

## **BULLETIN 1**

### **TURNING SEED QUALITY FAILURE INTO CONSISTENT SUCCESS: HOW WIDESPREAD IS THE PROBLEM?**

**A six-month study has proven seed viability, purity and quality is a problem for industry. Funded by Hort Innovation, the study began with face-to-face grower surveys that identified on farm issues and possible solutions; a comprehensive literature review followed, to pinpoint the newest and best technologies to grade and improve seed quality. The outcome is a series of recommendations for future R&D investment strategies; grower meetings to determine commercialisation and research priorities are scheduled for 2018.**

The Australian vegetable industry recognised a need to tackle on farm seed quality and viability issues and hence tendered the Hort Innovation co-funded project VG16028, *“On farm evaluation of vegetable seed viability using non destructive techniques”* in early 2017. The 6-month study aimed to identify grower seed quality issues and provide recommendations for future R&D investment into technologies, activities or programs that can evaluate and improve seed viability prior to planting on farm. Levy payers and commercialisation partners were the primary audience.

The University of Queensland’s Plant Growth and Productivity Optimisation group, led by Dr Jitka Kochanek, were selected to undertake the tender. At project onset, the group conducted face-to-face surveys with growers and industry affiliates across key Queensland and NSW vegetable growing areas. This bulletin summarises the seed quality issues identified from this grower survey.

Many growers described quality seeds as their most important farm input because without quality seeds all other resources are wasted. Based on the survey, the definition of a high quality seed lot for the Australian vegetable industry is one that is disease-free and genetically pure, with high germination (>95%) and uniform seedling establishment and with seed sizes and shapes that fit well into seed sowing machinery. “Certain seed suppliers consistently do the right thing by growers, which is great to see,” said Dr Kochanek, “Unfortunately, the survey revealed all growers reported experiences with seed viability, purity or quality issues. In fact, some growers have resorted to importing their own seeds because certain seed suppliers do not meet the quality and quantity standards needed.”

Key seed quality issues identified were (a) **Poor germination percentage and non-uniform emergence**. This was commonly observed in certain varieties of sweet corn, cabbage, cauliflower, lettuce, beetroot and other crops; (b) **Disease transmission via seeds**. Growers suspect certain diseases are entering production systems via infected seeds. This was flagged as an important potential biosecurity threat, particularly for overseas imported seeds; (c) **Varietal impurity**. For example, non-hybrid seeds were mixed into hybrid lines, multiple varieties or cultivars were mixed together or the entirely wrong variety or cultivar was supplied to the grower; (d) **Non-uniform seed size**. Uniform seed size is needed for optimal machinery performance, such as to avoid sowing two seeds into one location. Further, larger seeds were perceived to have higher vigour; (e) **Damage to seeds**. Certain cleaning practices were believed to damage seeds; (f) **Seed enhancements need improvement**. Techniques such as priming and pelleting need to be improved; presently many reduce seed quality rather than enhance it.

Other seed-related concerns raised by growers included (g) **Growers were forced to ‘accept what they get’** from certain seed suppliers, even if seed quality was poor; compensation was rarely provided; (h) **A lack of lines bred or grown for Australian conditions**; (i) **Inadequate or inaccurate seed packet labelling**. Often information on the packet was incorrect or misleading, for example the

label promised 95% germination but only 70-80% of seeds germinated; (j) **Long lead-in times for seed delivery** of certain cultivars or varieties.

A follow-up bulletin will detail specific recommendations for future R&D investment strategies from a global review of new technologies, opportunities and future program activities gathered from the industry survey, researcher interviews and from scientific literature. Growers are now invited to submit more seed quality information via email directly to the team ([j.kochanek@uq.edu.au](mailto:j.kochanek@uq.edu.au)). Following this second phase of data gathering, a strategy meeting with key Levy payers will be held in southern Qld and central NSW during autumn 2018 to determine the R&D investment direction for further seed quality research activities. All Levy payers are invited so please make a note in your calendar now if you plan to attend!

*Footnote: Special thanks are extended to all growers who participated in the survey - the study would not have been possible without this valuable input! We also gratefully acknowledge NSW extension officers from the Greater Sydney Local Land Services and grower Mario Muscat who organised a field day and on farm interviews within the Sydney Basin and Bathurst growing areas.*

Want more details? Order the full VG16028 report from the Hort Innovation website at <http://horticulture.com.au/resources/final-report-order-form/>