

Example Commercial Hybrid Maize Improvement Program featuring New Line Development and New Line Evaluation

SEASON ¹	ACTIVITY
Summer 0	Make breeding cross
Winter 0	Self or BC
Summer 1	<ol style="list-style-type: none"> (1) Grow 40 F₂ or BC₁ populations (i.e. S₀ generation) with 200+ plants each (2) Select S₀ plants in each population based on plant type, disease and insect resistance, marker genotype, etc. (3) Self and testcross 100 selected S₀ plants in each population to an inbred tester
Summer 2	<ol style="list-style-type: none"> (1) Discard ≤5 F₂ or BC₁ populations based on performance data on the parents, obtained from the previous year (2) Grow 3500 S₀ testcrosses in unreplicated trials at 2-4 locations (3) In each S₁ family, self ≥3 plants to obtain 2 S₂ subfamilies per S₁ family. Discard S₁ families that appear inferior. (4) Select the best 350 families based on their S₀ testcross performance
Winter 2	<ol style="list-style-type: none"> (1) Cross 700 S₂ families to each of 2 inbred testers (2) Self S₂ families to obtain S₃ families
Summer 3	<ol style="list-style-type: none"> (1) Evaluate 1400 S₂ testcrosses in unreplicated trials at 6-10 locations (2) Select 8-15 S₃ families based on their S₂ testcross performance; code lines
Winter 3	Self the selected S ₃ families to obtain S ₄ seeds of new inbreds
Summer 4	<ol style="list-style-type: none"> (1) Cross each new inbred with 6-10 elite inbreds (2) Self the S₄ lines to obtain S₅ seeds of new inbreds
Summer 5	<ol style="list-style-type: none"> (1) Yield trials of experimental hybrids at 15-40 locations (2) Self the S₅ lines to obtain S₆ seeds of new inbreds
Summer 6	<ol style="list-style-type: none"> (1) Yield trials of advanced hybrids at 20-75 locations (2) On-farm strip tests (i.e. 150-300 m² plots) at 30-500 locations
Summer 7	On-farm strip tests of pre-commercial hybrids at 50-1500 locations
Fall	Release 0-2 new hybrids

¹ Number after season indicates the year in the development pipeline. Note: this program serves a market region with one growing season per year (Summer). Winter indicates off-season activities.