

1 **S3 Supporting Information: Exclusion probability.**

2 We adapted the exclusion probability of Devaux et al. [43] derived from a previous paper [47]
3 to take into account cultivar richness:

4
$$P = \sum_{v'} N_{v'} \sum_v N_v \sum_k g_{v, G_k} \cdot \frac{1}{2^n} \sum_i 1_{\text{incompatibility}}(\gamma_{v', G_k, i}, v'),$$

5 where N_v is the OSR plant number assigned to a cultivar v in a given year; n is the number of
6 loci; g_{v, G_k} is the frequency of genotype G_k of cultivar v ; and $\gamma_{v', G_k, i}$ represents the rank i
7 of the gamete produced by the genotype G_k of cultivar v . $\sum_i 1_{\text{incompatibility}}(\gamma_{v', G_k, i}, v')$
8 is an incompatibility function between gamete g and cultivar v . This function returns 1 if g
9 and v are incompatible, but 0 if they are compatible.