

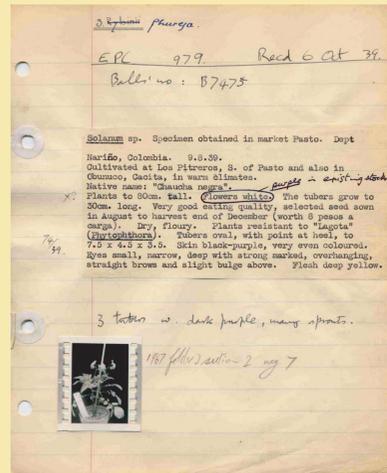
# Exploiting the Commonwealth Potato Collection

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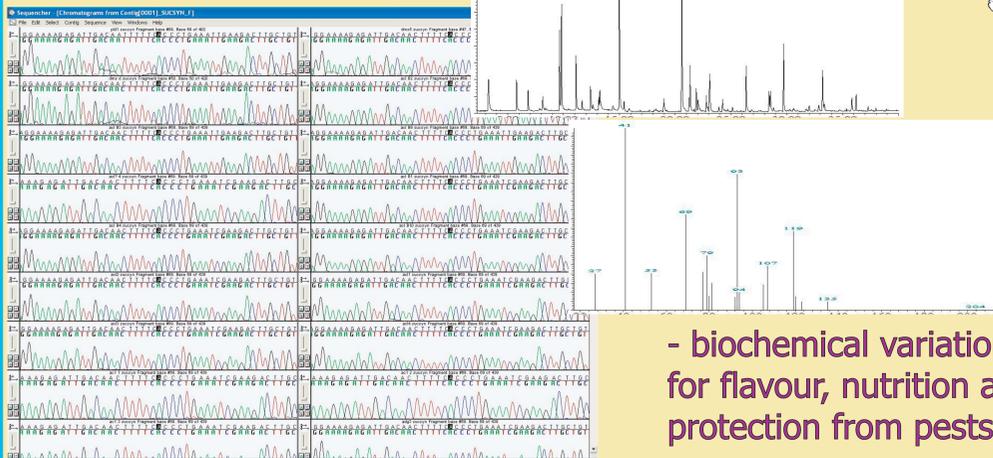
## The Commonwealth Potato Collection

- an international genebank of wild and landrace potatoes held at SCRI
- tremendously valuable resource for resistance and quality traits
- genomics offers new ways of understanding and exploiting the diversity

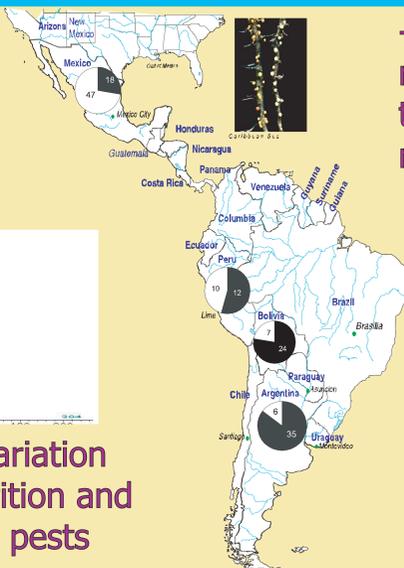


## Useful traits in landraces and wild relatives

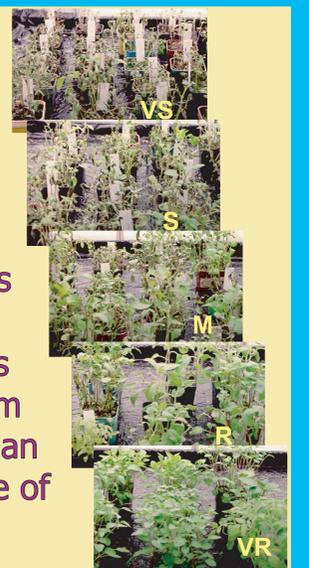
- allelic variation for a wide range of traits



- biochemical variation for flavour, nutrition and protection from pests



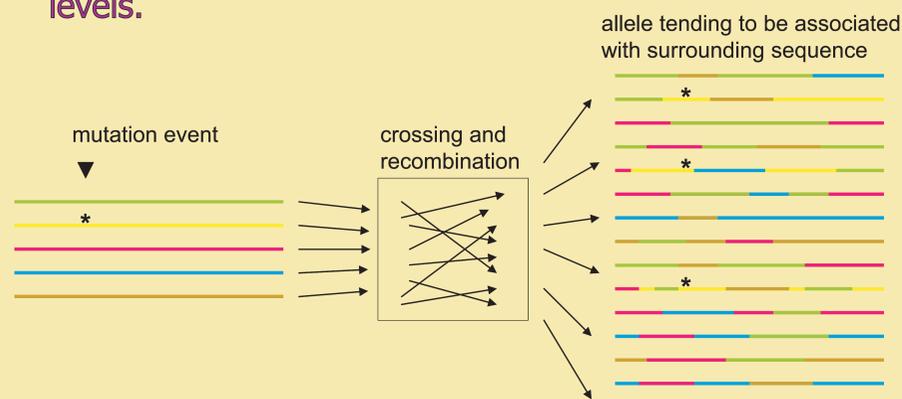
- genes for resistance to potato cyst nematode, late blight and other pests and diseases



- abiotic stress resistance from adaptation to an extreme range of environments

## New approaches to using germplasm

- can we use association genetics to tag genes and understand traits more rapidly?
- the marked allele (below) and sequence in the yellow region will be associated, or in linkage disequilibrium, in interbreeding populations.
- in potato landraces, does linkage disequilibrium persist over 100 bp, kb's or cM?
- we are currently testing LD in CPC-derived neo-tuberosum lines, initially looking at sequence variation in candidate genes for tuber carotenoid levels.



Neo-tuberosum, derived by selection from *S. tuberosum* ssp. *andigena*, captures the diversity of Andean landrace potatoes, in a form adapted to Scottish conditions and so can be grown in replicated trials.