

# New stylo varieties for frosty locations

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## Introduction

Pasture legumes have been identified as the best long-term option to increase productivity and profitability of grass pastures for large areas of Australia. However, finding legume varieties that are suited to the frost prone sub-tropics has been challenging due to low and unreliable winter rainfall resulting in poor persistence of temperate legumes (e.g. subterranean clover); while frosty winters and less rainfall during the summer growing season than in more northerly districts have resulted in poor persistence of tropical legumes (e.g. shrubby stylo *cv. Seca*). Some legumes have persisted on clay soils (e.g. medic and desmanthus); however, there are currently no commercially available legume varieties that are widely persistent on light soils (loams and sands) in southern Queensland. This paper describes the evaluation and planned commercialisation of five new stylo varieties that aim to fill the gap in available legume varieties for this important climate zone.

## Methods

A summary of the evaluation methodology is provided in this paper, and a full description is available in Peck et al., (2022). Multiple accessions of stylo from multiple species persisted and spread at old pasture evaluation trial sites at more southerly latitudes, with greater frost frequency, than considered suitable for commercial varieties. Forty legume accessions were described and seed re-collected from 8 sites (36 accessions of stylo, 3 desmanthus and 1 *Neptunia* sp.); however, the seed crop of one of the stylo accessions was severely damaged by disease, resulting in 39 accessions for sowing in new evaluation trials.

The 39 collected accessions, 3 experimental accessions shortlisted from other projects and 10 commercial legume varieties were sown in 2016 at six evaluation trial sites across southern Queensland. One of these trial sites failed to establish with adequate plant density due to soil crusting. The remaining five trial sites were assessed over four growing seasons.

## Results

Five stylo accessions were selected for release as new legume varieties for light textured soils in frosty locations in the sub-tropics. These five new stylo varieties produced 40 to 70% higher average yields than the best performing, commercially available legume variety (*cv. Unica*, a Caatinga stylo) across five trial sites in the third and fourth growing seasons after sowing. These measurements were conducted during severe drought years that were in the driest 10% of years for the districts where the trials were located.

## Discussion and conclusion

Five new stylo varieties that were identified and re-collected from old trial sites have the potential to increase the geographic range suitable for sowing legumes in southern Queensland where previously there were no suitable legume varieties. The new varieties had significant yield and persistence advantages over existing legume varieties where tested; therefore, they also have the potential to improve productivity for large areas where existing varieties are suited. DPI and MLA have partnered with a seed company to commercialise these new varieties. Research and extension activities have commenced to support the commercialisation and adoption of these promising new stylo varieties.

## References

Peck, G. et al. (2022). *Evaluating promising stylo lines for southern Queensland. Final report B.NBP.0749* Meat & Livestock Aust. Sydney Aust.

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