

Next-Generation Sequencing (NGS) application to the detection of mutations endowing herbicide resistance

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Aims

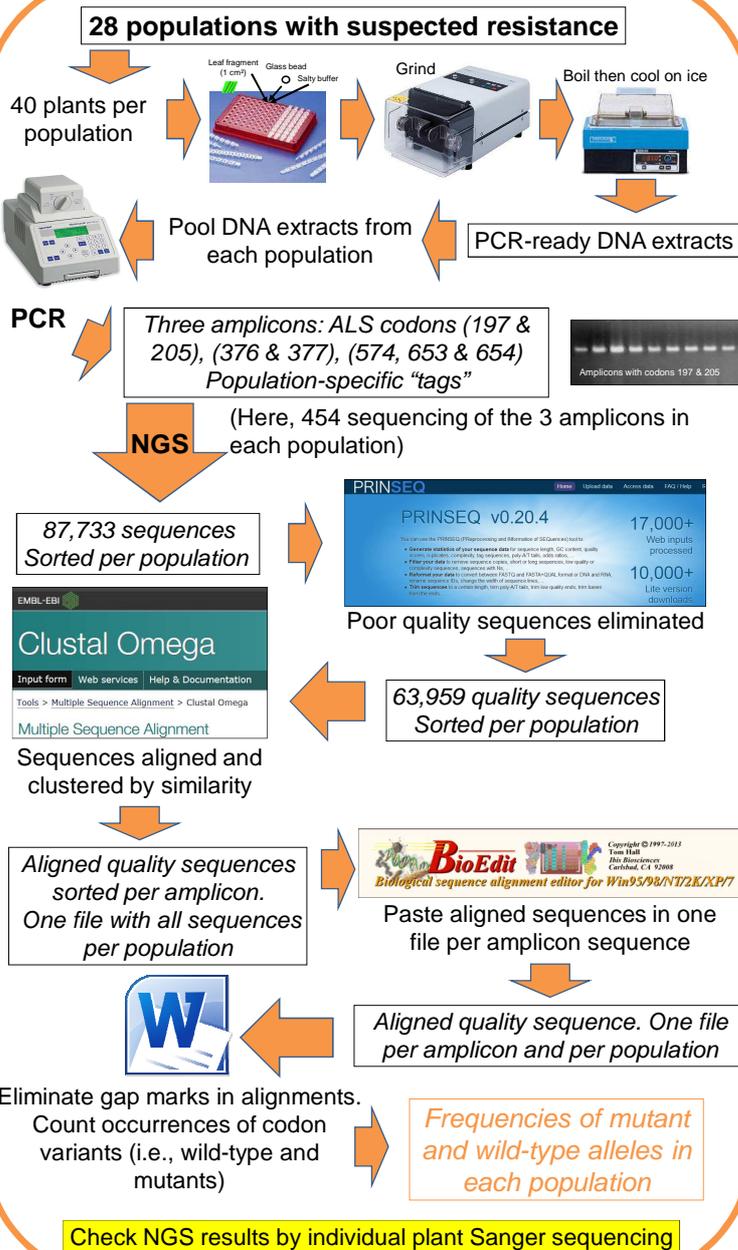
- Promote NGS use for pesticide resistance diagnosis
- Describe a simple procedure for the analysis of NGS data



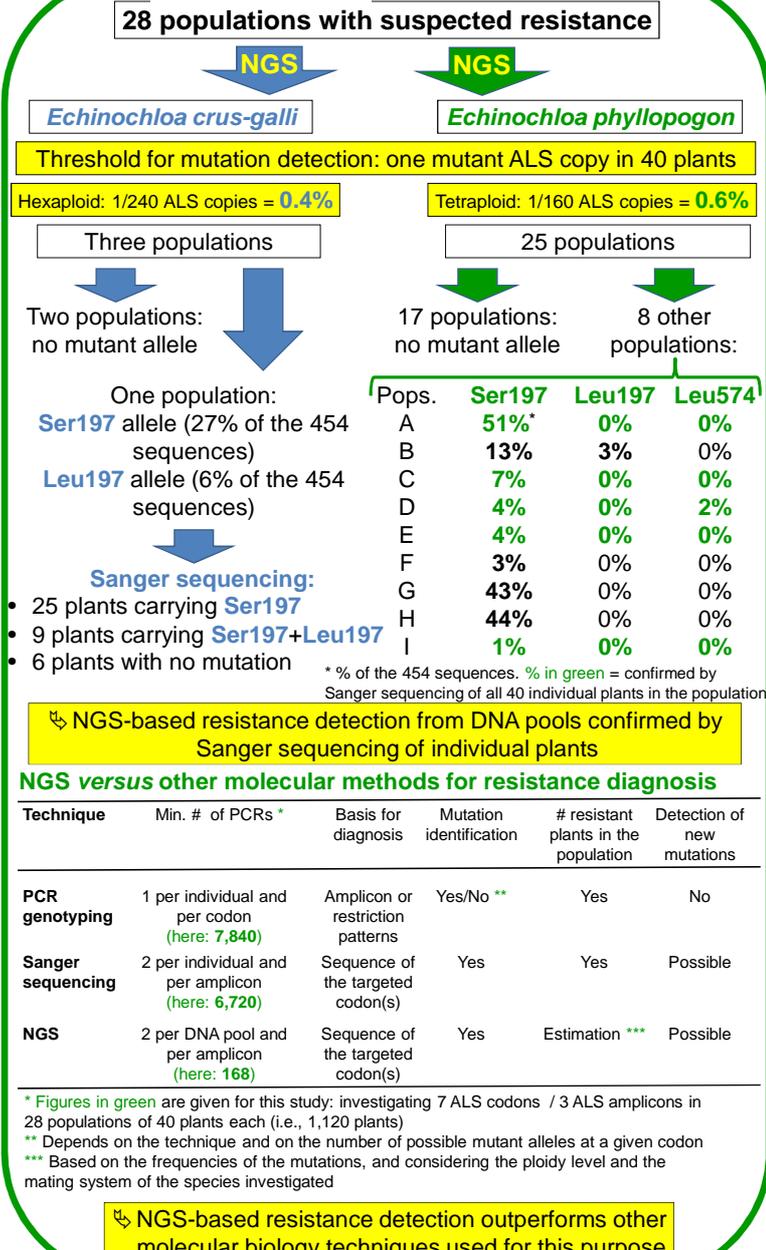
Model studied: ALS-based herbicide resistance in barnyardgrasses
 (*Echinochloa crus-galli* [6N] & *E. phyllopogon* [4N])



Methods



Results



Conclusions

- NGS-based herbicide resistance diagnosis is feasible without extensive training in NGS data analysis or specialised software
- Frequency of mutants detected similar to that observed using Sanger sequencing
- Detection of 1 mutant plant out of 40 in DNA pools without DNA quantification
- Possible to rapidly analyse tremendous numbers of individuals in populations
- Detection of resistant individuals at very early stages in resistance evolution in the field
- Adaptation of the crop protection program

More information: Délye et al., 2014, Next-Generation Sequencing to detect mutations endowing resistance to pesticides: application to acetolactate-synthase (ALS) based resistance in barnyard-grass, a polyploid grass weed. *Pest Management Science* – Online early - doi: 10.1002/ps.3818.