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Bioengineering *Brassica carinata*

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The demand for renewable plant-derived oils is growing. Development of hardy and high yielding oil crops adapted to challenging environments can contribute to meeting this demand. *Brassica carinata* is an oil crop that is native to Ethiopia and has the potential to be grown productively in challenging environmental conditions.

We aim to identify and generate *Brassica carinata* germplasm resources that support the future use of this oil crop for diverse industrial applications. Our approach involves testing *B. carinata* transformation systems, developing strategies to optimise oil properties for biofuel industries and assessing diverse accessions for environmental stress tolerance. We are trialling transformation protocols for *B. carinata* and screening a diverse *B. carinata* population in a glasshouse experiment. We have been investigating different callus regeneration media and selection options towards identifying methods that are suitable for efficient *B. carinata* bioengineering. We will investigate factors that influence whether bioengineering methods can be developed that will be suitable for optimising a range of different *B. carinata* varieties and a range of traits.

We expect to learn whether about the relative versatility of different transformation approaches for use in different varieties. We have successfully generated *Brassica carinata* callus and regenerated shoots. The diverse accessions we are studying are from different geographical locations and were sourced from the Australian Grains Genebank. Our goal is to learn about the ge-netic potential within the population. We are interested in oil yield, oil quality characteristics and tolerance to soil constraints.