What do we know about the genetics of seed longevity?

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Abstract: The availability of high quality seeds, with high and vigourous germination, is essential for the production of healthy, high-yielding plants, be that an arable crop, a horticultural crop, a forest species, or any other useful plant species. Seed quality is inextricably linked with seed longevity, since it is the detrimental effects of seed ageing that lead to declines in seed vigour and germination. Seed longevity depends on the conditions under which seeds are stored, most importantly, moisture content and temperature. But it is also a highly plastic trait that varies depending on pre- and post-harvest factors such as climate during seed development, moisture content at harvest and post-harvest drying regime. It also varies greatly between species, if seeds are stored under the same, standardized conditions. For different seed lots within a species, it was originally thought that variation in longevity would correlate with the initial viability of the seeds and that all seed lots of a species would age (lose viability) at the same rate. However, we are now starting to understand that the rate of ageing can also vary between different seed lots within a species. This presentation will present our current understanding of the genetic basis of variation in seed longevity.

Bio: Dr. Fiona Hay is has been working in seed ecology and physiology for the past 20+ years and currently holds the position of Senior Scientist and Deputy Head of the T.T. Chang Genetic Resources Center at the International Rice Research Institute (IRRI) in the Philippines. She started her career with a PhD studying the development of seed longevity in wild plant species at the UK's Millennium Seed Bank (MSB). During her years at the MSB, her work included researching seeds of UK aquatic species, developing a comparative longevity protocol for wild seeds and enhancing our understanding of the relationship between seed moisture content and longevity, as well as supervising a number of undergraduate and doctoral students. Her MSc in Applied Statistics and Operational Research has enabled her to guide both students and colleagues around the globe in the correct use of statistics in seed research. Dr. Hay and her research team at IRRI study seed development, dormancy and germination in addition to seed longevity and optimising genebank procedures. Fiona is the coordinator for the Global Strategy for the Ex Situ Conservation of Rice. She is also Chief Editor of Seed Science and Technology.

Further information:

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