Breeding KPI That Drive Program Value

Breeding programs ultimately create value through consistent release of superior varieties at the end of a years-long pipeline. By the time material reaches commercial trials, most of the cost has already been spent and most key decisions made. The choice of key performance indicators (KPIs) determines the extent to which a program receives actionable insights without having to wait on the markets' reaction. Effective KPIs create a practical framework for communicating progress to stakeholders. NSIP focuses on KPIs matched to the intent and realities of each trialing stage to provide a complete picture of how a breeding program creates value.

Screening/Early-stage Trials:

The most relevant KPI here is percent on-target material. Early-stage trials are broad and inherently noisy: Their purpose is not to prove final superiority, but to fill a pipeline with material that resembles the desired product profile. If only a small fraction of entries are on-target, the program may still produce an occasional winner, but inefficiently. When the proportion of on-target material rises over time, it shows that crossing, trait filtering, and program logic are improving. Value is not just isolated success, but a better funnel.

Intermediate Trials:

At this stage, when most material is on target, the key question becomes: Are we advancing the right material? Selection advancement accuracy is now the most critical KPI. Advancement determines which lines receive more plots, more environments, and more investment. A program that advances material inaccurately leaks value by spending resources on false positives while discarding future winners. Improvement in advancement accuracy shows a program's ability to turn incomplete information into selection and advancement of the best on-target material.

Pre-commercial and Commercial Testing:

Now value must become visible against the market. Here, the critical KPI is performance against commercial controls. Internal rankings are not enough. A program creates real value only when its best on-target material can match or exceed benchmark varieties under realistic conditions. This is where breeding progress becomes commercially legible.

Together, these three KPIs provide a practical view of value creation across the breeding pipeline: percent on-target material in screening trials, selection accuracy in intermediate trials, and performance against commercial controls in pre-commercial or commercial trials. The first measures funnel quality. The second measures decision quality. The third measures commercial relevance. End-stage results show what the program delivered; all three KPIs show whether it is positioned to deliver again.

NSIP Genetics website: https://genetics.nsiplants.com/

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