Sources of phenotypic variation of life history traits in an invasive species, *Senecio inaequidens* DC. (Asteraceae)

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The importance of different sources of phenotypic variation, namely adaptation, phenotypic plasticity, environmental maternal effects, ploidy level and genetic drift, were estimated in several life history traits among populations of an invasive plant species within its invasion range. Several common garden experiments were set out, two of which in a reciprocal transplants experiment. The populations considered in this study were located in Belgium, in France and in the native range of the model species. *Senecio inaequidens* DC. (Asteraceae) is native to Africa. It was introduced in Europe via wool trade in the late 19th century. In the native range, the species occurs at two co-existing cytotypes: diploid and tetraploid. Only tetraploid individuals are reported in Europe. The particular and well-documented invasion history of *S. inaequidens* makes it an excellent plant model for evolutionary studies. Several life history traits were measured, related to germination, growth and sexual reproduction. The sources of phenotypic variation in those traits were analysed with respect to climatic variation along altitudinal gradients in the invaded areas. The influence of the ploidy level and the range (native vs introduced) on those traits was also analysed. Results showed that diploid and tetraploid populations differed, mainly in winter survival capacity. Along altitudinal gradients, clinal phenotypic differentiations with a genetic basis were observed among populations. However, environmental maternal effects were found to significantly influence phenotypic variation in areas with harsh climatic conditions.

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Monty A., Lebeau J., Meerts P., Mahy G. 2009. An explicit test for the contribution of environmental maternal effects to rapid clinal differentiation in an invasive plant. Journal of Evolutionary Biology (Early view – doi: 10.1111/j.1420-9101.2009.01728.x)