

HONEY BEE USE OF SHELTERBELTS IN THE GREAT PLAINS



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Honey Bees in the Dakotas

Transported to the region for the growing season

- Following almond pollination
- Rebuild colonies
- Produce honey



Figure 1.3 Some migratory routes of America's beekeepers.

Note: The major honey producing states are shown in yellow. Arrows show the path of some migratory beekeeping operations. For example, beekeepers on the East Coast may move colonies to the Northeast for blueberry and cranberry pollination and a variety of other crops, and to the South to produce honey from citrus. Some beekeepers in the Midwest may move their colonies to California for almond pollination, then return to produce large honey crops from clover, alfalfa, canola, and basswood. Other midwestern beekeepers may move their colonies to Texas and other southern states to produce queen bees and to increase their colony numbers by making "divides."

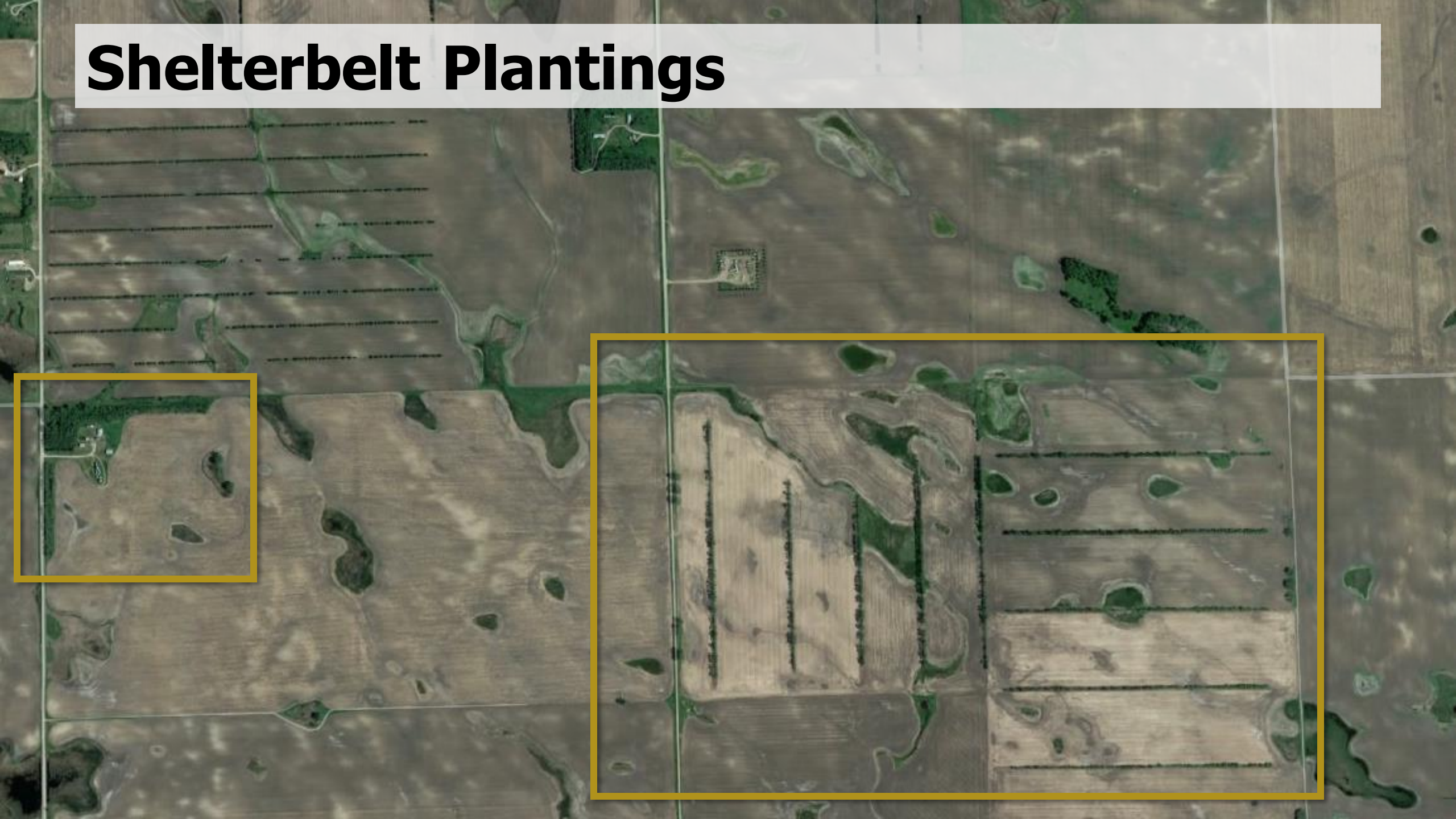
Spring Floral Resources

Spring resources: elements:

- Limited when honey bees return
- Additional floral resources?
 - Pollen-for colony
- Diverse resources
 - Floral timing
 - Nutrients



Shelterbelt Plantings

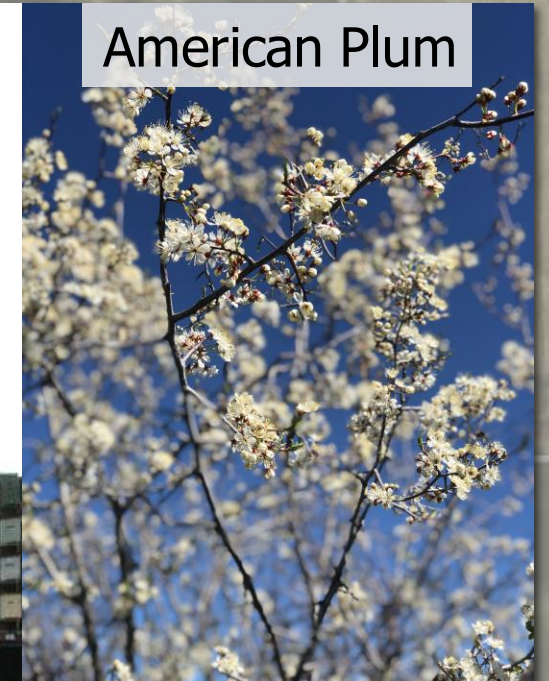


Shelterbelts as Honey Bee Resources

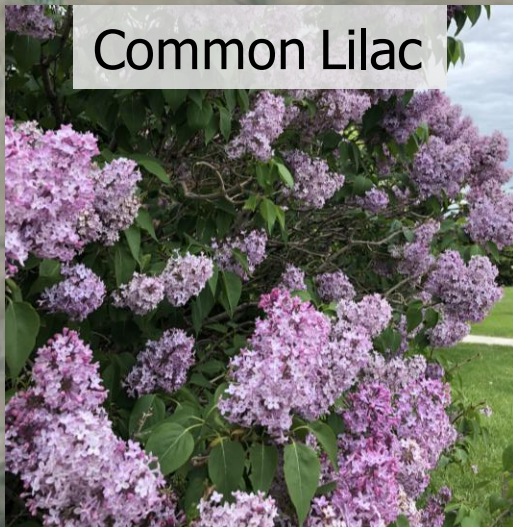
- Shelterbelt characteristics
 - Many species
 - Spring flowering
- Beekeepers return to the region
- Fill a temporal forage gap?



Caragana



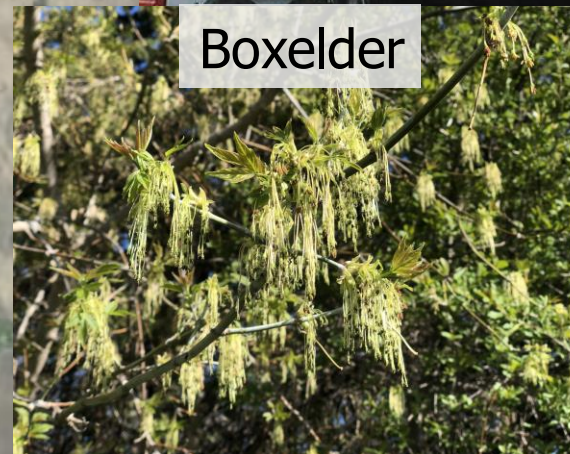
American Plum



Common Lilac



Golden Currant



Boxelder



Honeysuckle

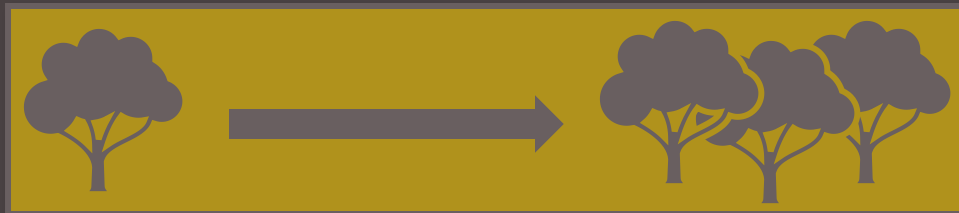
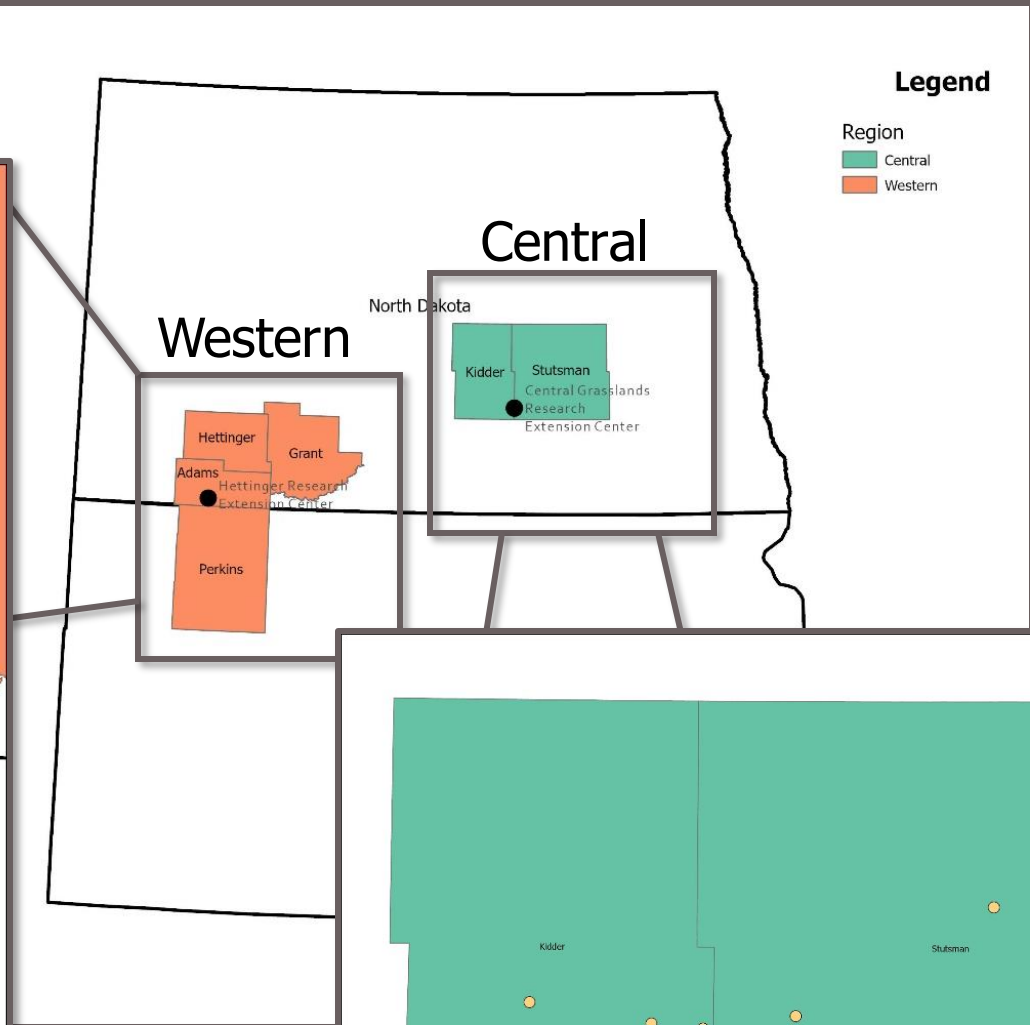
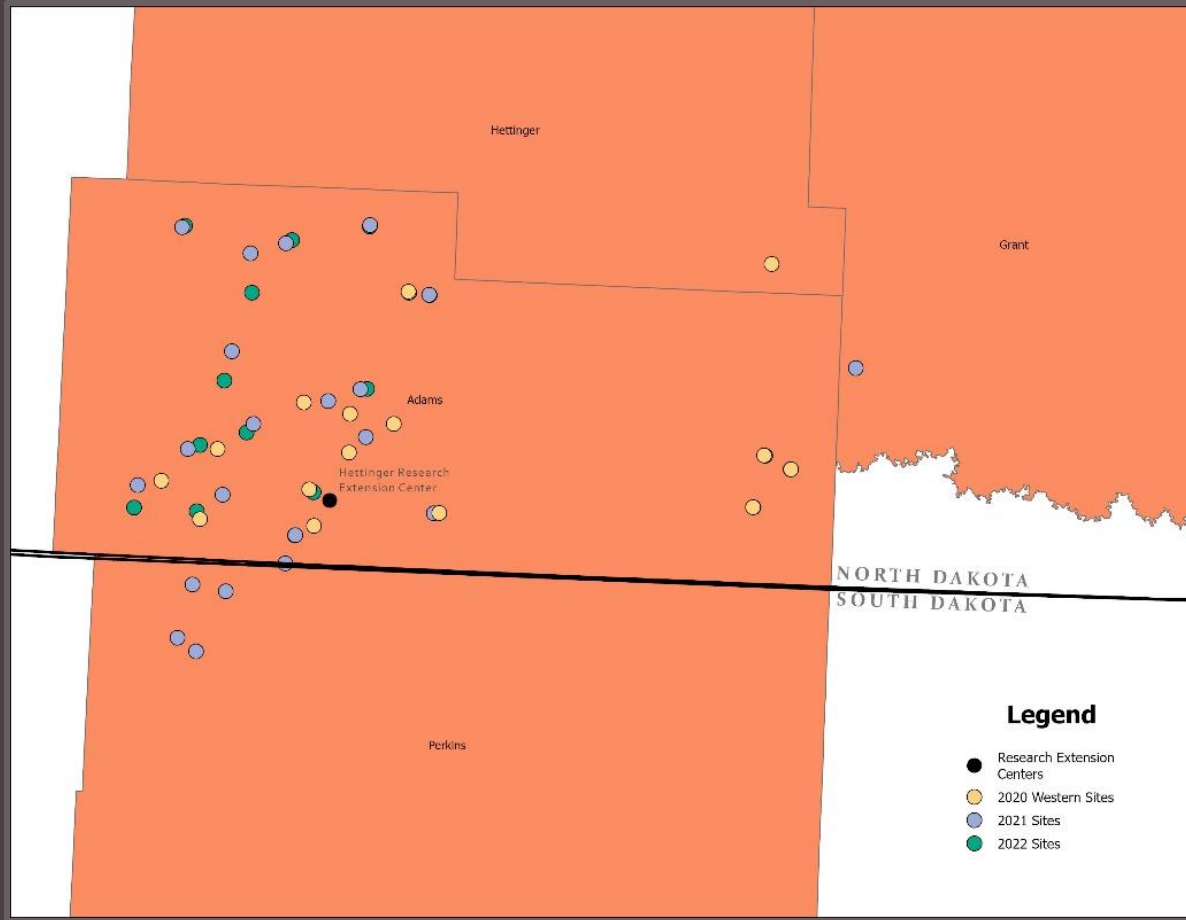
Research Questions

1. Does honey bee-collected pollen contain shelterbelt species?

2. Does shelterbelt cover impact early-season colony growth?



Apiary Sites



Data Collection

Pollen:

- Floral resource use

Hive weights:

- Hive health and honey production

Data:

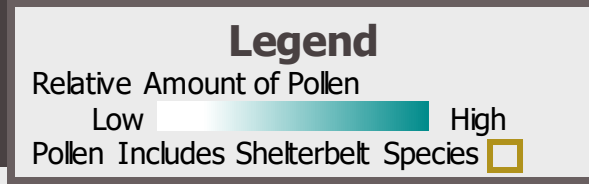
- Collected May-June 2020-2022



Hive Scale

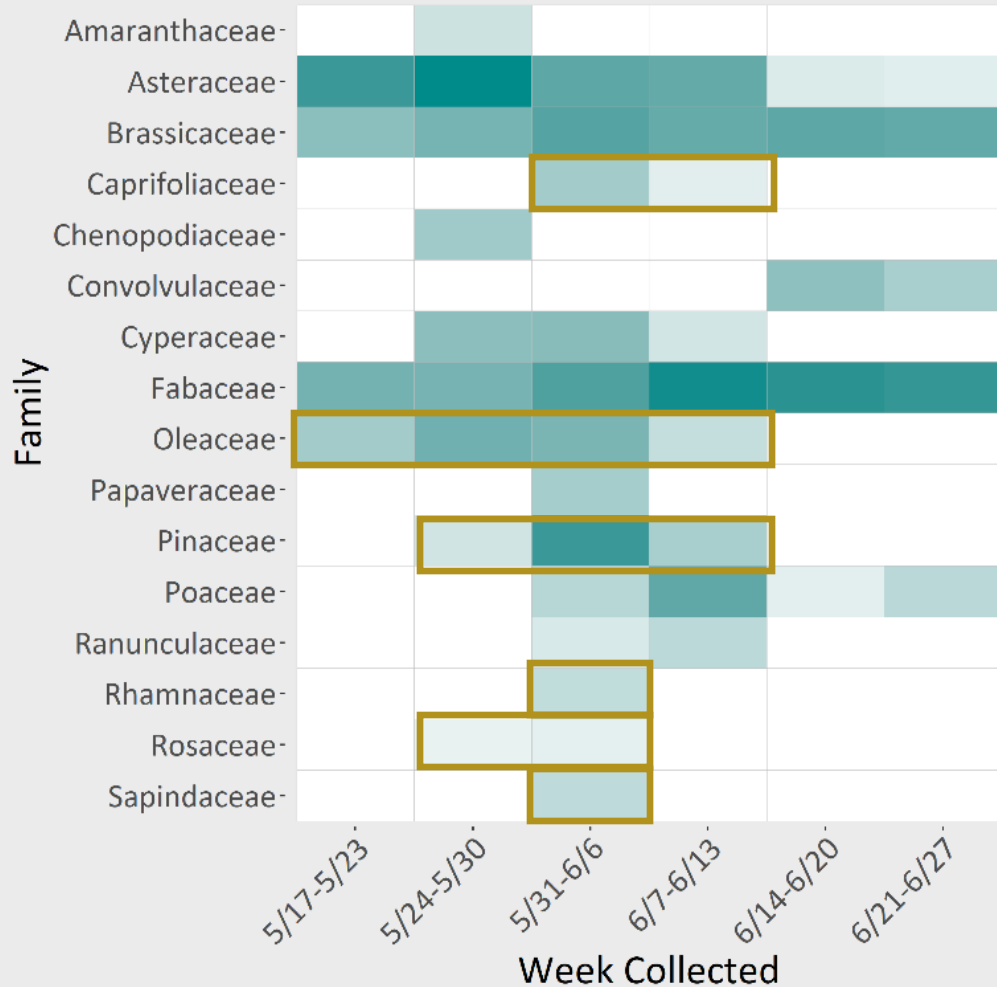
Pollen Trap

Shelterbelt Species in Pollen

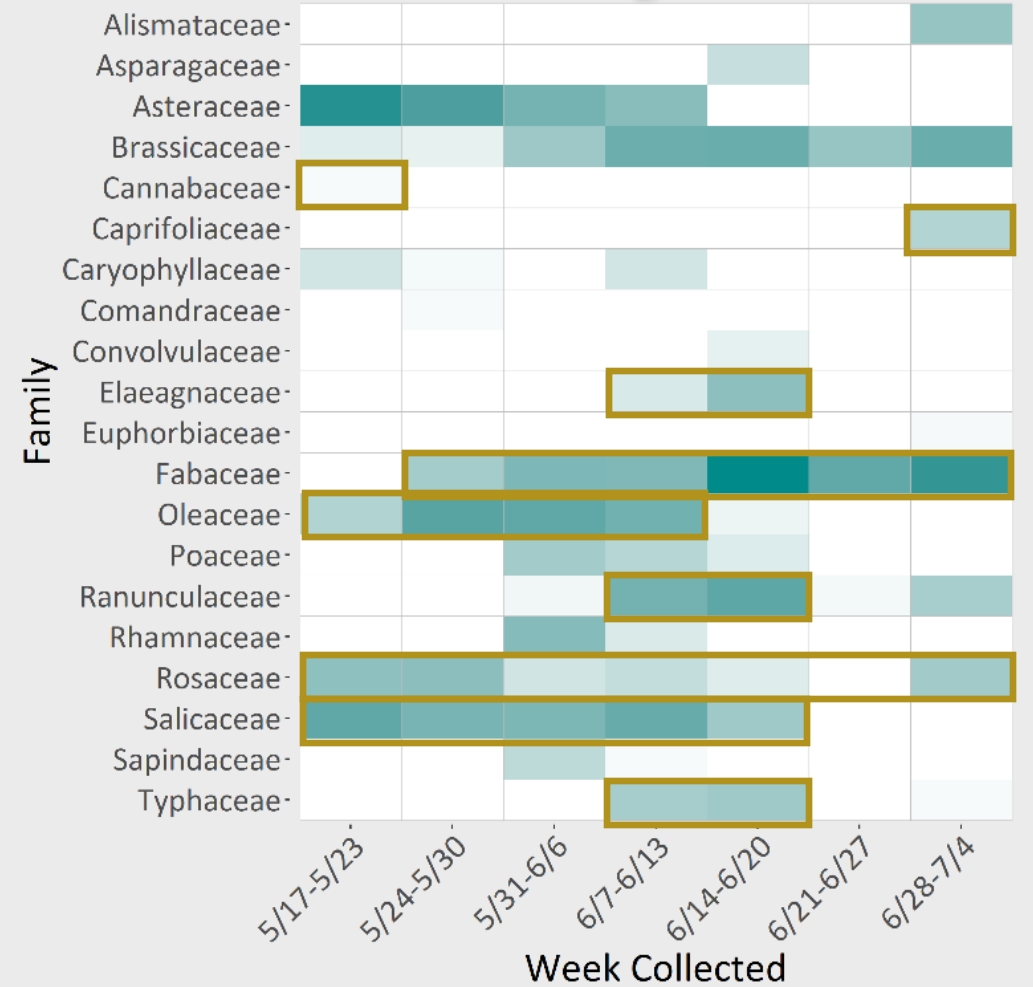


2020 Honey Bee-Collected Pollen By Week

Western Region

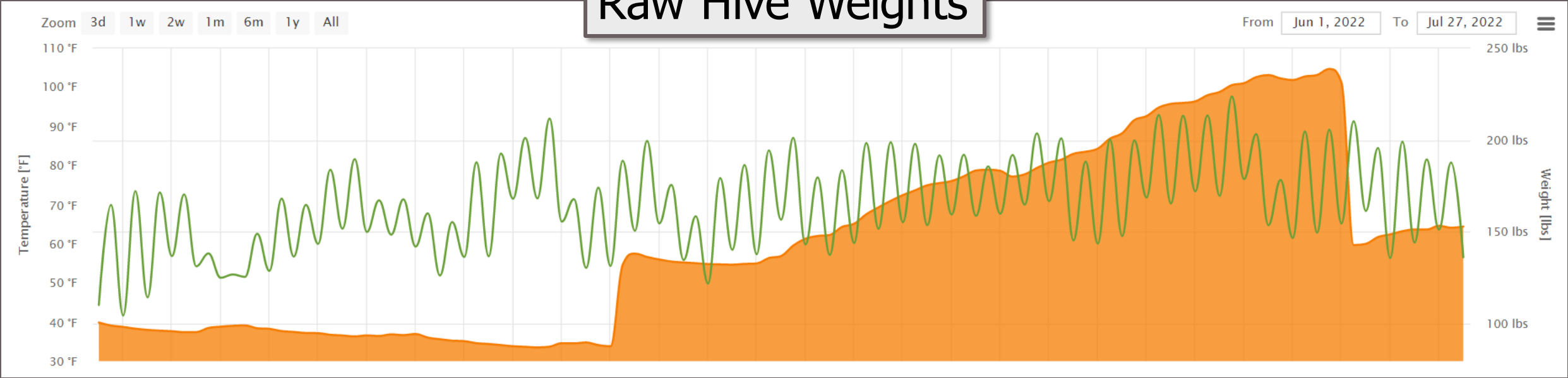


Central Region

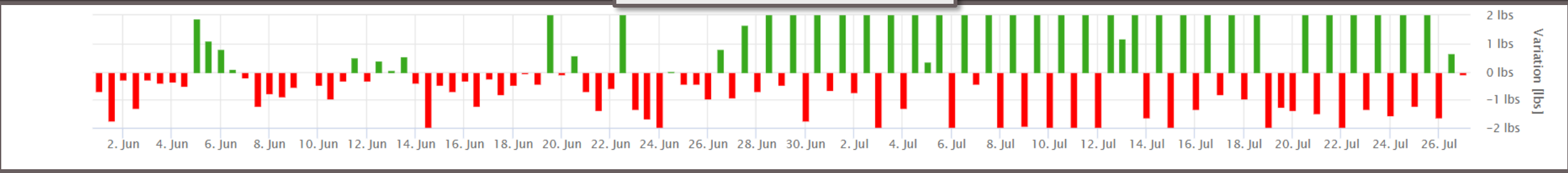


Hive Weight Data

Raw Hive Weights

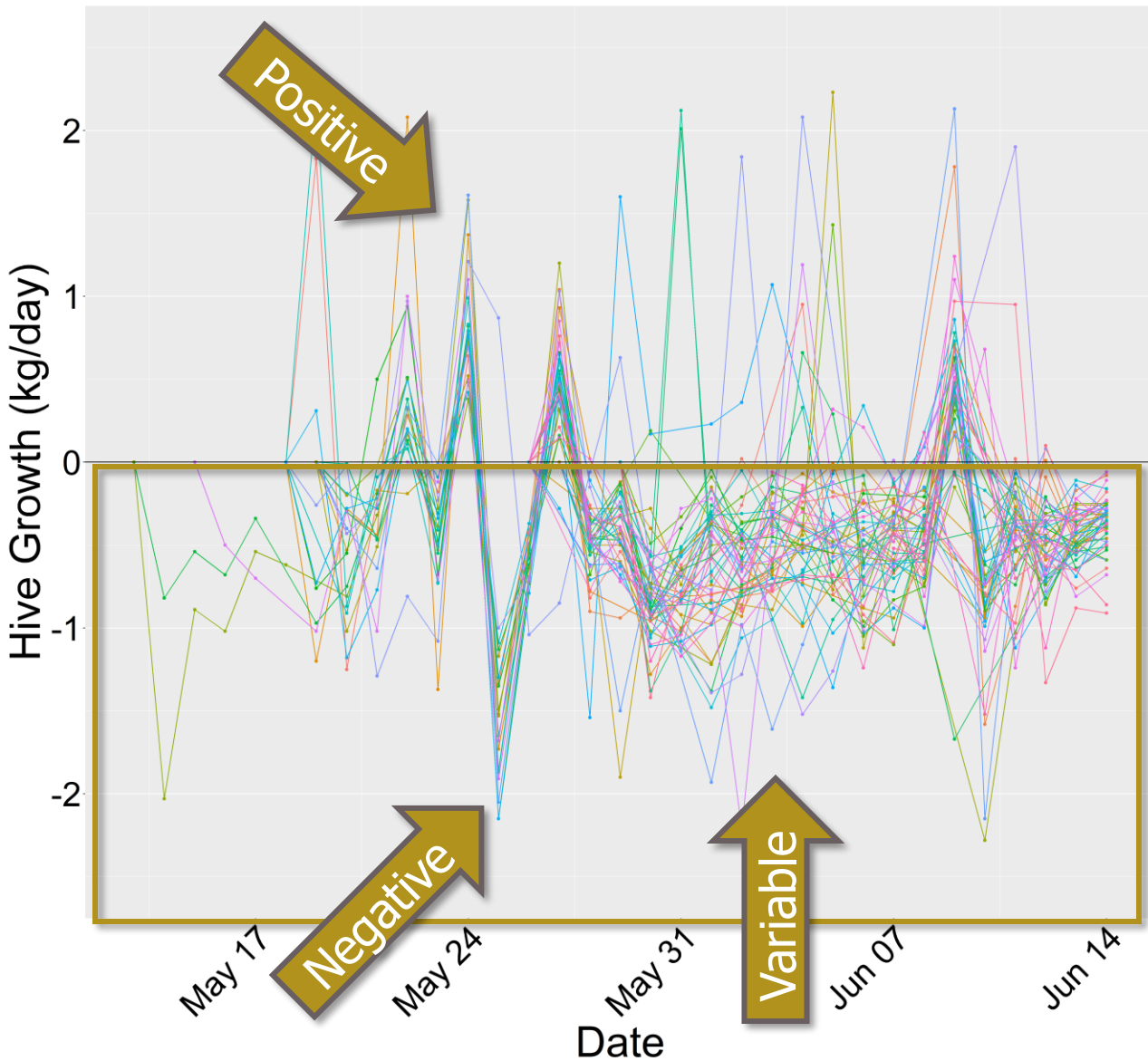


Weight Change

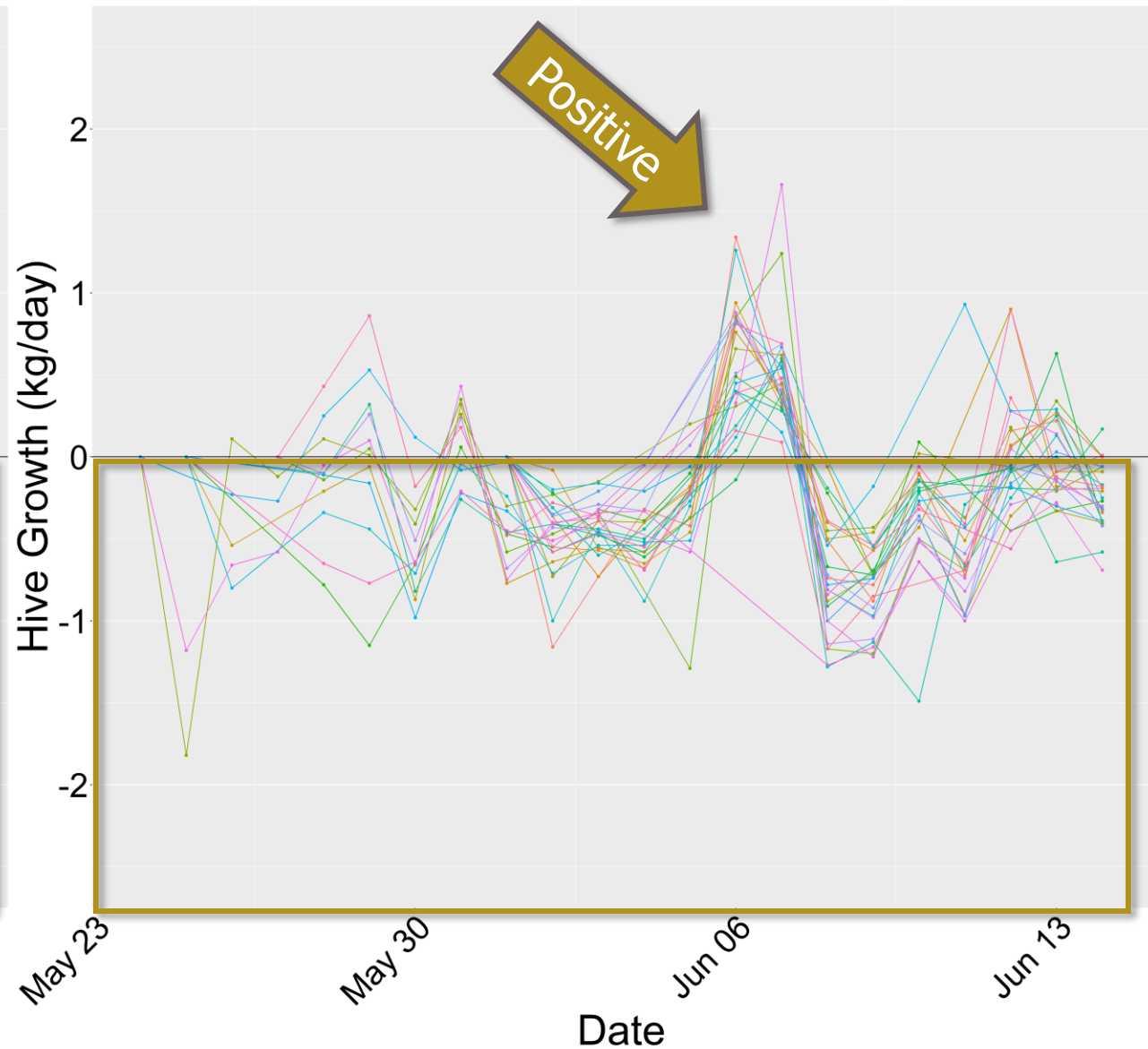


Early-Season Hive Growth

2021

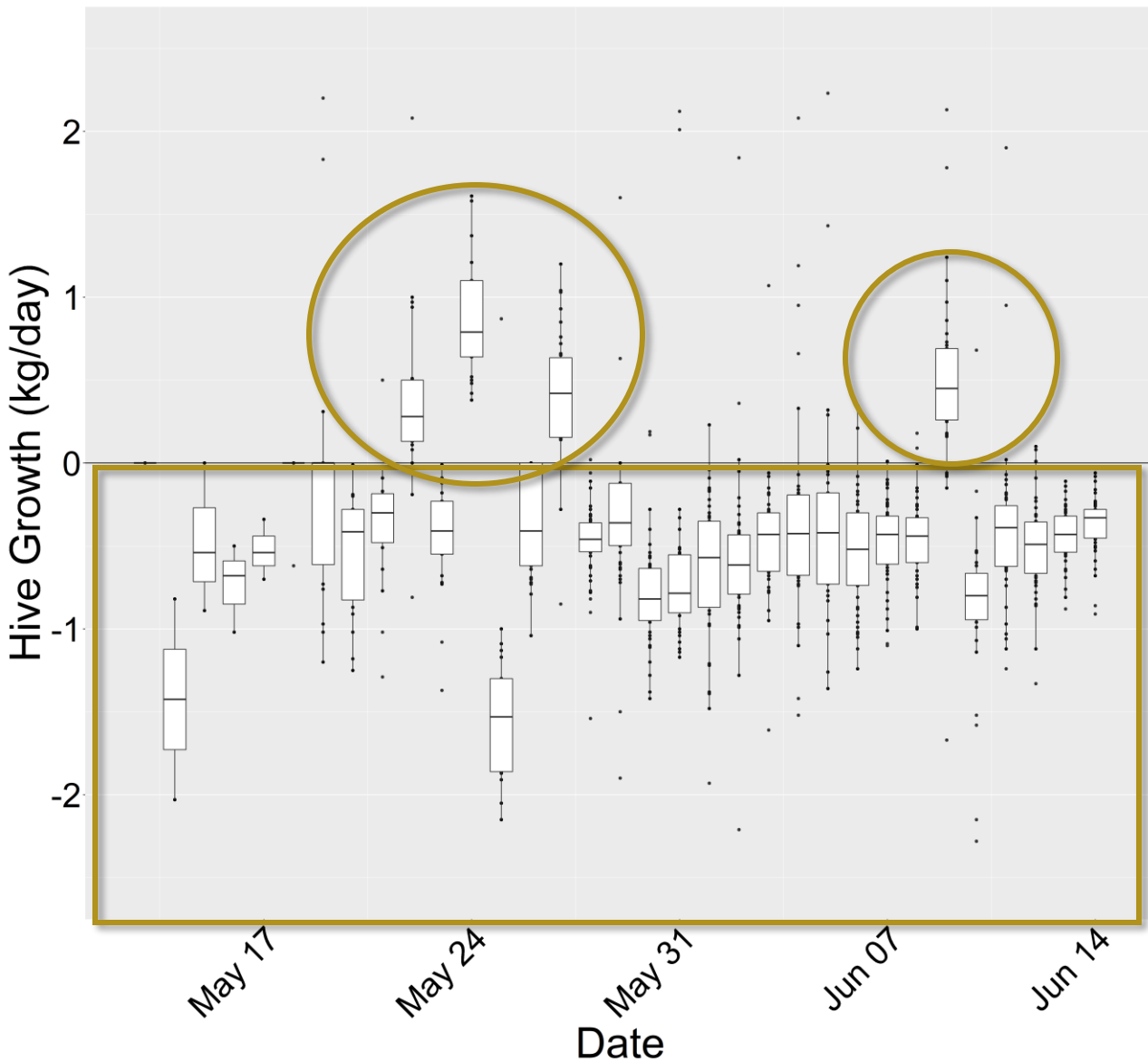


2022

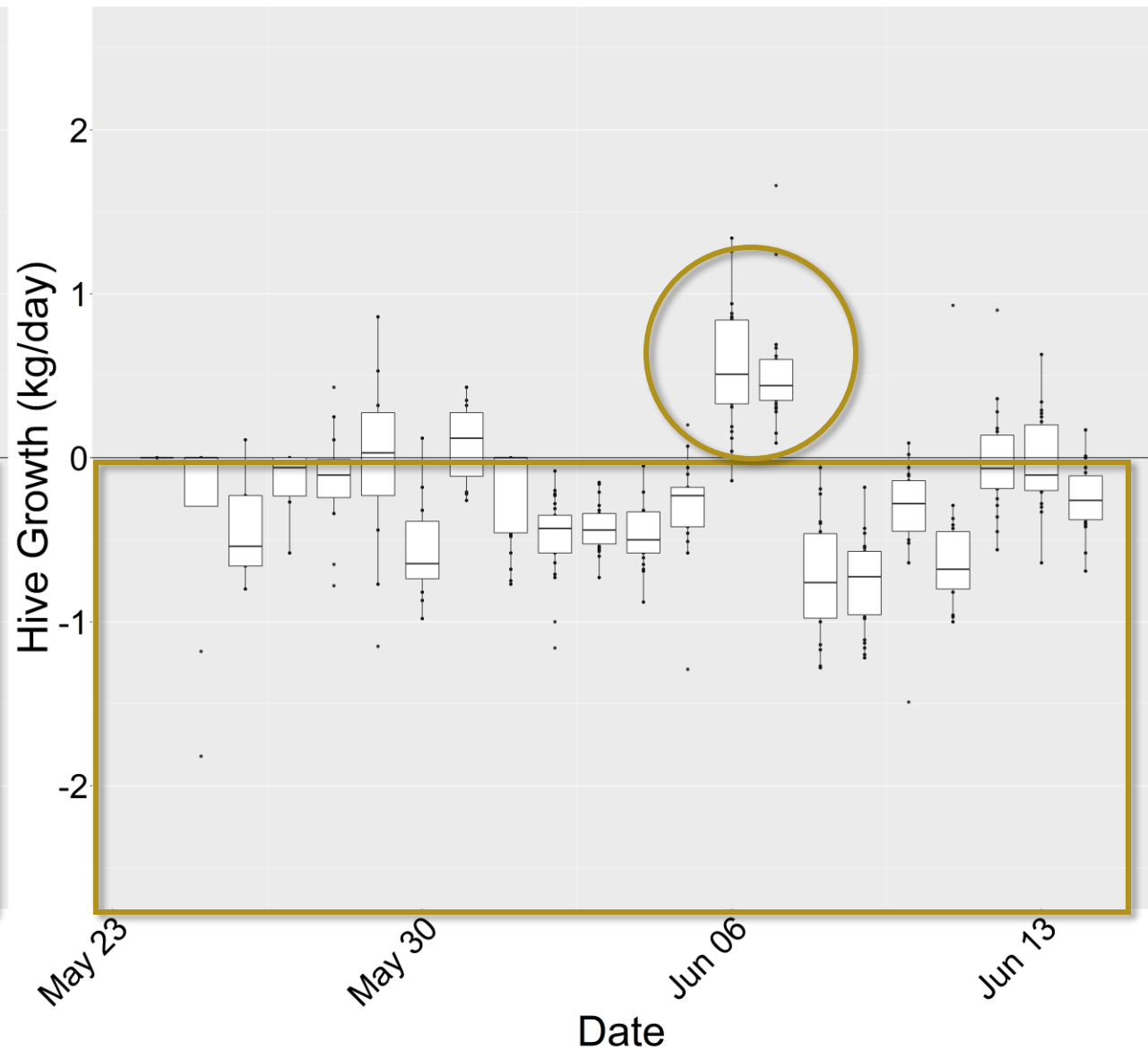


Early-Season Hive Growth

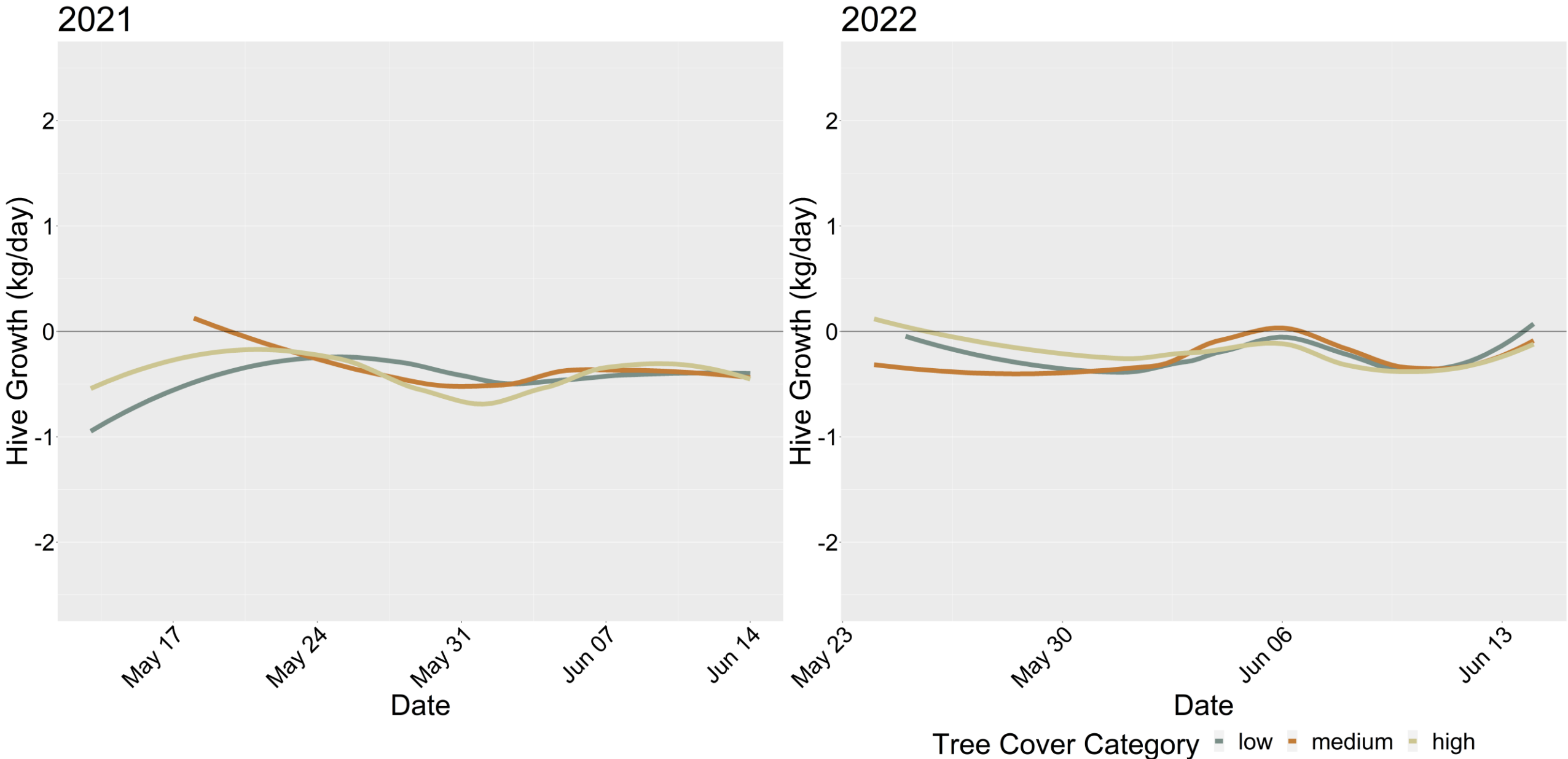
2021



2022



Hive Growth and Amount of Tree Cover



Shelterbelt Species in Pollen

Shelterbelt species present in pollen samples

- 10 families with tree or shrub species
 - Salicaceae (willows)-central region
 - Oleaceae (lilac)-both regions
 - Rosaceae (chokecherry/apple/plum)-central region
- Including these species in future plantings may provide additional early-season pollen resources for honey bees



Early-Season Hive Growth

Negative growth during early season

- Limited floral resources
- Artificial feeding

Multiple hive growth spikes

- Correlates with shelterbelt flowering period
- Growth event similar between years-nectar flows



Hive Growth and Shelterbelt Cover

Hive growth not significantly different between shelterbelt categories

- Influenced by a variety of factors



Acknowledgements

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