

PROJECT TITLE

Bigger, better Brassica: does induced polyploidy increase yield?

CONSORTIUM

P 1	Annaliese Mason		
P 2	Daniela Quezada Martinez		

SUMMARY OF THE REPORT

Polyploidy and hybridization are known to confer significant advantages in plant evolution and crop production. However, how polyploidy and hybridization affect phenotypic traits has rarely been studied under controlled conditions and never for a well characterised diversity panel of *Brassica*. Normally, we see the results of these processes as different species in natural ecosystems, or as selected crops in agricultural systems. This confounds our ability to control for the effects of allelic variation and other kinds of genetic differences in assessing the effects of polyploidy and hybridization on phenotypic traits.

This access used a large collection of experimental polyploids and hybrids in the agriculturally significant *Brassica* genus including synthetic allotetraploid and allohexaploid plants from known homozygous cultivars as parental species. These are being used to comprehensively assess whether ploidy level and/or heterozygosity are responsible for phenotypic differences between diploids, tetraploids and hexaploids.

Access to the large plant platform at Aberystwyth University allowed characterization of 49 diverse lines, recording water use, manual scoring of key developmental stages and imaging across the life cycle, from young plants to post flowering traits including pod size and seed set. We will use the outputs of this access to relate phenotypic variation with genetic variation, thereby addressing the idea that ploidy has specific effects on phenotype.