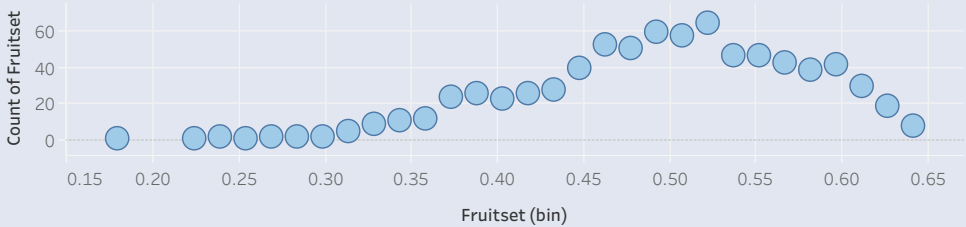


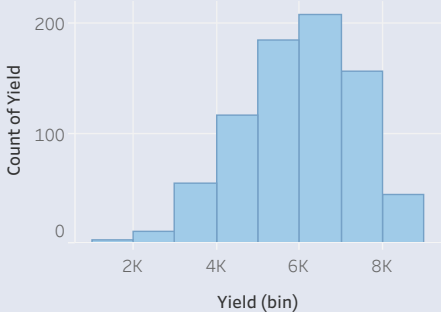


Environmental factors during blooming season such as temperature and rain are the *most important factors in this data set concerning total blueberry siz..

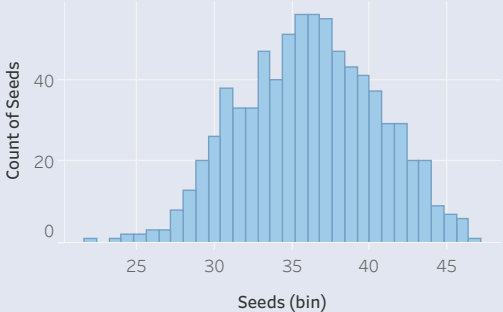
fruitsets



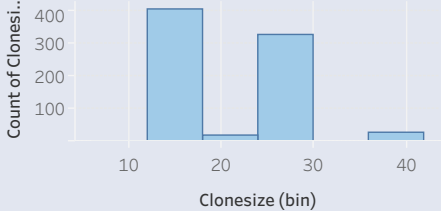
yield



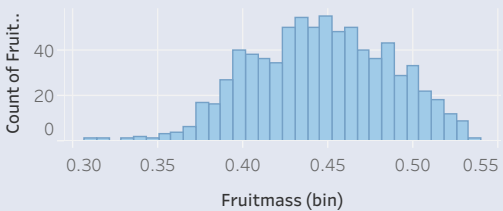
seeds



clonesize



fruitmass



click on any fruitset to explore the blueberry characteristics o..

1

2

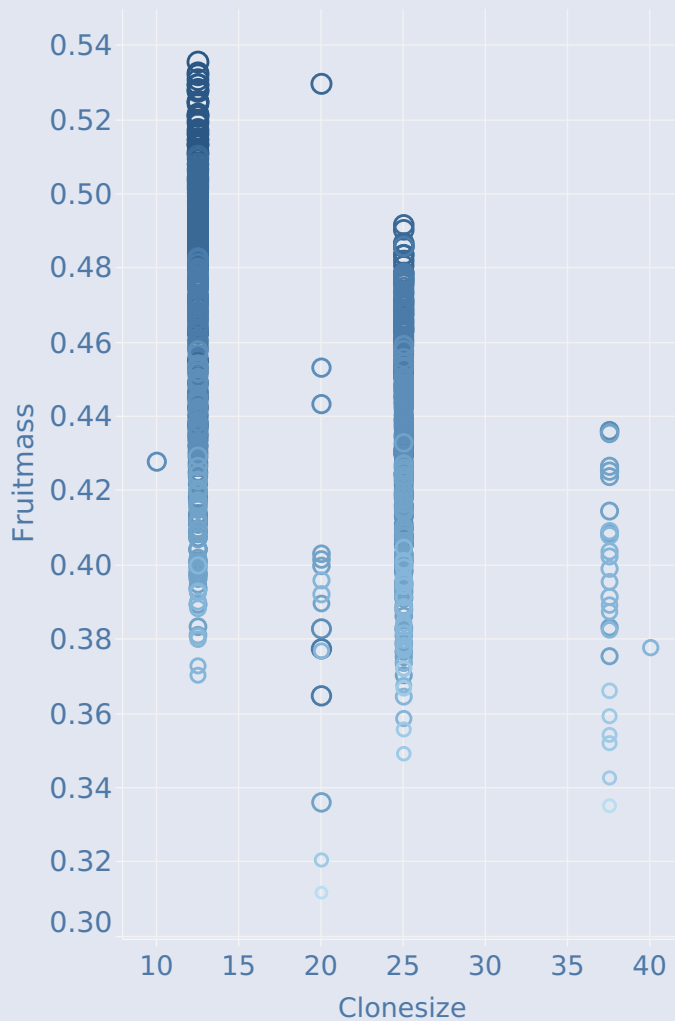
3

4

5

6

clonesize by fruit mass



When we look at the **Forrest Regression Models**

Bumbles is the only pollinator we can confidently correlate with yield having a decent RMSE: 0.04 & R² Score: 0.70398

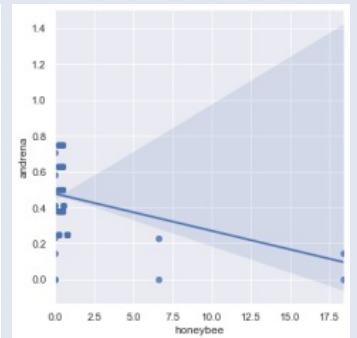
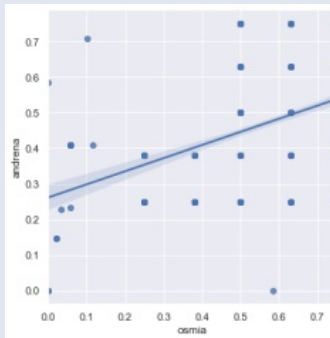
Yields begin to rise at a minimum of 0.20 bees per square meter.

This observation holds true **regardless** of the pollinator species.

What can we make of this?

Outside of sunshine and precipitation, the most important thing to affect blueberry production is the density of the bees whose territory extends to the Blueberry fields of this study.

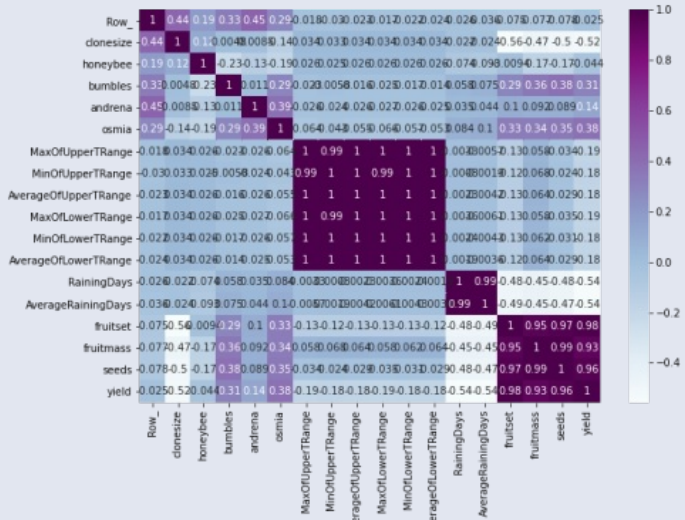
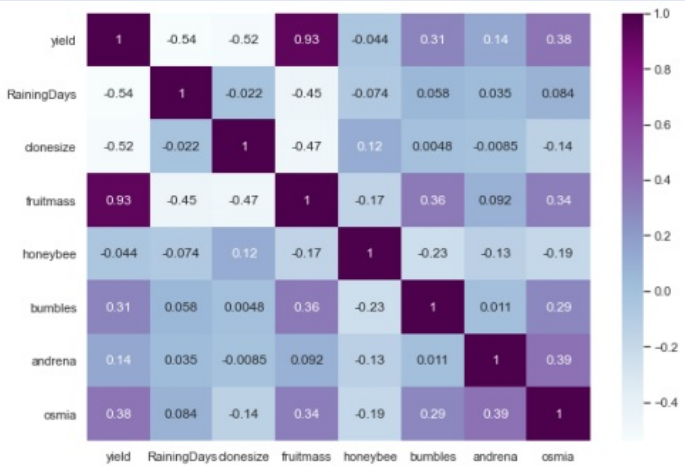
When we compare **Bees to Bees** we can see pollina..



Andrena and Osmia have similar densities and higher yields than honeybees

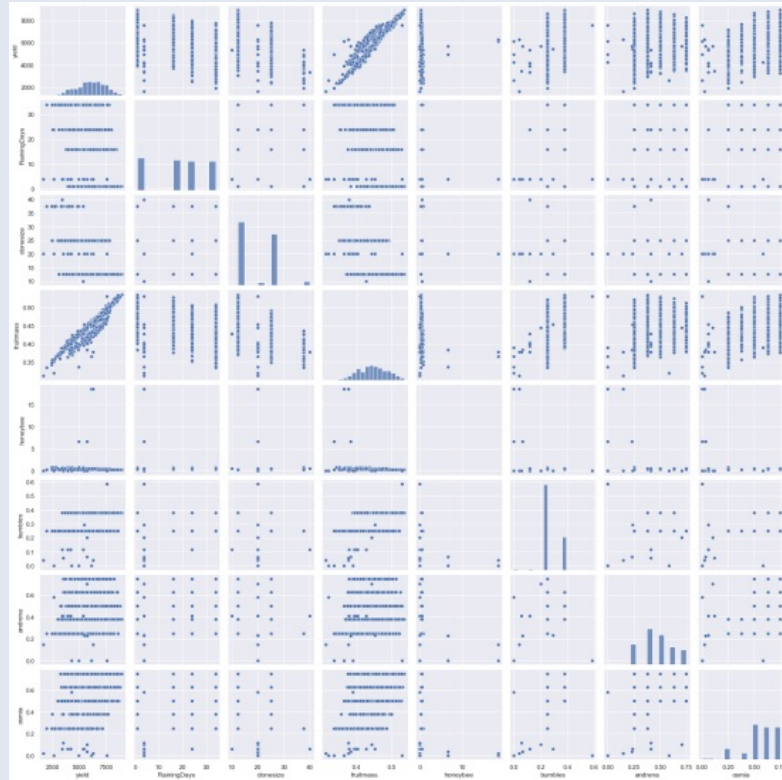
When we look at **the Correlation Heat Maps** , we see overall, environmental factors like temperature and rainy days have the highest correlation to yield, fruitmass and seed production.

..



Correlation: The shapes of the yield and fruitmass histograms are very similar, confirming their high correlation.

Bee Density: Andrena bees have the most uniform distribution per square meter ranging between 0.20 and 0.75 bees per square meter. Osmia are less evenly but more densely packed between the 0.50 to 0.75 bee per square meter, Bumbles fall between 0.25 and 0.40 per square meter, and honeybees are scarce.



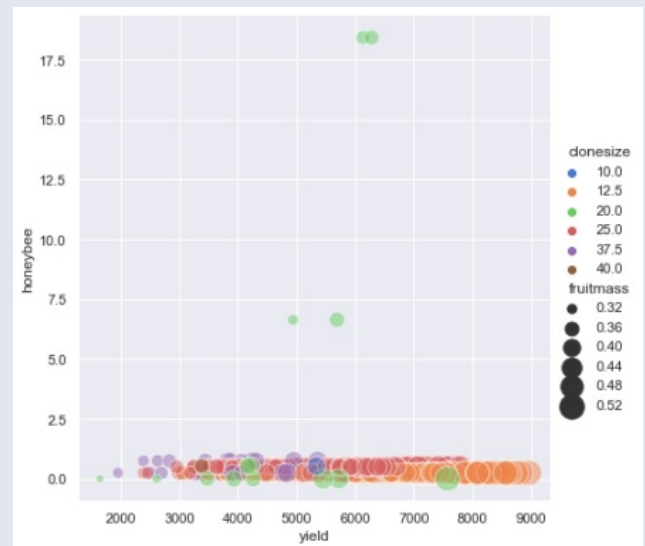
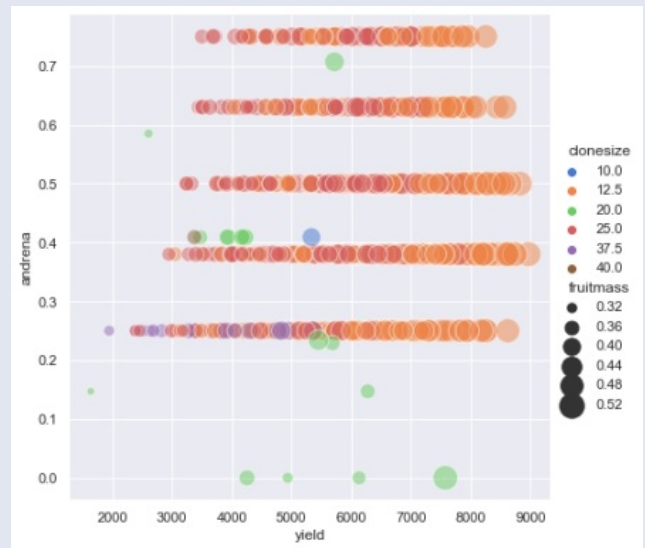
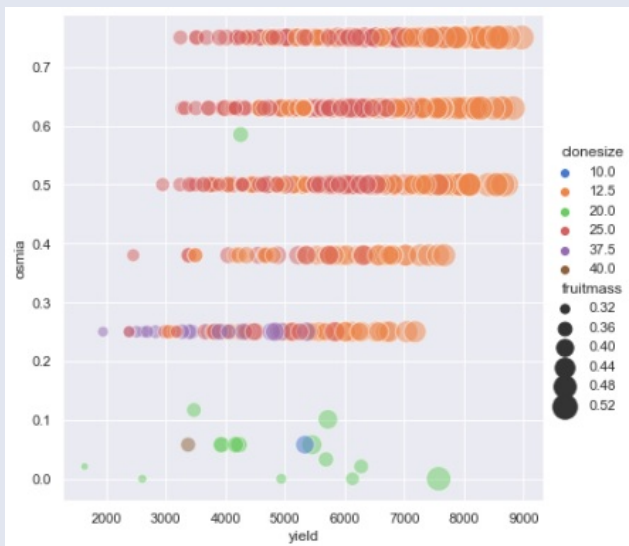
***fruitmass stabilizes when bee density rises above 0.20 per square meter for all but 1 pollinator, the honeybee which rarely rises ab..**

*The denser the bee population, the higher the yield - regardless of the bee species.

When we look at Relational Plots we see Osmia and Andrena outperform in yield and fruitmass over all others.

Osmia has the highest mean density at 0.56 bees per square meter with Andrena in second with a mean density of 0.46 bees per square meter.

If these results vary on the importance of bumble andrena and osmia bees to yield, they all agree on the lack of impact made by the honeybee. . .





Recommendations

Osmia are wild bees, native to North America where this data was collected. They are also known as the 'Mason' bee because of the manner in which they construct their nests. They use mud and create a sort of brick and mortar to seal naturally occurring cracks in natural cavities.

Another wild species, Andrena bees are known as the "Miner" bee's because they dig holes to make their nests.

Honeybees are not wild, they are domesticated and most often live in structures created by human hands. These colonies can get quite large and last for decades while our wild species tend to live in small groups or even as solitary beings. Honeybees are best used in blueberry cultivation to 'prop up' the other active, wild species of the territory, a tactic captured in this analysis.

1. Support local wild bee populations by augmenting the territories with native plants that work well with blueberries and the soil blueberries grow in. Of specific interest are of course, blooming plants, flowers and shrubs.
2. Support the 'Mason' and 'Miner' bees by cultivating diverse forest and field floors. For example, scattering field stones and leaving fallen tree branches in the bee territories will provide suitable material for the construction of their nests.
3. Ensuring access to water, for bee refreshment and for the Mason's mortar needs.
4. Engage community support by encouraging pollinator friendly local landscaping and gardens to help ensure the bees get maximum nutrients during blooming season.

