

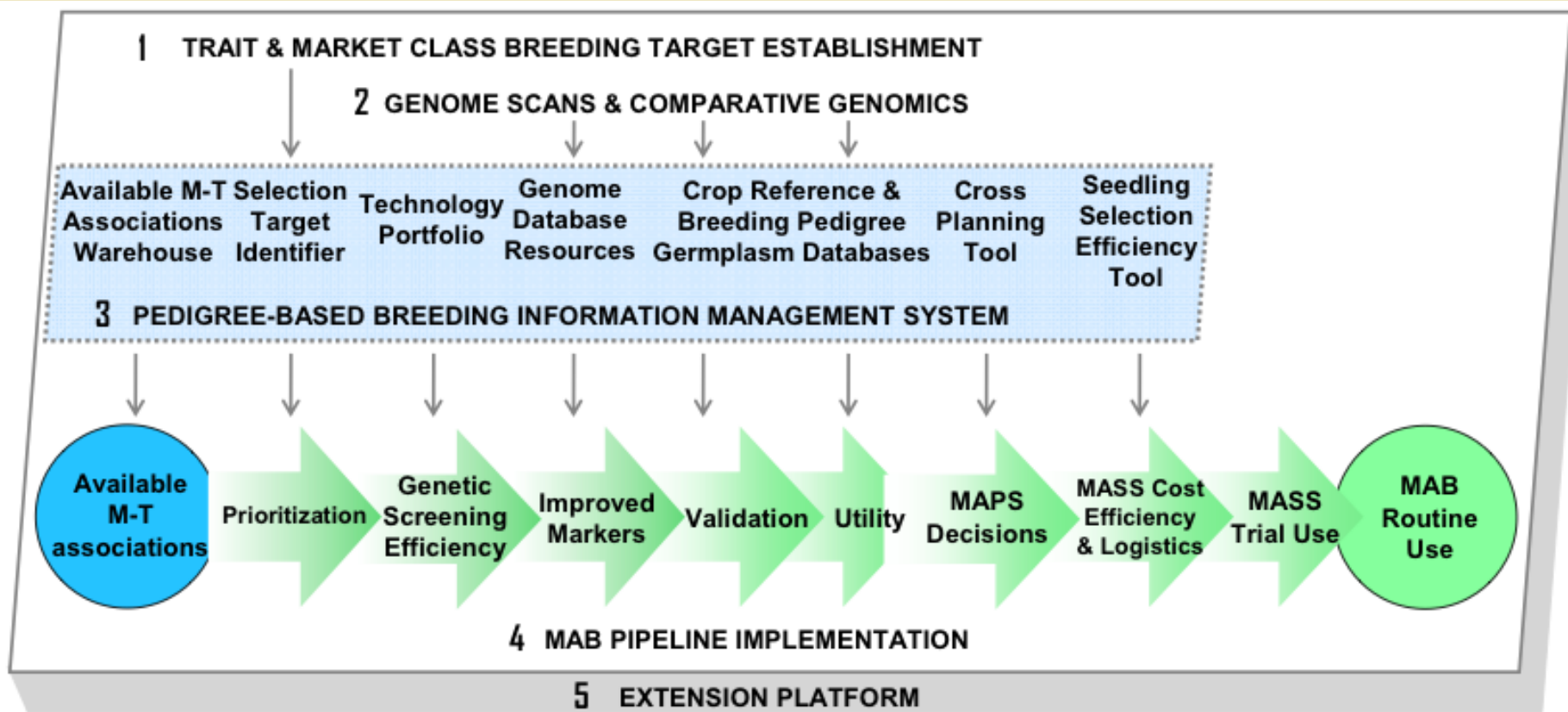
ROSBREED

Enabling marker-assisted breeding in Rosaceae

Extension and Outreach

Cholani Weebadde
Team Leader

RosBREED Components



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United States Department of Agriculture
National Institute of Food and Agriculture

Target outcomes: Extension

1. RosBREED's demonstration breeders and project associates will be trained to optimize utilization of marker-assisted breeding (MAB) and knowledge of trait values.
2. Successful adoption of MAB will be enhanced by cross-communication and cross-disciplinary collaboration with allied scientists.
3. Stakeholders will appreciate how the use of genomics information can be harnessed to develop new cultivars that meet market needs and consumer preferences.

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Products that are useful for them

Project Participants

My role as the
Extension lead

Communication between stakeholders
Address needs, gaps, concerns....

AP Members

Products that are useful for them

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Today's Goals:

- Involve our Advisory Panel Members
- Review the scheduled meetings and workshops and web-based communication protocols
- Review Year 1 goals for breeding teams in preparation for tomorrow's activities.

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Involve our Advisory Panel (AP) Members

1. Why you are an important part of RosBREED?
2. What RosBREED can deliver for you.

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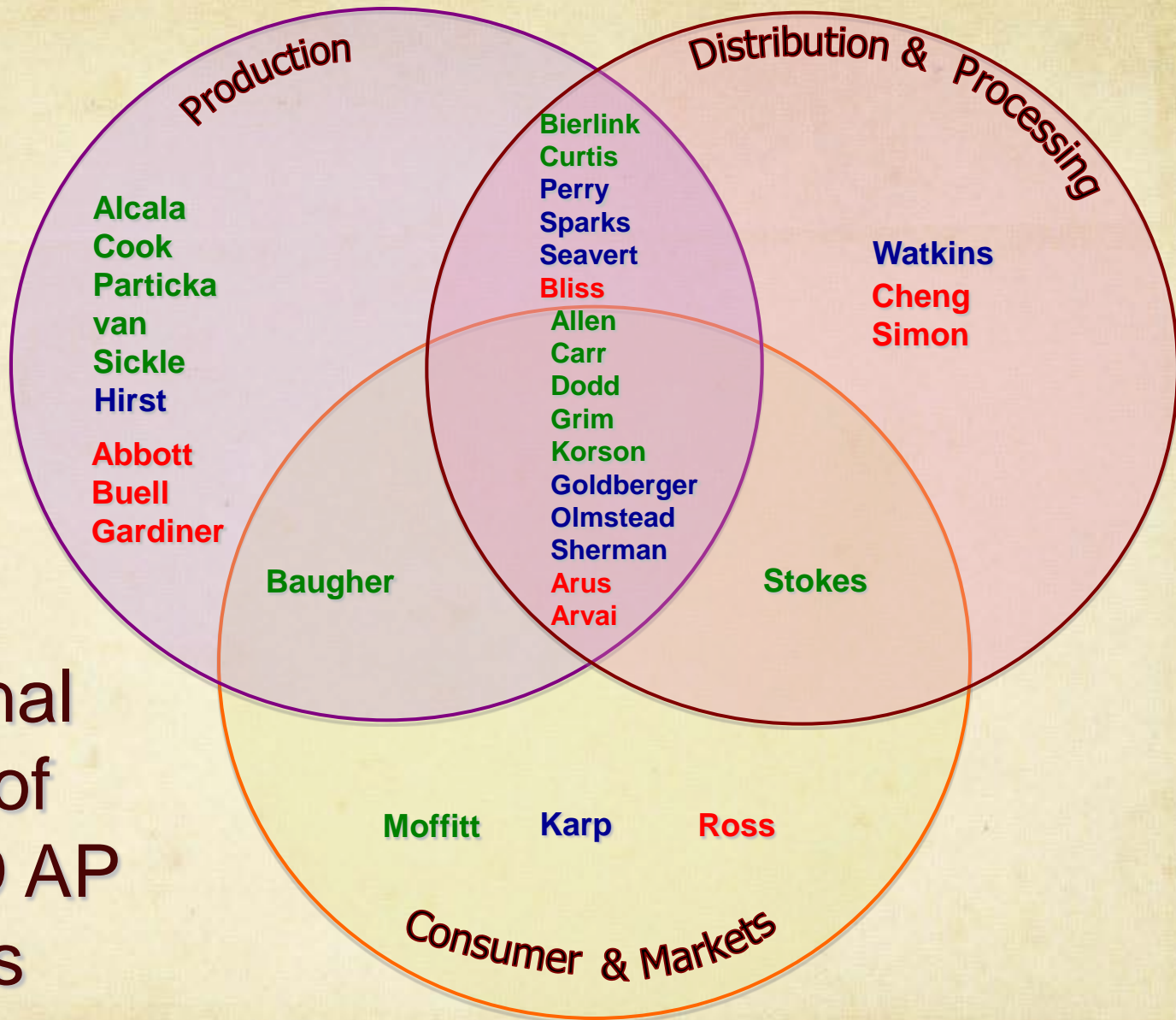
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AP Color Key

Industry

Extension

Scientific



Professional interests of RosBREED AP members

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RosBREED Industry Advisory Panel

Jim Allen
Phil Baugher
Henry Bierlink
Fred Cook
Chalmers Carr III
Robert Curtis
Bill Dodd
Chrislyn Particka
Bruce Grim
Rick Harrison
Philip Korson
Kevin Moffitt
Tom Stokes
Gary van Sickle



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RosBREED Extension Advisory Panel

Jessica Goldberger
Peter Hirst
David Karp
Mercy Olmstead
Ron Perry
Clark Seavert
Jamie Sherman
Brian Sparks
Chris Watkins



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RosBREED Scientific Advisory Panel

Bert Abbott
Pere Arús
Joe Arvai
Fred Bliss
Robin Buell
Lailing Cheng
Sue Gardiner
Carolyn Ross
Phil Simon



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Review the scheduled meetings and workshops and web-based communication portals.

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Project meetings and workshops

<i>Timeline</i>	<i>Meeting</i>	<i>Location</i>	<i>Target Audience</i>	<i>Theme</i>
YR 1	RosBREED I	San Diego, CA Jan 7 th – Jan 8 th , 2010	RosBREED Participants, Advisory Panel Members, & Collaborators	RosBREED Orientation & Planning
	SNP Summit	Seattle, WA May 2010	RosBREED Genomics team participants & Collaborators	Design genotyping platforms in coordination with international partners.
	ASHS	Palm Springs, CA August 2010	Community breeders & local AP Members	RosBREED Introduction to Rosaceous community crop breeders
YR 2	RosBREED II	East Lansing, MI Week of March 3 rd , 2011	RosBREED Participants, Advisory Panel Members, & Collaborators	<ul style="list-style-type: none"> • Breeding teams perform data analysis. • Overview of RosBREED goals, accomplishments, deliverables to date. • Feedback from AP Members & Collaborators
YR 3	RosBREED III	East Lansing, MI Week of March 5 th , 2012	RosBREED Participants, Advisory Panel Members, & Collaborators	<ul style="list-style-type: none"> • Breeding teams perform data analysis. • Overview of RosBREED goals, accomplishments, deliverables to date. • Feedback from AP Members & Collaborators
	Participatory Workshops	4 locations* 2012	Demonstration & community breeders Local Advisory Panel Members	Assist in MAB adoption by breeders Stakeholder education
YR 4	RosBREED IV	TBD 2013	RosBREED Participants, Advisory Panel Members, & Collaborators	<ul style="list-style-type: none"> • Breeding teams perform data analysis. • Overview of RosBREED goals, accomplishments, deliverables to date. • Feedback from AP Members & Collaborators • Final recommendations and program evaluation
	Participatory Workshops	5 locations* 2013	Demonstration & community breeders Local Advisory Panel Members	Assist in MAB adoption by breeders Stakeholder education
	Regional Workshops	NY, SC, WA, CA 2013	Regional extension specialists. Community breeders Industry representatives	MAB training Technology transfer Engage stakeholder community

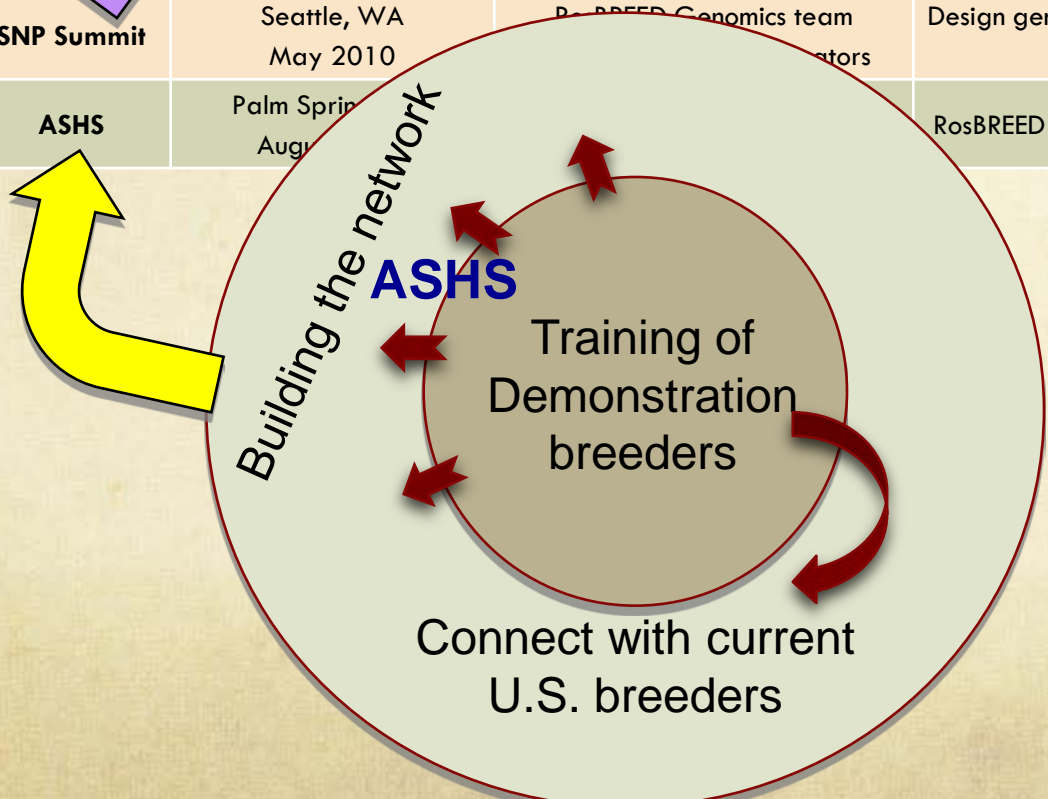
* Participatory workshops will be located in NY, MI, SC, AR, TX, CA, WA, MN, and NH.

Year 1 activities

Compare SNP genotyping platforms and decide on an efficient technology and a service provider for genome scans

Get everyone onboard.
 Sessions for breeders:
 Pedimap, FlexQTL &
 PBGworks
 SE breeder interviews
 DNA marker discussions

	Location	Target Audience	
YR 1	San Diego, CA Jan 7 th – Jan 8 th , 2010	RosBREED Participants, Advisory Panel Members, & Collaborators	RosBREED Orientation & Planning
	Seattle, WA May 2010	RosBREED Genomics team Advisory Panel Members	Design genotyping platforms in coordination with international partners.
	Palm Springs, CA August 2010	RosBREED Participants, Advisory Panel Members, & Collaborators	RosBREED Introduction to Rosaceous community crop breeders



Years 2 and 3 Activities

Validate reported fruit quality QTL, identify new QTL and QTL alleles, identify marker alleles associated in coupling phase with QTL alleles

Estimate effect and value of individual QTL alleles, Calculate probable QTL genotypes for parents, and Predict the QTL performance of resulting progeny

Timeline	Meeting	Location	Target Audience	Theme
YR 2	RosBREED II	East Lansing, MI Week of March 3 rd , 2011	RosBREED Panel	<ul style="list-style-type: none"> Breeding teams perform data analysis. Review of RosBREED goals, accomplishments, deliverables to date. Feedback from AP Members & Collaborators
YR 3	RosBREED III	East Lansing, MI Week of March 5 th , 2012	RosBREED Panel Member Advisory Collaborators	<ul style="list-style-type: none"> Breeding teams perform data analysis. Overview of RosBREED goals, accomplishments, deliverables to date. Feedback from AP Members & Collaborators
	Participatory Workshops	4 states	Breeders	<ul style="list-style-type: none"> Assist in MAB adoption by breeders Stakeholder education

Share findings with breeders

Consider needs of individual breeding programs and their local industries

Marker – trait associations identified from data analyses used to select markers for MAS

* Participatory workshops in WA, MN, and NH.

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Year 4 Activities

Share findings with breeders

Consider needs of individual breeding programs and their local industries

Maker – trait associations identified from data analyses used to select markers for MAS

Evaluate the work accomplished

Timeline	Activity	Locations	Audience	Themes
YR 4	Participatory Workshops	2013	Participants, Advisory Panels, & Collaborators	<ul style="list-style-type: none"> Breeding teams perform analysis. Overview of RosBREED goals, accomplishments, deliverables to date. Feedback from AP Members & Collaborators Final recommendations and program evaluation
	Regional Workshops	NY, MI, SC, WA, CA	Demonstration and community breeders Local Advisory Panel Members	Assist in MAB adoption by breeders Stakeholder education
	Regional Workshops	NY, MI, SC, WA, CA	Regional extension specialists. Community breeders Industry representatives	MAB training Technology transfer Engage stakeholder community

* Participatory workshops to be located in NY, MI, SC, AR, TX, CA, WA, MN, and NH.

Next two slides

Extension & Outreach Team Members

&

Organizers of the Regional Workshops in Year 4

- Carlos Crisosto - California (Univ. of Calif. - Davis)
- Karina Gallardo - Washington (Wash. State Univ.)
- Greg Reighard - South Carolina (Clemson Univ.)
- Kenong Xu - New York (Cornell Univ.)

Co-PDs with
Extension
expertise!!!

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Goals of the Regional Workshops

Enhance communication among stakeholders

Train regional extension specialists for ToT

1. Trait values
2. MAB

videos

presentations

handbooks

Community breeding programs

Activities

1. Half day short course MPB
2. Case studies from demonstration-breeding programs in the region
3. Site visits to demonstration breeding programs in the region
4. Short course – socioeconomic valuation tools
5. Personal and small group tutelage by BIMS developer

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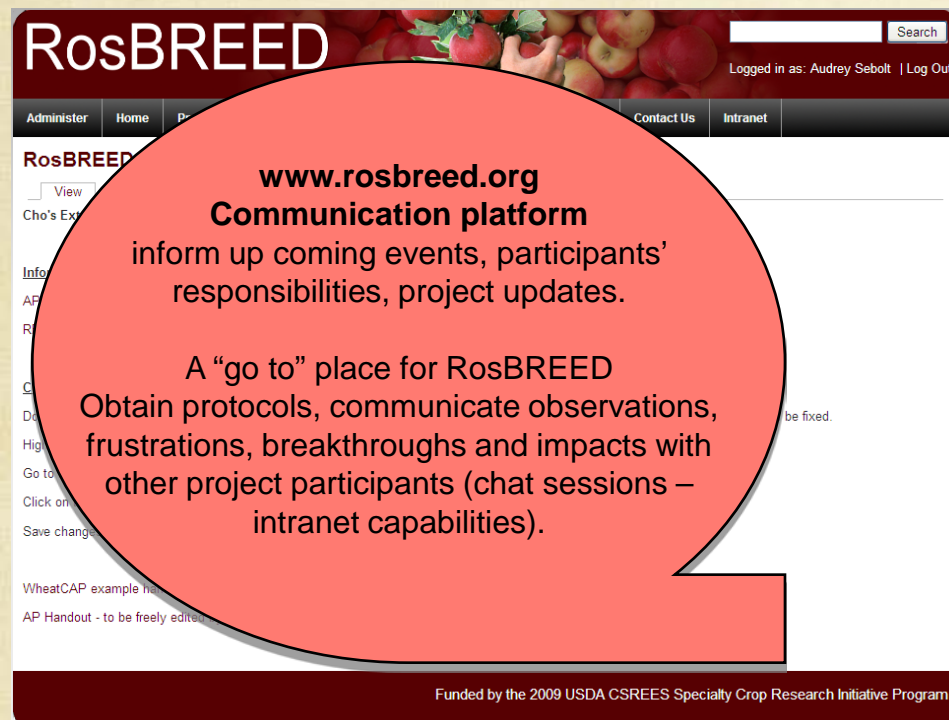


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RosBREED Communication

Within RosBREED

Within the Community of Practice (CoP)



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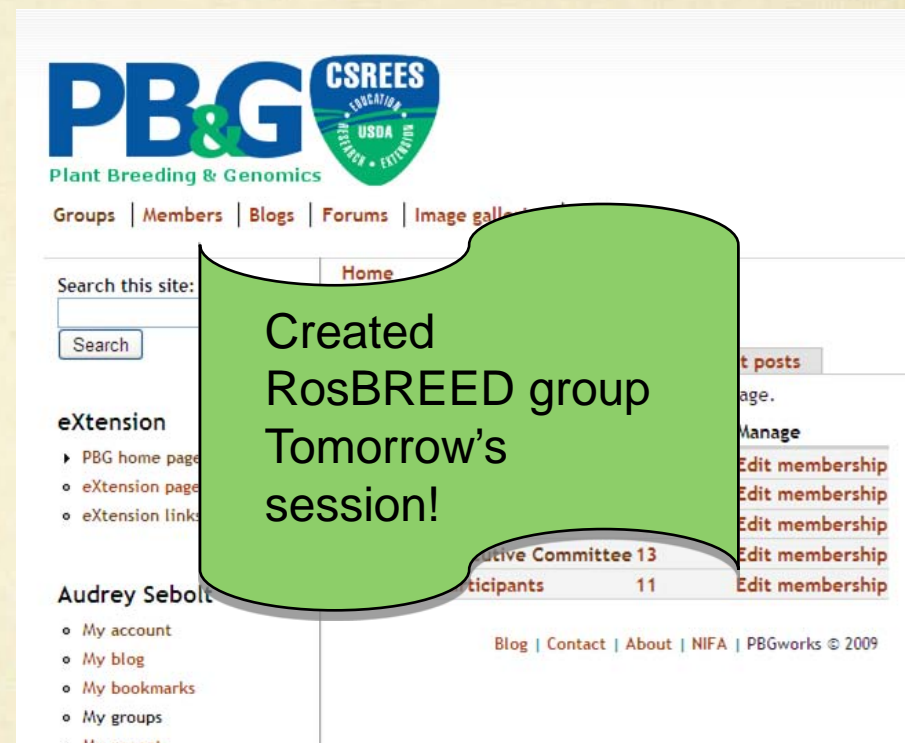
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www.rosbreed.org
Communication platform
inform up coming events, participants' responsibilities, project updates.

A "go to" place for RosBREED
Obtain protocols, communicate observations, frustrations, breakthroughs and impacts with other project participants (chat sessions – intranet capabilities).

Funded by the 2009 USDA CSREES Specialty Crop Research Initiative Program



PB&G CSREES
Plant Breeding & Genomics

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Interactive communication with AP Members – Q on handout

How often? - Quarterly, monthly?

What method? - Pose questions for feedback???

- Internet/Intranet
- E-mails
- Newsletters
- Phone: Personal and/or conference calls (got meeting.com?)

How do we ensure the communication is sustained and goes in both directions?????????

First question in the handout under “Questions to be thinking about for the discussion session”



Review Year 1 goals for breeding teams in preparation for tomorrow's activities.

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Year 1 Plan of Work

Year 1 goals for breeding teams:

- Phenotype the **Crop Reference Sets (CRS)**
- Collect leaves and in some cases, extract DNA of **Crop Reference Sets (CRS)**
- Begin phenotyping the **Breeder Pedigree Sets (BPS)**
- Become familiar with Pedimap, FlexQTL and PBGworks – begins tomorrow with discussions and hands-on sessions
- Communicate within RosBREED team through RosBREED.org and PBGworks

Summary of RosBREED Outcomes

Four year project outcomes

Increased genetic knowledge flow across taxonomic boundaries in the Rosaceae



Implementation of MAB by breeding programs



Increased gain in fruit quality per breeding cycle due to improved parent selection and improved mean progeny value

Long-term outcomes

More rapid availability of new cultivars with genetically superior fruit quality

Improved profitability and sustainability of US rosaceous fruit, nut, and floral crops with increased consumption and enjoyment



After four years: How will we know if we've been successful?

- Demonstration breeders are using marker-assisted breeding for key target traits.
- Breeding is more efficient because of the use of molecular markers.
- Rosaceous community crop breeders are motivated to use MAB.
- Stakeholders (allied scientist, producers/processors, marketing groups and trade organizations) appreciate the advantages of using molecular information to enhance breeding.

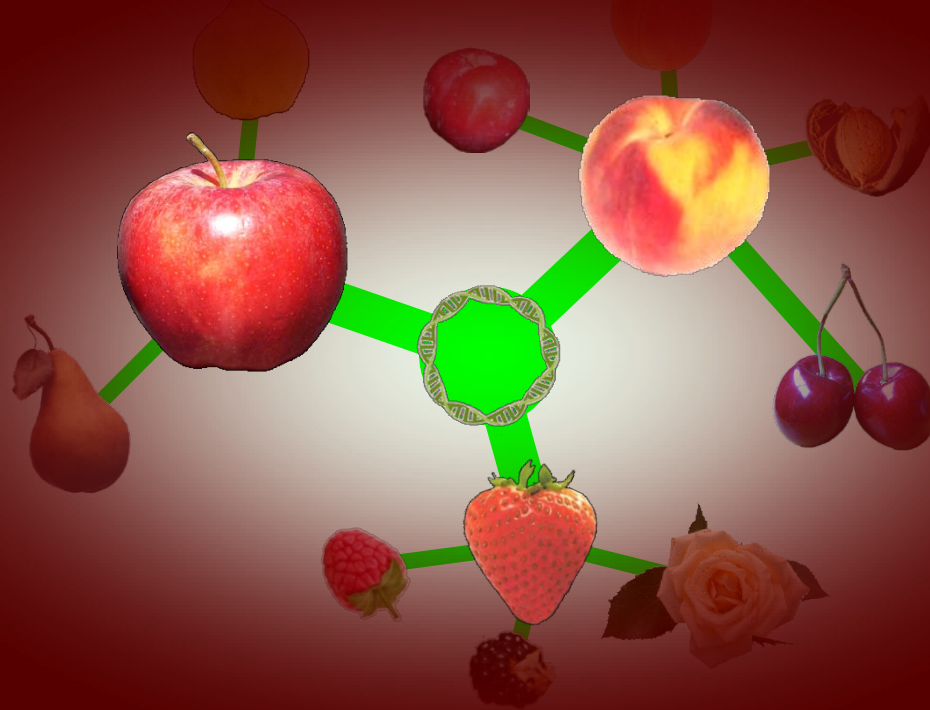
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Questions?