



# Single Plant Selection within a Lentil Landrace Enhances Genetic Progress

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Response to selection and duration of conventional breeding programs constitute of breeders' main concern. It has been asserted that absence of competition optimizes genetic expression and advances progress [1]. Single-plant selection within landraces of self-pollinated species might result in pure-line varieties.

It was investigated the genetic progress through 2-cycle single-plant selection within a lentil landrace, on grain yield at of 1.15 plants/m<sup>2</sup>

Among 1000 initially grown plants of the commercially cultivated landrace 'Farsala' (Fig. 1), 31 plants were selected to form the 1<sup>st</sup> generation progeny lines; then four individuals selected within each of two 1<sup>st</sup> generation progeny lines led to eight 2<sup>nd</sup> generation progeny lines.

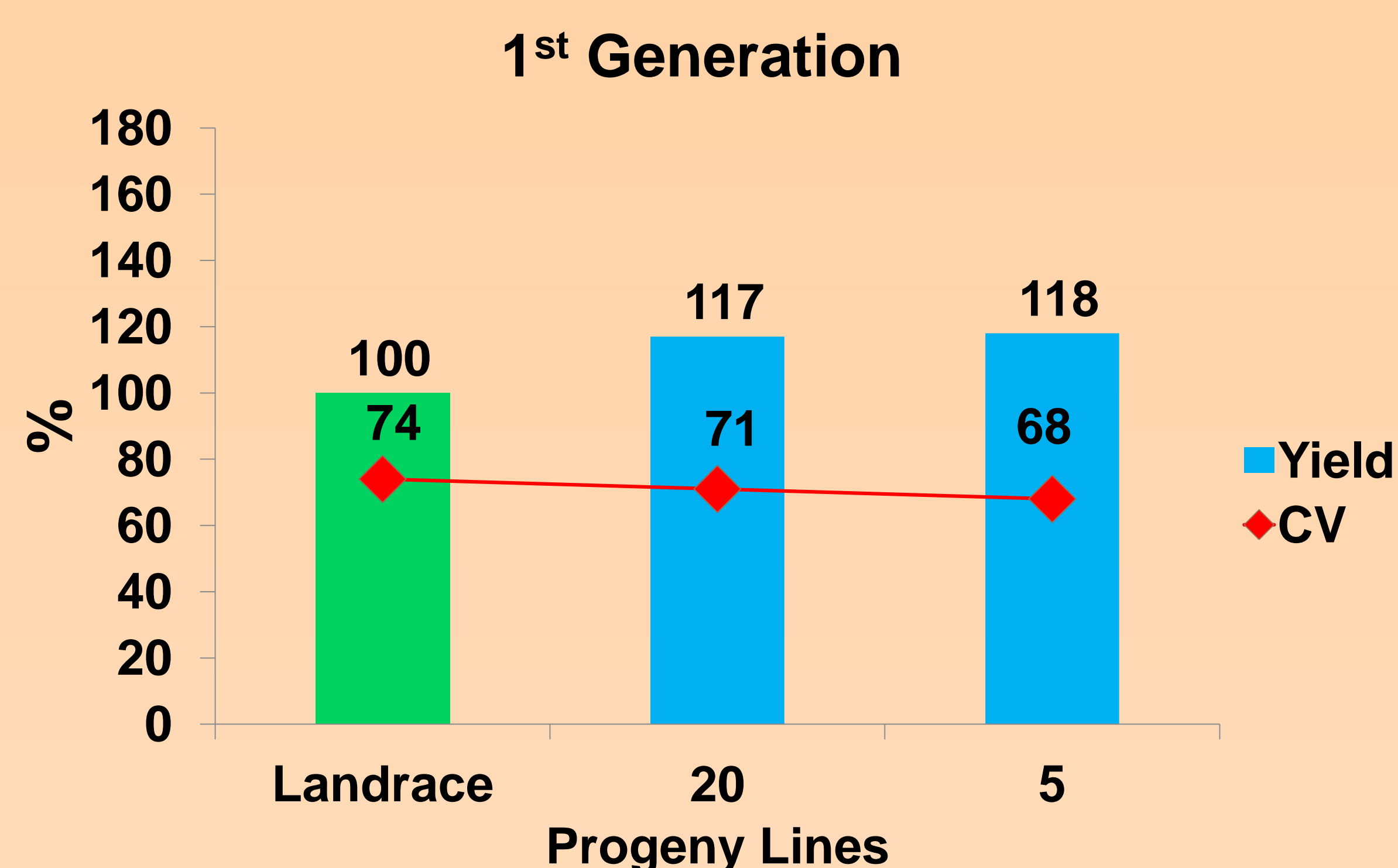


Fig. 2. Yield and CV values of the 1<sup>st</sup> generation progeny lines and the landrace 'Farsala' (control).

Regarding mean yield per plant, the two 1<sup>st</sup> generation progeny lines were by 17 and 18% more productive than the landrace (Fig. 2) but these differences were not significant due to high standard deviations attributable to intense virus infection. Ultra-low density intensifies virus infection facilitating potentially tolerant genotypes [2]. Six out of the eight 2<sup>nd</sup> generation progeny lines significantly out yielded the initial landrace by 43% up to 69% (Fig. 3). Concerning CV values, they were consistently lower than the respective CVs of the mother landrace, indicating narrowing genetic variation. Lower CVs were also attributed to reduced virus load of the advanced lines.

## Conclusion

The results suggest that selecting in absence of competition within a lentil landrace appears a direct approach of promising pure-line varieties.

## Acknowledgements

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Fig. 1. The initial honeycomb trial where the 1<sup>st</sup> generation progeny lines were selected (an later stage about 35% of the plants were lost due to severe virus infection)

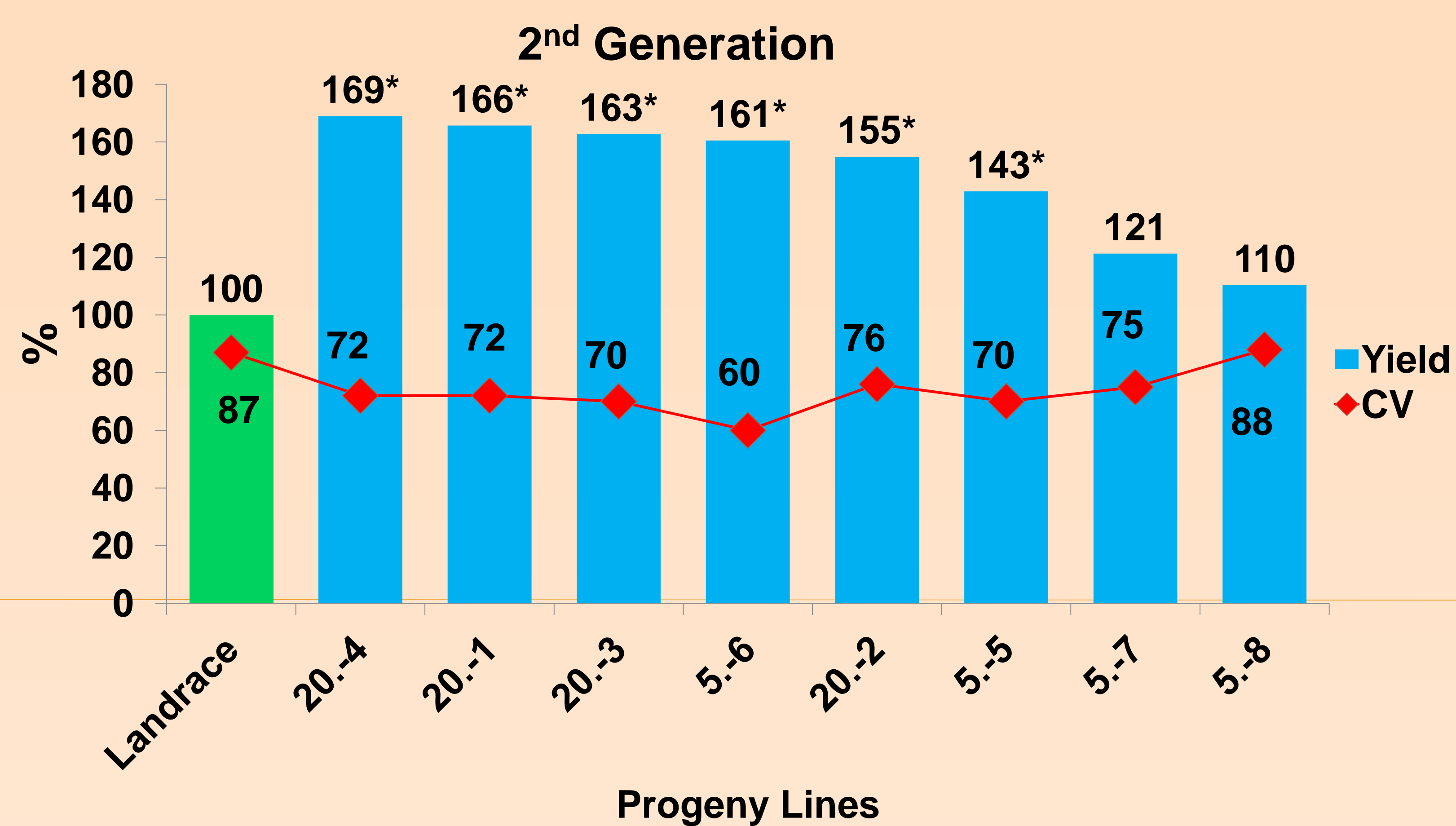


Fig. 3. Yield and CV values of the 2<sup>nd</sup> generation progeny lines and the landrace 'Farsala' (control).

\* Significantly differing from the control at P<0.05

## REFERENCES

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2. Kargiotidou et al. 2014. *Journal of Agricultural Science*, 152:749-758.

