Genes Genomes Genetics

Which recurrent selection scheme to improve mixtures of crop species? Theoretical expectations

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Supplemental Material
Figure S2

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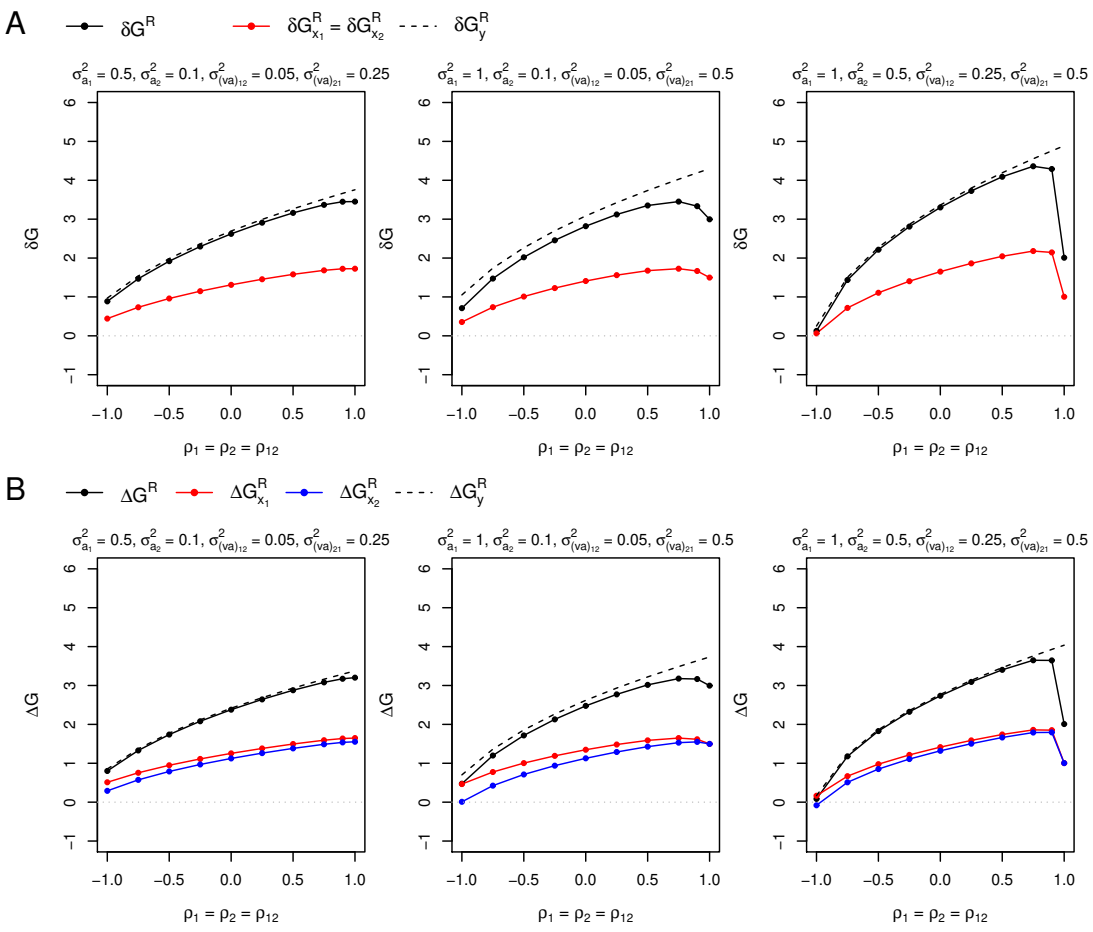

Figure S2 Responses to selection expected from one cycle of recurrent selection for Reciprocal Mixture Ability (SRMA) between two species aiming to equate the expected responses of the contributions of the two species to the performance of their mixture. The selection criterion was a linear combination (index) of the contributions of progeny families (half-sib or topcross progeny families) of pairs of candidates from the two species to the observed performance of their mixture. Index weight was tuned in order to equate the expected responses of species contributions before recombination of selected candidates ($\delta G^R_{x_1}/\delta G^R_{x_2} = 1$). (A) Expected responses to selection of the performance of the mixture of the two species (δG^R) and of species contributions ($\delta G^R_{x_1}$ and $\delta G^R_{x_2}$) before recombination of selected candidates. (B) Expected responses to selection of the performance of the mixture of the two species (ΔG^R) and of species contributions ($\Delta G^R_{x_1}$ and $\Delta G^R_{x_2}$) after recombination of selected candidates. The response to selection of the performance of the mixture expected when the selection criterion is the observed performance of tested mixtures is also reported before recombination of selected candidates (δG^R_y on graphs (A)) and after recombination (ΔG^R_y on graphs (B)). The variance of direct effect was set equal to 1 in the two species. $\sigma^2_{a_1}$ and $\sigma^2_{a_2}$ are the variances of associate effects in species 1 and 2, respectively. $\sigma^2_{(va)_{12}}$ and $\sigma^2_{(va)_{21}}$ are the variances of direct × associate interactions in the variances of the contributions of species 1 and 2, respectively. The correlation between the two species components of the plot error was set to +0.5. See Figure 4 (main text) for the meaning of ρ_1, ρ_2 and ρ_{12}.