



Pollination: Prep, Partnerships and Policy





Pollination: Preparation Partnership and Policy

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Preparation for Almond Pollination

- What does it take to get bees to almonds?

Partners

- Are we collectively solving CCD?
- Are we collaboratively improving honey bee health?

Policy

- What's on the horizon to help honey bees?

Colony Collapse Disorder



We are still seeing honey bee losses

- **Research Summit Nov. 12, 2012**
 1. **Varroa/virus complex**
 2. **Pesticides**
 3. **Nutrition/habitat loss**

Vision

Ensure long-term sustainability of honey bees to protect the nation's food supply

Strategic Priorities

1. **Coordinate research and funding**
2. **Enhance technology transfer**
3. **Create beekeeper business model**

Ensure long-term sustainability of honey bees to protect the nation's food supply

Working to improve bee supply

Research Funding

- ABC
- Project Apis m
- National Honey Board
- USDA - ARS
- CA State Beekeepers Association
- CA Dept of Ag
- ND Dept of Ag
- Monsanto
- Costco
- Bayer



Almond Grower Investment in Bee Health

- ABC has funded research in pollination since 1976, investing some \$2 million of almond grower dollars
 - Largest, most sustained of any commodity organization
 - Honey bee health a focus since 1995 – nutrition, stock improvement, pest/disease management, impact of pesticides - \$1.4 million spent
 - Since 2003, \$950,000 spent on 55 projects
- Partnering with beekeepers (e.g., Project Apis m and CSBA) and research institutions



	Current Almond Board Funded Pollination Research	2011-12	2012-13
Cobey, UCD	Stock Improvement	\$21,020	\$35,605
Sheppard, Wash St U	Cyropreservation, Germplasm Preservation for Stock Improvement	\$20,629	
Spivak, U Minn	Tech Transfer to Improve Honey Bee Genetics, Health, and Stocks	\$20,000	
Mueller, UCCE Fresno Co.	Colony Evaluation – an Online Learning Course	\$3,300	
Huang, Mich St Univ	RNAi as a Control Method for Varroa	\$17,960	
Carroll, USDA Tucson	Varroa Control Using Brood Host Volatiles	\$13,050	
Eischen , USDA Weslaco	Honey Bee Colony Density and Nut Set		\$33,845
Frazier, Penn State	Insecticides and Fungicides Found in Migratory Honey Bee Colonies and their Impacts on Immune Function and Varroa Population Levels		\$40,748
Hooven, Oregon St U	Fungicide Effects on Honey Bee Development	\$10,000	\$10,000
	Total	\$105,959	\$120,198

Project Apis M Funding

Ellis	UF	Varroa Control-RNAi	\$	16,835
DeRisi	UCSF	Viruses & Pathogens II	\$	45,000
Bromenshenk	Bee Alert	Virus & Nosema	\$	36,000
Flenniken	MSU	Virology & Immunology	\$	43,500
Martin	UK/HA	Virus-Pathogen Complex	\$	32,556
Wick	BVS, Inc	Virus & Essential Oils	\$	15,000
Spivak	U MN	Landscapes & Nutrition	\$	10,000
Huang et al	MSU	Amino Acids	\$	27,500
Eischen	USDA	Colony Density Almonds	\$	16,200
Pettis	USDA	Amitraz	\$	33,140
Frazier	PSU	Pesticide CostShare	\$	10,000
Johnson, R	OH State	Pristine	\$	29,690
vanEngelsdorp	U MD	Midwest Tech Transfer	\$	21,430
Mueller	UCCE	On-Line Tools	\$	3,300

\$ 340,151

Project Apis m.



Working to improve bee supply

- **Building Honey Bee Forage**
 - ❑ **Session following in Research Presentations**
- **Improving Transit through Border Stations**
- **Promoting Best Management Practices**
- **Supporting Tech Transfer Teams**
- **Seeking Grant Funding**
- **Seeking Corporate Funding**



Thank you!



Heintz, 2007



Maintaining Colony Quality and Numbers for Almond Pollination

**George Hansen
Foothills Honey Co LLC
Colton, Oregon**



Natural Annual Cycle for Honey Bees

Causes of Colony Loss

Pest and Pathogen Control

Queen Quality, requeening

Maintaining hives during season

Preparation of colonies for winter.

Honey Bee Nutrition

Costs

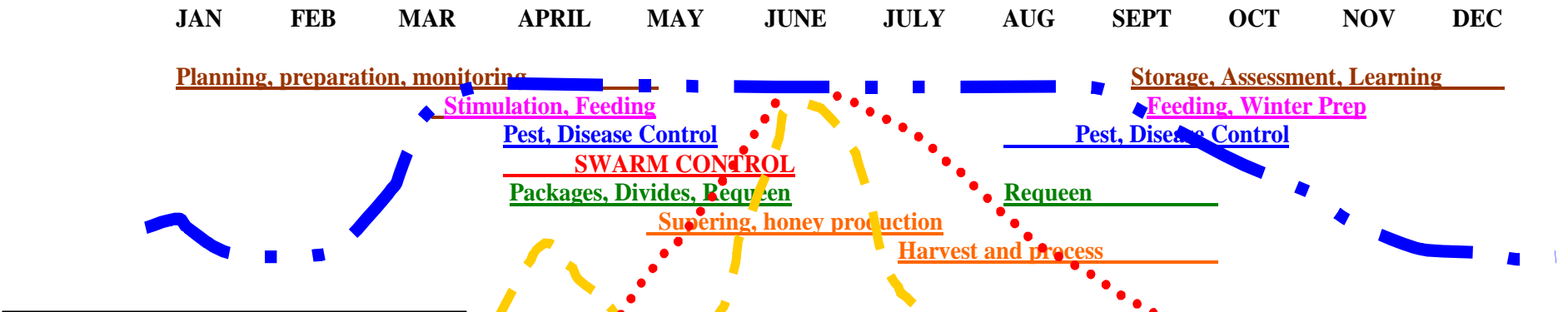
Natural Annual Cycle for Honey Bees



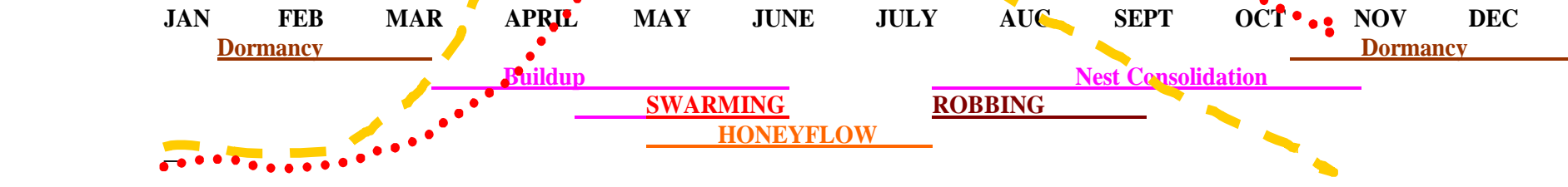
- Colonies expand and contract depending on Seasonal Cycles.
- Temperature, length of day, availability of pollen and nectar are triggers to expansion/contraction.
- Beekeeper has little or no control over these triggers, except through supplemental feeding.

WILLAMETTE VALLEY BEEKEEPING CYCLES

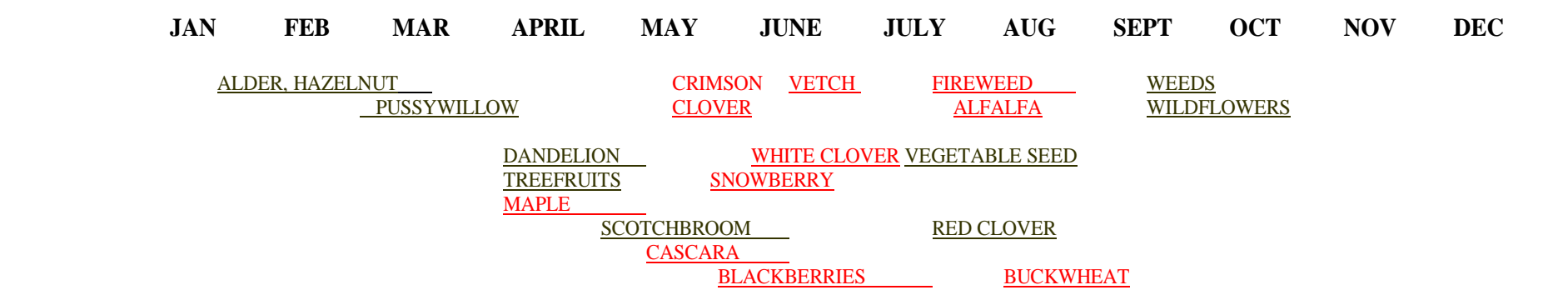
BEEKEEPING ACTIVITIES



HONEYBEE COLONY ACTIVITY



MAJOR NECTAR AND POLLEN PLANTS



Causes of Colony Loss



Beekeepers report a small percentage of colonies lost had CCD symptoms

The majority of colony losses are from causes that beekeepers know and have some control over

Pest and Pathogen Control



Monitor levels

Timely Treatments

Check efficacy

Double check for reinfestation

Beekeepers do not have field reps, monitoring services, or extension specialists to monitor and make pest control recommendations.

Queen Quality, Requeening



Annual requeening

Make sure of acceptance

Be cognizant of health issues in selection of queen stock

Queen at her best when she will make the most impact



Maintaining Hives during the Season



Ensure proper nutrition

Comb replacement schedule

Eliminate stressful and unprofitable placements

Plan for attrition

Preparation for Winter



Young Bees

Fat Bees

Best Feed Money Can Buy

Quality Queens at their peak

Pests and Pathogens under control

Pollen vs Substitute.

Preparation for Almonds starts in Early August

Honey Bee Nutrition



Bees need both Carbohydrates and Protein.

Bees can bridge short periods of dearth.

Nutrition is the first defense against disease and pesticide exposure.

No single pollen source provides all the amino acid needs for a full diet.

By itself, no protein supplement currently available will sustain bees for more than a few weeks.

Cost Estimates for Successful Wintering

High colony counts

High populations

February 1 timeline for delivery

\$200/ colony







ALMOND









Questions