**ALA10.1 Usefuleness – parent choice**

**Prerequisites**

Course in Molecular Plant Breeding; Ideally students should have completed Crop Improvement

**Purpose**

Provide understanding of significance of parent choice for establishing breeding populations.

**Background**

Plant breeders establish 10s or 100s of breeding populations per year in order to identify a very limited number of superior elite lines or genotypes, which ultimately become parents of commercial varieties. If it was possible to reliably predict the best parent combination to establish a breeding population, then breeders would work with only one or a few large breeding populations to maximize the chance of finding the best genotypes. However, up to now breeders are spreading the risk by working with multiple smaller breeding populations in parallel.

**Tasks**

1. Recapitulate the usefulness concept. What are the main parameters of interest ?
2. Based on earlier eModules, which approach(es) appear most promising to estimate those parameters of interest. Consider oligogenic and polygenic inheritance for traits of interest.
3. Which molecular tools may be helpful to estimate usefulness parameters ? Discuss in particular DNA versus non-DNA markers.
4. For which types of varieties (clone, line, population, or hybrid) do you expect to be more or less promising to estimate usefulness parameters ? Provide arguments.

**Tentative answers** (can differ, based on context / assumptions made)