Blackeye Cowpea Varietal Improvement for California and the USA Focused on Biotic Stress Resistance

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A  Crop significance
Blackeye-type cowpeas (Vigna unguiculata)
A traditional dry-grain legume in cropping systems in California and southern USA

Typical grains (California Blackeye 46)
Central Valley of California
California production field

Crop rotation system to cut N-fertilizer input

B  Main biotic stresses – targets for resistance breeding

Aphid
Lygus bug
Root-knot nematodes
Fusarium wilt

C  Genetic/genomic resources

UCR germplasm collection ~ 6,000 accessions
2 primary Gene pools centered on West Africa and Southeast Africa

Multiple resistance sources, QTL haplotypes, SNP genotyping (60K iSelect, KASP) and genetic mapping

D  Breeding strategy

Greenhouse-grown progeny
Leaf samples for SNP genotyping

MABC
Highest-background plant in backcrossing

Only positive-haplotype plants retained

Near-isogenic lines of local varieties with stacked resistance traits

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