# Supplementary Figure 1.

**Genetic gain measured at stage of** $SYN2$ **and standardized by the standard deviation of the** $SYN2$

Genetic gain was investigated for $SYN2$ stage as:

$$∆\_{G}=\frac{av. \left(TBV\_{SYNi}\right)-av. \left(TBV\_{SYN1}\right)}{σ\_{\left(TBV\_{SYN1}\right)}}$$

where $av. \left(TBV\_{SYNi}\right) $and $av. \left(TBV\_{SYN1}\right)$ are the mean TBVs of the $SYN2$ groups in cycle 1 and in later cycles ($i$ = 2 to 25), and $σ\_{\left(TBV\_{SYN1}\right)} $is the standard deviation of the $SYN2$ true breeding values at cycle 1.



# Supplementary Figure 2.

**Genetic gain measured at stage of** $SYN2$ **and standardized by the standard deviation of the** $F\_{1}$**.**

Genetic gain was investigated for $SYN2$ stage as:

$$∆\_{G}=\frac{av. \left(TBV\_{SYNi}\right)-av. \left(TBVF1\_{1}\right)}{σ\_{\left(TBVF1\_{1}\right)}}$$

where $av. \left(TBV\_{SYNi}\right) $and $av. \left(TBVF1\_{1}\right)$ are the mean TBVs of the $SYN2$ and $F\_{1} $groups in cycle 1 and in later cycles ($i$ = 2 to 25), and $σ\_{\left(TBVF1\_{1}\right)} $is the standard deviation of the $F\_{1}$ true breeding values at cycle 1.

