

<b>RosBREED</b>	<b>Genomics, Genetics, and Breeding Research Logic Model</b>			
<b>Inputs:</b>	Project Core and Partner Members Genomics and Genotyping Laboratories RosBREED Scientists Pedigree Based Analysis (PBA) Software and Statistical Support Genome Database for Rosaceae (GDR)		Stakeholder, Scientific, and Extension Advisory Panels Existing Plant Germplasm in Breeding Programs Graduate Students and Post-Doctoral Interns Development Committees	
<b>Activities</b>	<b>Outputs</b>	<b>Short-term Outcomes</b>	<b>Mid-term Outcomes</b>	<b>Long-term Outcomes</b>
<p>Develop databases of archived phenotypic and genotypic data</p> <p>Develop and install MAB software in core breeding programs with training</p> <p>Develop genome-wide scan capabilities for apple, peach, cherry and strawberry</p> <p>Trial use of marker assisted seedling selection (MASS) in core breeding programs</p>	<p>Crop Reference Sets (publicly available)</p> <p>Breeding Program Pedigree Sets (available only to individual breeding programs)</p> <p>Pedigree-Based Analysis (PBA) and Breeder Information Management System (BIMS) are accessible to all breeding programs</p> <p>Useful, novel marker-trait associations are identified for fruit quality</p> <p>Marker assisted Cross Planner in use for crossing decisions, including more wide crosses</p>	<p>Improved understanding of the relative impact of genetic and non-genetic factors influencing fruit quality</p> <p>Coordinated MAB Pipeline approach in use in core breeding programs for genetic management of valuable fruit quality traits</p> <p>PBA, BIMS, Decision Support tool and other software adopted and in use by initial core set of breeding programs</p> <p>MAS in use in core breeding programs to facilitate introgression of valuable novel traits</p> <p>Transfer of genomic information among the Rosaceous crops using the candidate locus approach and orthologous markers</p>	<p>Improved understanding of the mode of action of genes and alleles influencing fruit quality</p> <p>The core RosBREED breeders implement MAB</p> <p>Increased gain in fruit quality per breeding cycle due to improved parent selection and improved mean progeny value</p> <p>Increased genetic knowledge flow across taxonomic boundaries in Rosaceae</p>	<p>More efficient production and handling for superior fruit quality by use of gene-based information</p> <p>More rapid availability of new cultivars with superior fruit quality</p> <p>Improved consumption, enjoyment, profitability and sustainability of rosaceous fruit, nut, and floral crops</p> <p>A reference Rosaceae genome resource for rapid use of genomics information across Rosaceae crops</p>

<b>RosBREED</b>	<b>Socio-Economics Research Logic Model</b>			
<b>Inputs:</b>	Project Core and Partner Members Genomics and Genotyping Laboratories RosBREED Scientists Pedigree Based Analysis (PBA) Software and Statistical Support Genome Database for Rosaceae (GDR)		Stakeholder, Scientific, and Extension Advisory Panels Existing Plant Germplasm in Breeding Programs Graduate Students and Post-Doctoral Interns Development Committees	
<b>Activities</b>	<b>Outputs</b>	<b>Short-term Outcomes</b>	<b>Mid-term Outcomes</b>	<b>Long-term Outcomes</b>
<p>Survey Rosaceae breeders, producers, processors, marketing groups, consumers</p> <p>Discover current priorities of Rosaceae breeders for fruit and production traits</p> <p>Discover grower preferences for fruit traits and production traits and willingness to adopt new cultivars</p> <p>Discover preferences and values of marketing intermediaries for fruit traits</p> <p>Integrate findings from different stakeholder groups</p>	<p>Establishment of transparent process to determine economic values of production traits and fruit quality traits for breeding programs</p> <p>Findings on the economic values of production traits and fruit quality traits across entire production, processing and marketing systems, including weightings to inform breeding programs</p>	<p>Increased awareness of the uses and value of breeding and marker-assisted breeding among Rosaceae producer/processors, marketing groups, and trade organizations</p> <p>More integrated specialty crop system involving breeding programs, producer/processors, market intermediaries, and consumers</p>	<p>Target markets identified and valuable production and fruit quality traits targeted by Rosaceae breeders within efficient marker-assisted breeding approaches</p> <p>Routine use of economic weighting of production traits and fruit quality traits for selection in Rosaceae MAB</p>	<p>More efficient production and handling for superior fruit quality by use of gene-based information</p> <p>More rapid availability of new cultivars with superior fruit quality</p> <p>Improved consumption, enjoyment, profitability and sustainability of rosaceous fruit, nut, and floral crops</p> <p>A reference Rosaceae genome resource for rapid use of genomics information across Rosaceae crops</p>

<b>RosBREED</b>	<b>Outreach and Extension Logic Model</b>			
<b>Inputs:</b>	Project Core and Partner Members Genomics and Genotyping Laboratories RosBREED Scientists Pedigree Based Analysis (PBA) Software and Statistical Support Genome Database for Rosaceae (GDR)		Stakeholder, Scientific, and Extension Advisory Panels Existing Plant Germplasm in Breeding Programs Graduate Students and Post-Doctoral Interns Development Committees	
<b>Activities</b>	<b>Outputs</b>	<b>Short-term Outcomes</b>	<b>Mid-term Outcomes</b>	<b>Long-term Outcomes</b>
<p>Targeted national and regional workshops for breeders, allied scientists, and other industry stakeholders</p> <p>Postdoc and student trainee mentoring programs in core breeding programs</p> <p>Develop eXtension Rosaceae Community of Practice and produce public information for Community of Interest</p> <p>Collaborate with other CAPs and MSU Plant Biotechnology Resource and Outreach Center to expand technical and non-technical short courses and other educational resources on marker assisted plant breeding</p> <p>Develop information resources for stakeholders on integrating socio-economic research with breeding, production, marketing</p> <p>Train-the-trainer workshops for extension specialists on genomics in plant breeding</p>	<p>Extension platforms facilitate communication of marker assisted plant improvement among targeted audiences: researchers, industry stakeholders, and consumers</p> <p>Breeders and allied scientists have access to PBA and MAB (using the BIMS and GDR) to optimize selection strategies</p> <p>Industry stakeholders have access to a variety of information resources about the uses and value of genomics approaches to specific selection targets in Rosaceae plant breeding programs</p> <p>RosBREED genomics and socioeconomic research publicized thru eXtension, PBGworks, GDR, scientific and trade publications, association newsletters, popular press, videos</p>	<p>Breeders and allied scientists better understand the relative impact of genetic and non-genetic factors influencing fruit quality</p> <p>Breeders and allied scientists learn how to use PBA, BIMS, and web-based resources</p> <p>Breeders and allied scientists better understand relative economic values of production traits and fruit quality traits</p> <p>Industry stakeholders better understand and appreciate breeding approaches that target valuable traits and market classes with efficient selection strategies</p>	<p>A broader set of Rosaceae breeders implement MAB</p> <p>Breeders and allied scientists develop significant new cross-commodity collaborations within and beyond Rosaceae</p> <p>Industry stakeholders provide ongoing feedback on economic value and preferences, enabling continuous quality improvement in plant breeding programs</p> <p>Industry stakeholders increase support of genomics applications in Rosaceae plant breeding programs</p>	<p>More efficient production and handling for superior fruit quality by use of gene-based information</p> <p>More rapid availability of new cultivars with superior fruit quality</p> <p>Improved consumption, enjoyment, profitability and sustainability of rosaceous fruit, nut, and floral crops</p> <p>A reference Rosaceae genome resource for rapid use of genomics information across Rosaceae crops</p>