

# Tech Transfer Teams for Commercial Beekeeping: Pacific Northwest Tech Transfer Team



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## Introduction

Commercial beekeepers face a set of challenges to keep honey bee colonies alive and healthy. The Tech Transfer Team model was created under the Bee Informed Partnership (BIP) to serve beekeepers in an effort to improve bee health and reduce colony mortality. Tech Teams work closely with large-scale beekeepers to collect samples and field observations from each colony. This includes the following data:

- Colony Strength
- Queen Quality
- Hygienic Behavior
- Brood Diseases
- Parasites + Pests
- Virus Levels

## Scope of Bee Informed Partnership

The Pacific Northwest (PNW) Tech Team partners with 17 commercial beekeepers in OR, WA, and ID. The **6 regional Tech Teams** partner with **77 beekeepers that collectively manage ~459,000 colonies** (Fig 1). Overall, this represents about 20% of the colonies managed in the United States. Many of these colonies provide **pollination services for 200,000+ acres of almonds**.

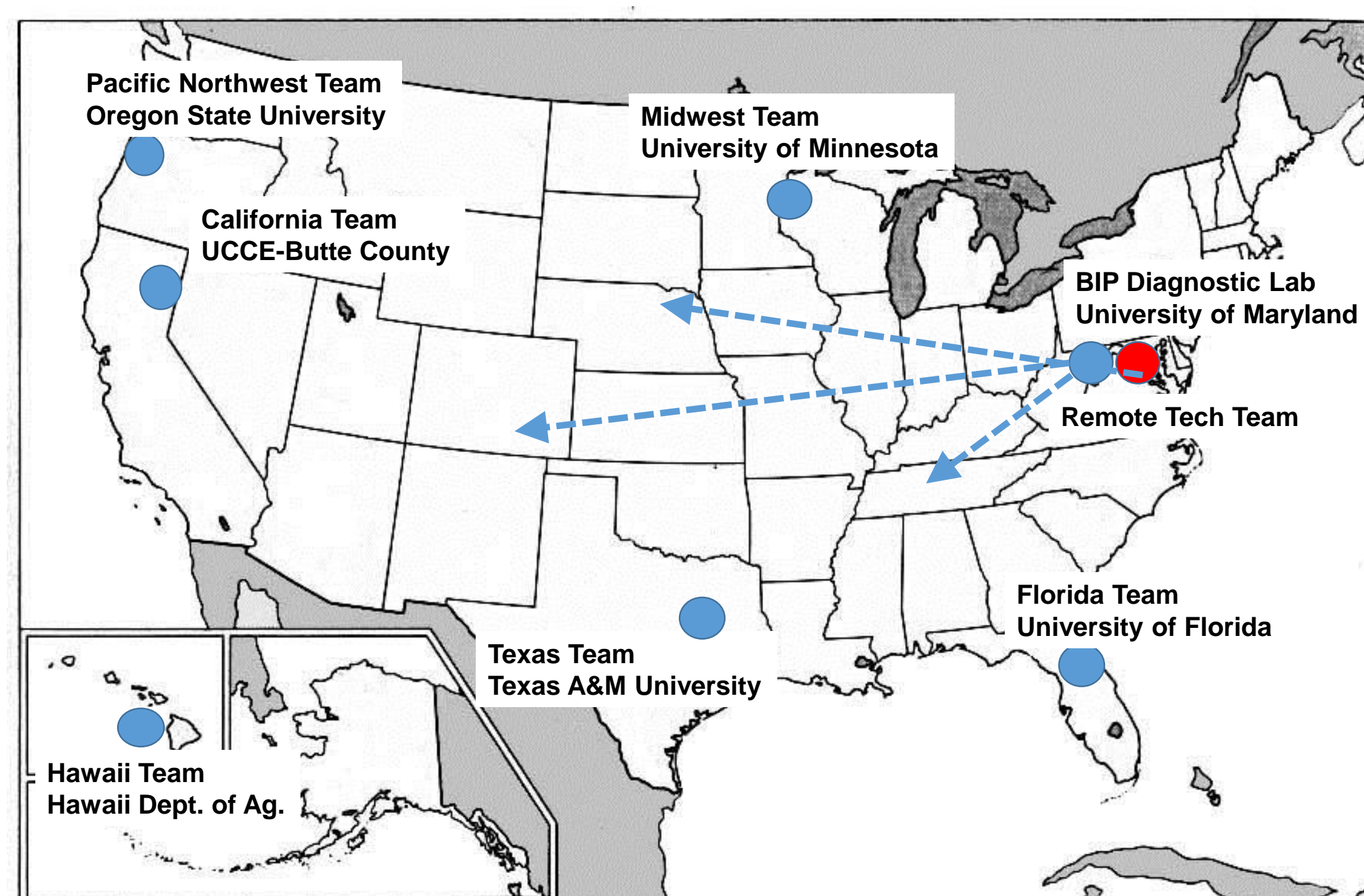


Forager on Almond Blossom



Colonies in an Almond Grove Near Turlock, CA

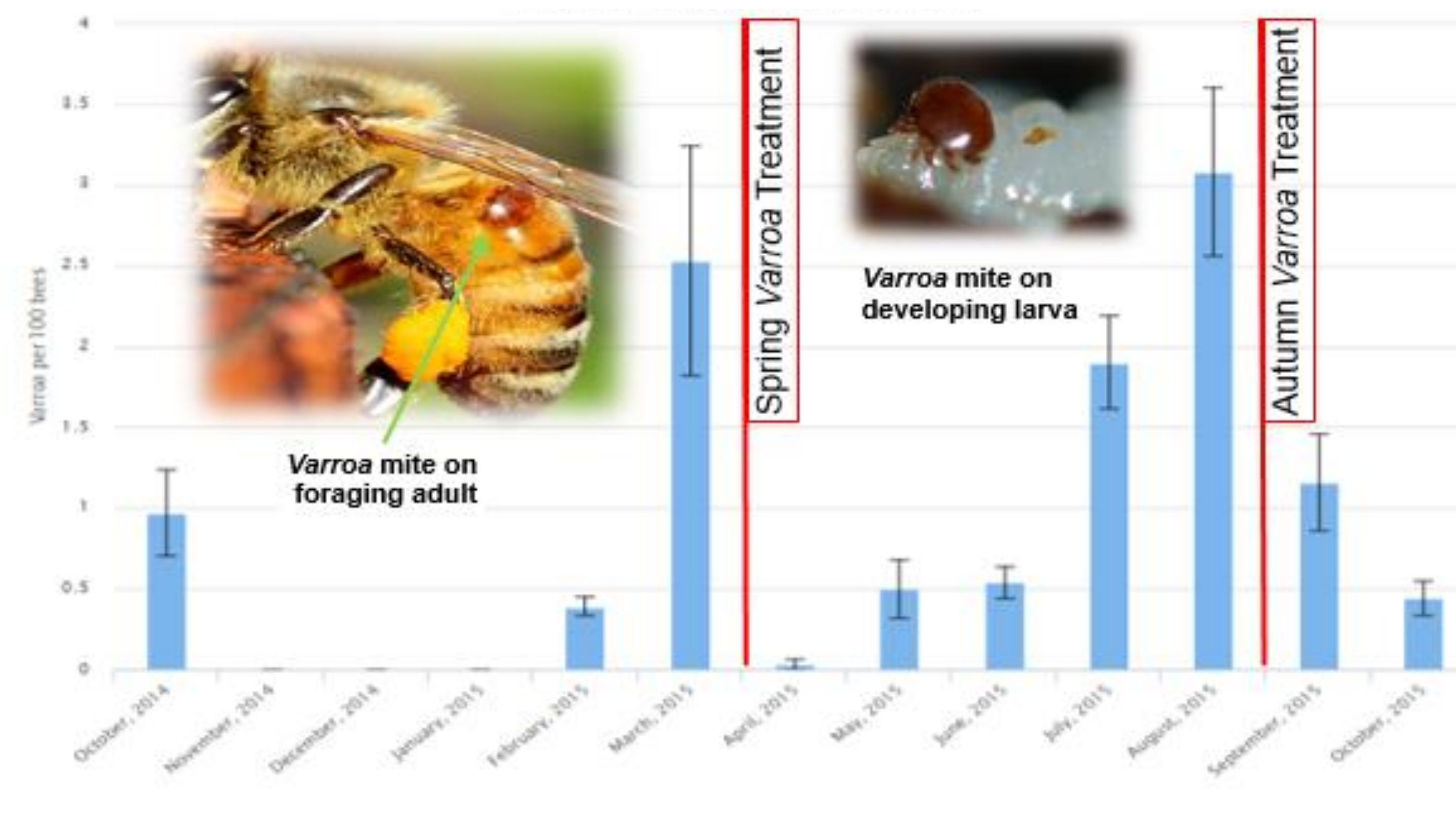
## Figure 1: Geography of BIP Tech Teams



## Varroa mite levels in the Pacific Northwest

Figure 2 shows the severity of *Varroa* infestation rates for all colonies sampled by the PNW Tech Team in 2015. Average *Varroa* levels generally increased throughout the spring and summer months. Most beekeepers applied miticides in April and September to subdue *Varroa* mite populations.

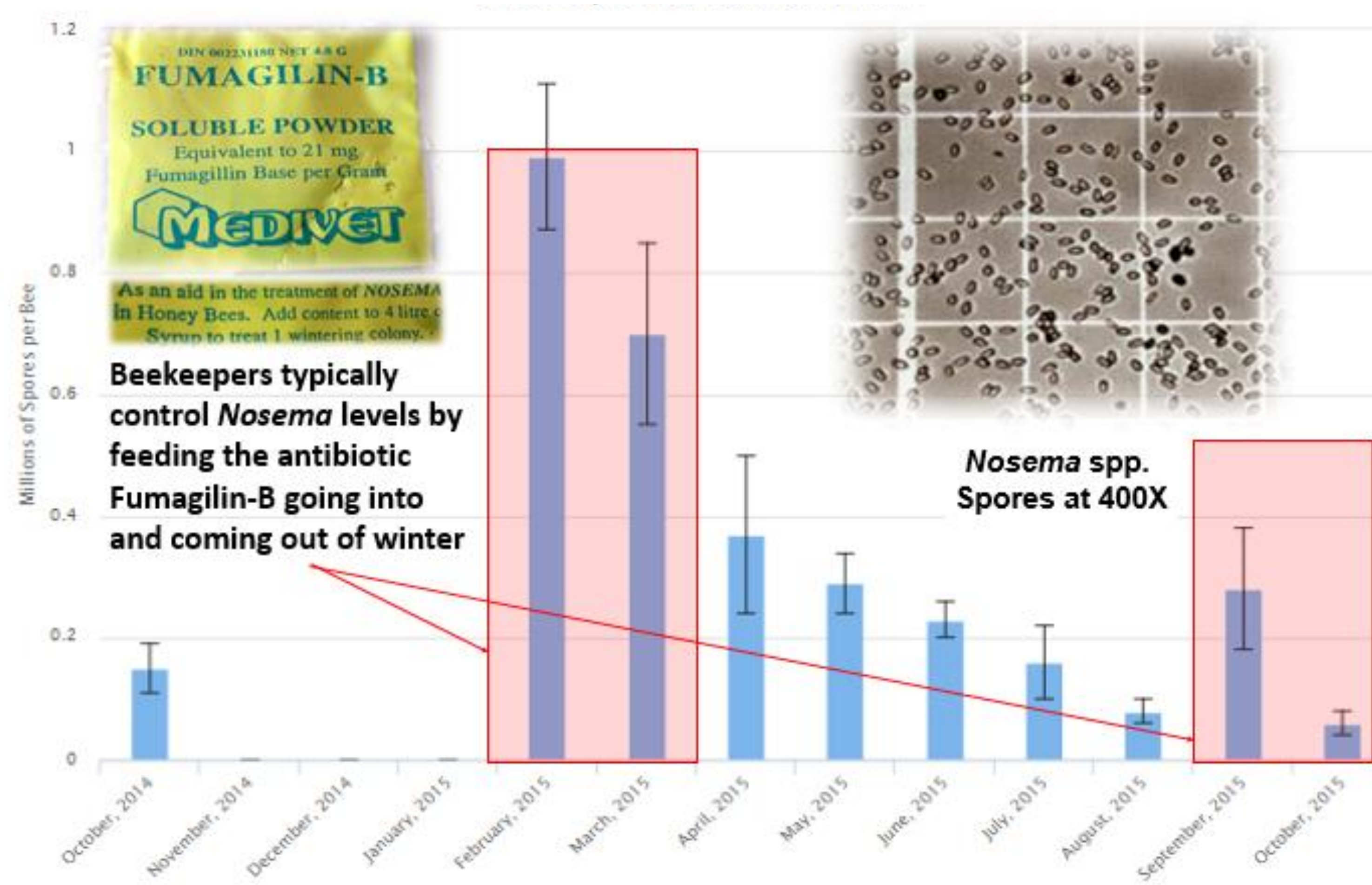
Figure 2: 2015 *Varroa* mite levels per month (%)



## Nosema levels in the Pacific Northwest

Levels of the gut pathogen, *Nosema* spp., show a seasonal trend with the highest spore counts (per bee) occurring in early spring and decreasing thereafter (Fig. 3).

Figure 3: 2015 *Nosema* spp. Levels (spores/bee)



## BIP Objectives

BIP will continue efforts to monitor colony health through Tech Teams. In addition to current activities, several new objectives are being integrated into BIP services to provide better value to partnering beekeepers and the overall industry. These new efforts will continue the mission of delivering actionable information. Topics that will be addressed include:

- Making **recommendations for management decisions** based on regional and national data
- Assessment of **pesticide exposure** of colonies being rented for crop pollination



Emergent bees showing symptoms of pesticide damage



Marked Carniolan queen

- Quality and longevity of **queens**
- Adequacy of natural and cultivated forage to meet colony **nutritional needs**



Pollen collected by foragers from a variety of plant species



Deformed Wing Virus

- Further investigation with **virus levels** in colonies and their impact on colony health

## Conclusion

The Bee Informed Partnership will continue to work towards supporting bees and beekeepers by providing a connection between industry and research through the use of Tech Teams. We look forward to continued support from the agricultural community as we expand the reach and capabilities of BIP. Further information about the ongoing research and results are available at: [www.BeeInformed.org](http://www.BeeInformed.org)

## Acknowledgements

