed technology and seed testing

Professor John Hampton

First Vice-President

International Seed Testing Association



Seed technology embraces

- plant breeding
- cultivar evaluation and release
- seed certification
- seed production and processing
- seed storage
- seed testing

(Feistritzer, 1975)





The importance of seeds was known by ancient civilisations, but seed trading as we know it today did not begin until the 19th Century

- first seed laws (e.g. Adulterated Seed Act, 1869, UK)
- first seed testing laboratory (Professor Nobbe, 1869, Germany)



140 Years Later

- global seed market ca. US\$37B
- seed traded internationally ca. US\$6B
- market almost tripled over last three decades
- drivers include multinational seed companies, F1 hybrids, IP protection, counter season production, GM crops





- The international seed trade is still dominated by Europe and the Americas
- The world's agriculture is still divided into commercial and subsistence sectors; there are different needs between the developed and developing economies

BUT

- The availability of Quality Seeds is important for all sectors

The seed industry is short of skilled people –

This is a global phenomenon (Marcel Bruins, ISF, 2009)

Positions recently advertised include

- plant breeders
- marketing assistants
- research technicians
- territory sales managers
- grain and seed representatives
- seed analysts





The seed industry offers wide career paths, and the opportunity to specialise in

- research
- management
- sales
- regulatory
- production
- marketing
- policy analysis
- finance and legislative

So, why the problem?



Possible Reason: The required training is not available

Conclusion: Not a reason. Tertiary level training in seed technology is available around the world

Table 1. Examples of universities offering postgraduate qualifications in seed technology¹

| Region | Country | University |
|---------------|-------------|---------------------------------|
| South America | Brazil | Universidade Federal de Pelotas |
| North America | USA | Ohio State University |
| Australasia | New Zealand | Lincoln University |
| Asia | India | Bangalore University |
| Europe | Netherlands | Wageningen University |

¹This list is indicative only; within each region there are other universities which offer postgraduate qualifications in seed technology.



Possible Reason 2: Lack of students

Conclusion:

- a) Developing world - not a reason by itself; there is plenty of interest, but often a lack of funding for education nationally and/or internationally.
- b) Developed world – certainly a reason; it is increasingly difficult to attract students into any part of agriculture and related industries. A career in the land-based industries is not seen as an attractive option.



- For today's seed industry, the drivers and leaders have been the Baby Boomers (born between 1946-1964) who are now starting to retire
- Generation X-ers (born between 1965-1979) tended to find careers in agriculture unattractive
- We need to attract members of the Y generation (born between 1980-1995) into the industry



Characteristics of Generation Y include:

- Preferred style of leadership – collaboration with management is expected
- Value of experience – irrelevant as the world is changing so fast
- Autonomy – questions, questions, questions
- Feedback – needed constantly and immediately
- Rewards – money talks
- Training – still in exam driven mentality
- Work hours – as long as needed (or until they get bored)
- Work/life balance – busy lives; need a lot of ‘me’ time
- Loyalty – already working out their exit strategy
- Meaning of money – just something that allows them to maintain their lifestyle



Capacity in Seed Testing

A change from almost exclusively government owned laboratories to:

- Seed testing laboratories which remain part of a government organisation and receive varying amounts of taxpayer support (e.g. much of Eastern Europe)
- Laboratories which are still designated as “governmental” but receive no taxpayer support and must be financially self sustaining (e.g. Denmark, Netherlands)
- Private Independent laboratories operating as a commercial business (e.g. Australia, USA)
- Seed company laboratories testing proprietary seed lots (e.g. Denmark, Hungary)



The days of any laboratory employing large numbers of seed analysts have also largely disappeared. In a 2009 survey of ISTA member laboratories:

- The mean number of analysts employed was 11.4 with a range from 1 to 26
- Only 9% of the laboratories employed more than 20 seed analysts
- 19% of the laboratories employed 5 staff or less
- For 54% of the laboratories, up to half of their analysts were employed on a part-time basis



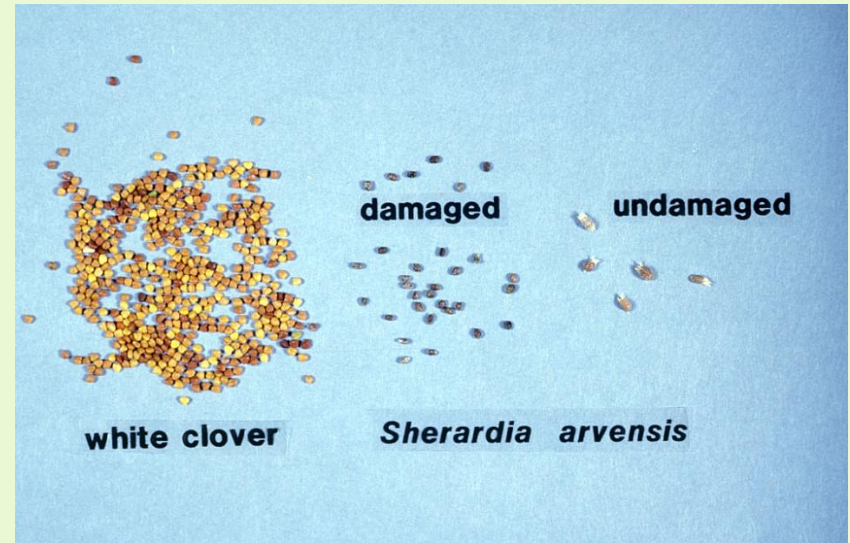
Factors effecting this change include:

- A reduction in seed lot numbers for testing, either because of changed seed production practices (e.g. fewer, larger fields), or increases in seed lot size following changes to the ISTA Rules (e.g. from 20t to 30t for cereals).
- Commercial reality following loss of taxpayer funding. A requirement to be either cost neutral or make a profit on the year's activities means that staff numbers are examined critically; the use of part-timers can be cost-effective.
- Competition for the seed testing business has reduced demand for services for laboratories which might have previously enjoyed a monopoly.

Seed analysts are highly trained specialists who require a knowledge of:

- Seed biology and physiology
- Seed sampling
- Seed identification
- Seed viability and germination and can accurately conduct seed quality tests.

The international trading of seed relies on the skills of the seed analyst.





Do we have sufficient seed analysts?

- The answer for many parts of the world is no; in North America, Australasia and Asia, recent seed analyst vacancies have been difficult to fill.
- While vacancies do attract applicants, few have any seed testing experience.
- Only 16% of the seed analysts currently employed by ISTA member laboratories had previous experience.





In North America, the reasons given for a shortage of seed analysts were:

- Lack of training opportunities
- Amount of training required to become a certified/registered seed analyst
- Low salaries not commensurate with training
- Lack of emphasis by school career advisors for agricultural careers



- Lack of training opportunities is also a feature for Australasia, Asia, Africa and South America
- Currently within ISTA, training is ‘in-house’ – trained analysts do the training
- The majority of seed analysts are either baby boomers or early generation X-ers; very few generation Y seed analysts
- The need for skilled seed analysts is unlikely to disappear



Maintaining Capacity – Seed Technology

Developing economies

- There is already keen interest from Generation Y, but a lack of resources, particularly as “seeds” have been downgraded in priority or removed completely from funding target areas.
- Regional seed organisations, in co-operation with FAO and governments should assess priorities and organise scholarship funding from whatever sources are available.



Developed economies

- Provision of scholarships and mentoring have much to commend them, and can be successful with Generation Y
- However this approach only captures those who have already decided on a career in primary industry
- The targeting must also include young people who have not previously considered a career in primary industry



“Meeting the needs of the future requires proactive management by industry and education providers together. It needs to be directed by a creative and exciting vision for the future, and to inform them that there is more to these industries than just ‘farming’. It must create a new perception of what a future in the primary industry has to offer”. (Rowarth and Morris, 2007).

- For the seed industry, this is a challenge which can best be met collectively by ISF, the regional seed associations, and national seed organisations.
- The private sector must add investment in people to the investments already made for infrastructure and R & D.



Maintaining Capacity – Seed Analysts

- Increasingly difficult as training on the job is not attractive and salaries are generally low.
- Introduce some form of international seed analyst training that is recognised internationally and would allow the holder to move readily among laboratories within a country or among countries?
- Make the job more attractive; more varied tasks and use of modern technology.



Conclusions

1. Since the 1980s in the developed world, responsibility for seed industry/seed quality assurance matters has moved from direct government support to increased private inputs. This is likely to continue; the private seed sector can no longer rely on government inputs for their industry.
2. Generation Y-ers are needed to replace the baby boomers. The challenge for the seed industry is to create a workplace environment that acts as a magnet for talent.
3. The message to young people must be that the seed industry offers a vibrant career with a myriad of opportunities ahead.



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Thank you for your attention.

