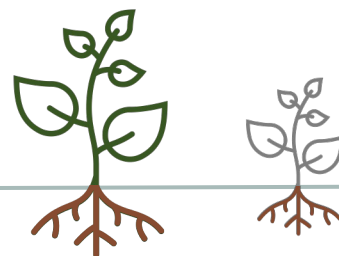


# From Molecular Gene Discovery to Field Performance

A **six-suggestion guide** to helping researchers understand what is required when evaluating or designing studies claiming major yield increases.

## 1) Use elite germplasm

*Backcross changes into ex-patent variety protection lines or similar commercially competitive germplasm.*



## 2) Measure plot yield

*Yield data from single plants is not scalable to plot-wide effects.*

## 3) Test G x E x M x T effects

*Genotype x environment x management x transgene effects should be tested for any introduced trait.*



Competition



Density



Edge



Irrigation



Fertilizer



Direct seeding or transplanting



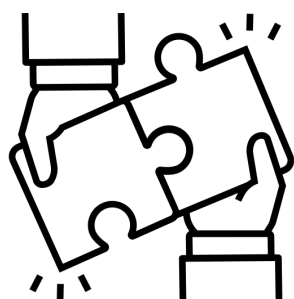
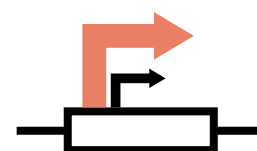
Mechanical harvesting

## 4) Follow standard management

*The agronomic practices of the target growing environments should be factored into the experimental design.*

## 5) Consider evolution

*Investigate 'missed' genetic variation or novel alleles from different species and ensure that comparable alleles aren't present in commercial varieties.*



## 6) Develop collaborations

*Reach out to colleagues, chat at conferences, and learn about existing public yield testing frameworks such as the Genomes to Fields Initiative, CGIAR, and university-based breeding programs.*

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Suggestions from: *The perils and promise of single-gene approaches to enhancing crop yield* (Khaipho-Burch et al., 2023 Under Revision)

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