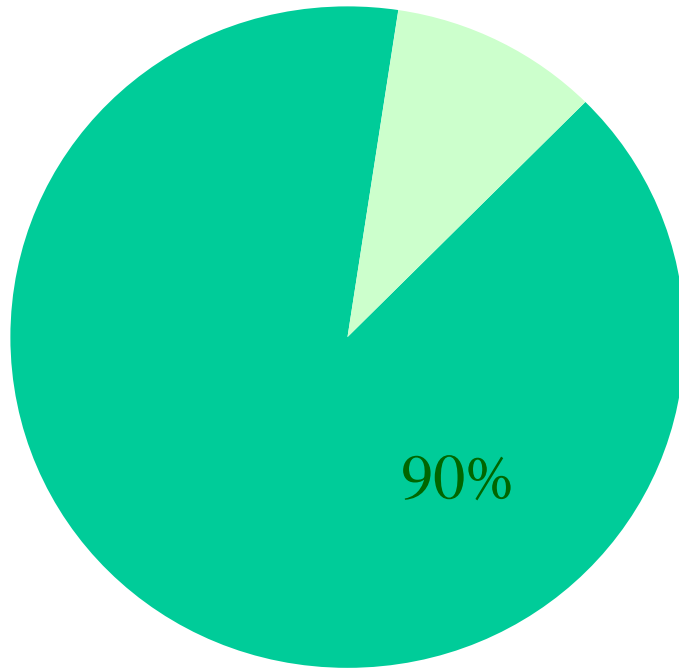


Effective Pollination Utilizing Managed Honeybee Colonies

Keith Fielder
UGA Cooperative Extension
Georgia Master Beekeeper



World Food Plants



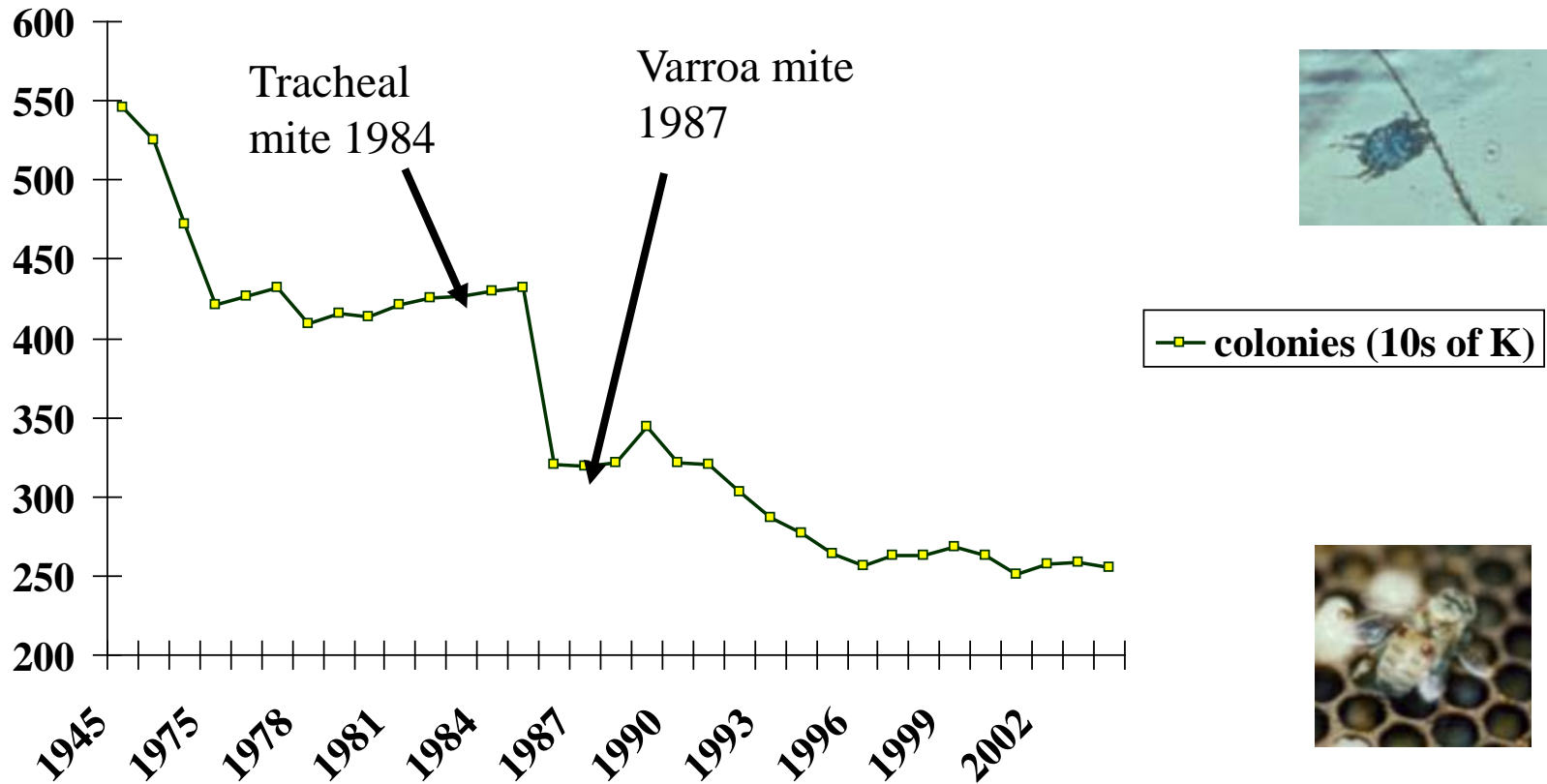
Do not require insect pollination

- Banana
- Barley
- Cassava
- Coconut
- Corn
- Millet
- Potato
- Rye
- Rice
- Sorghum
- Sweet potato
- Wheat

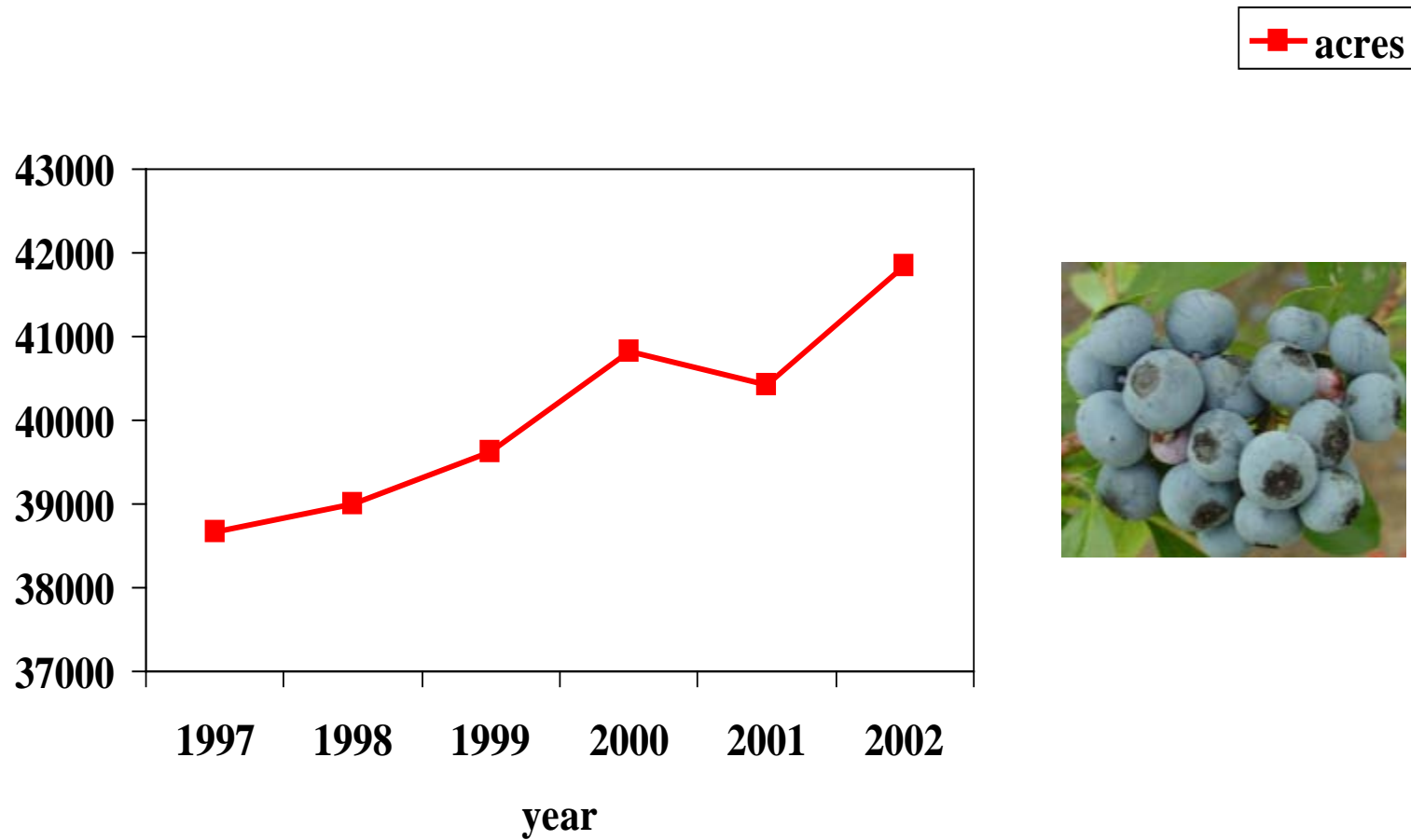
The other 10%

- The fruits and vegetables that give “favor” to the western diet!!!!
- However as demand for pollinators has increased we have run into “supply problems”

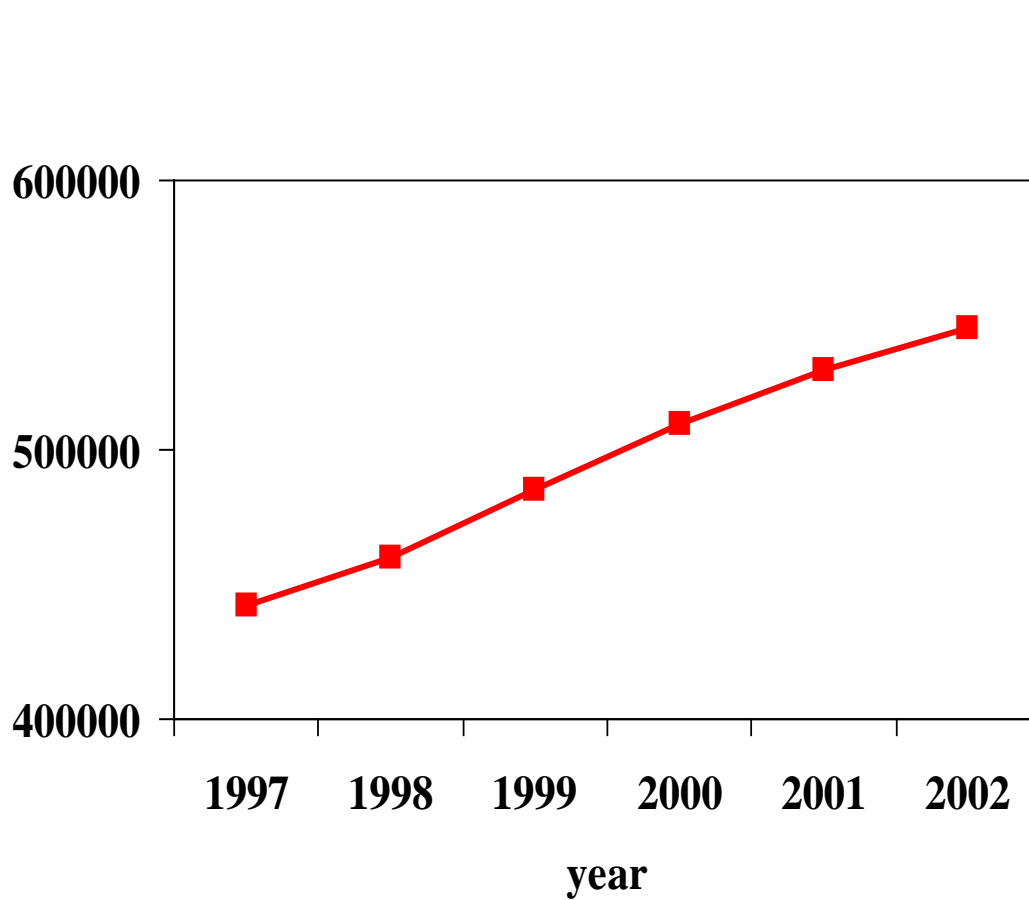
U.S. managed bee hives

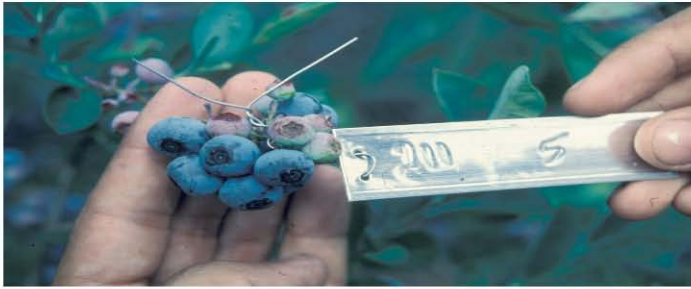


U.S. blueberry acreage



U.S. almond acreage





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% fruit-set

“good” pollination means

- Increased number of stigmas pollinated (ex. almond)
- Increased surface area of stigma pollinated (ex. watermelon)
- Increased percentage of stigmas per inflorescence pollinated (ex. strawberry)

Good pollination increases

- Fruit-set
- Fruit size
- Earliness of ripening
- Fruit symmetry
- Juice sweetness

A “good” pollinator

- Visits a high percentage of target species' flowers.
- Carries a high percentage of target pollen.
- Visits pollen-donor and receptive pollen-receiver flowers successively.
- Works rapidly.
- Works long hours.



“Scrabbling”



Honeybees Meet The Definition Of Good Pollinators

From a plant's perspective...

- Two independent dynamics
 - Dependence on pollination
 - Complexity or exclusivity of its flowers





Probing



Sonicating



Robbery by nectar thieving Carpenter Bee



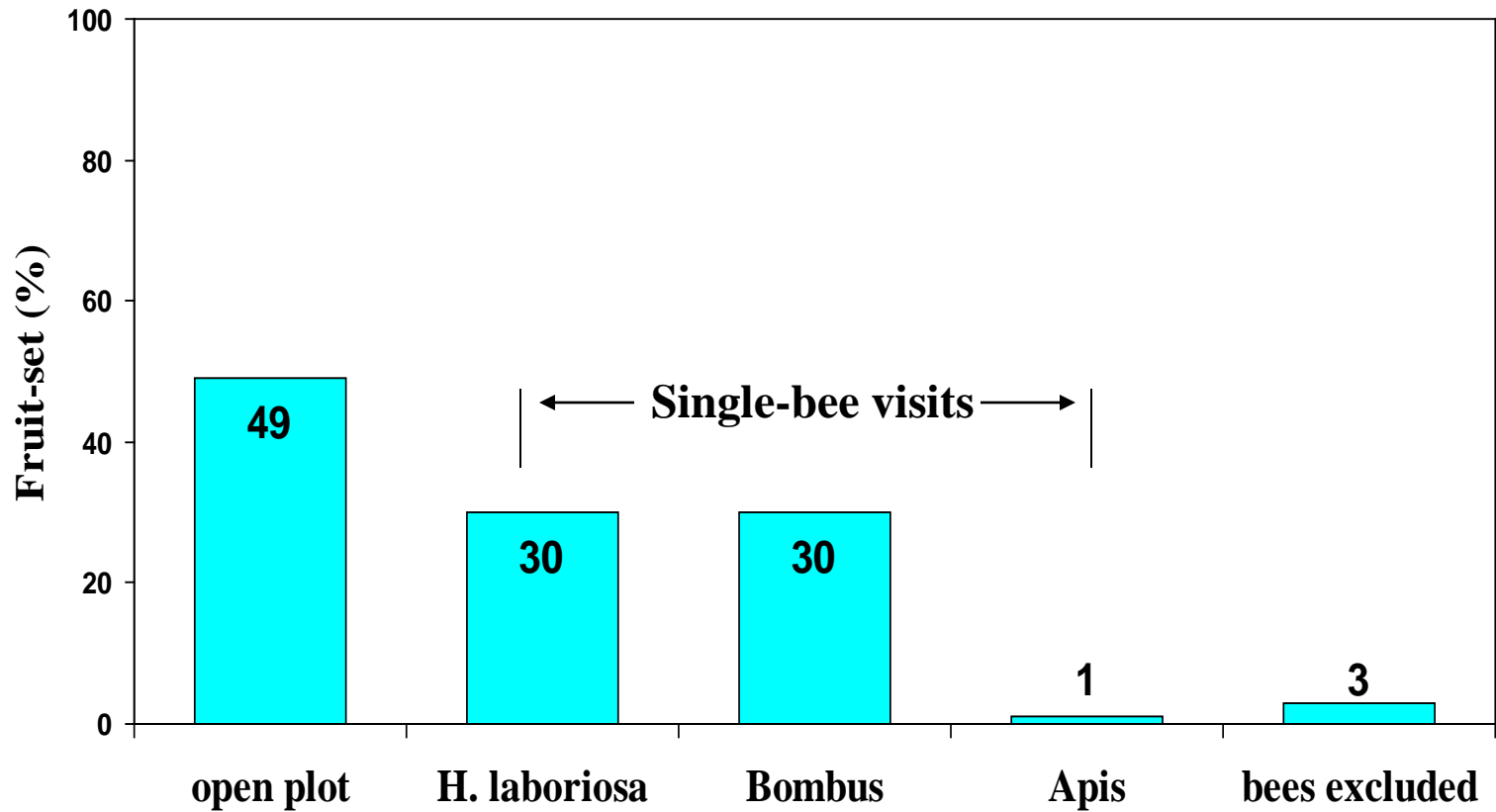


Secondary robbery by Honey Bee

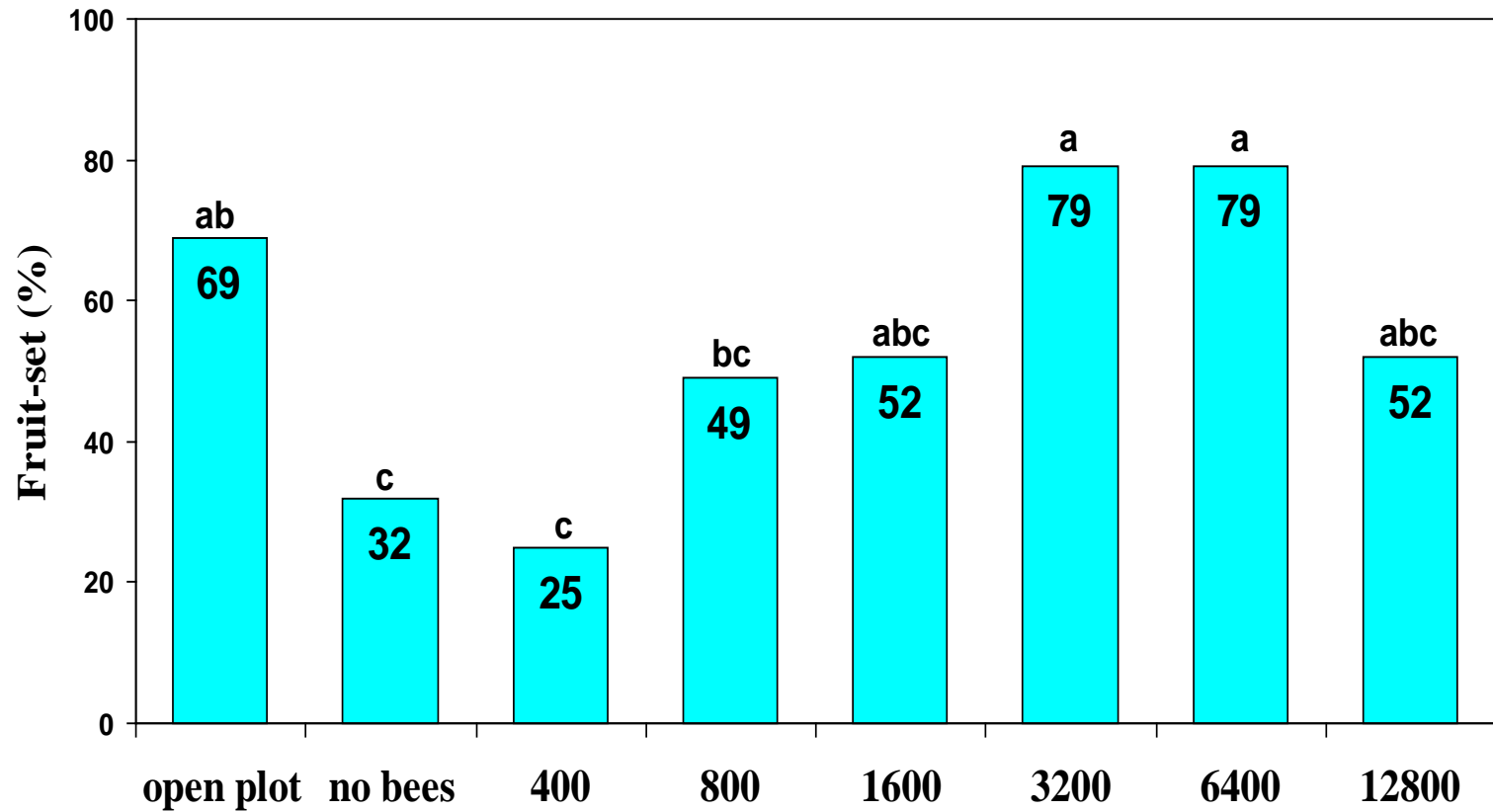
Efficiency of individual pollinators

Rabbiteye blueberry 'Tifblue'

Cane and Payne 1990



Effect of honey bee density on fruit-set



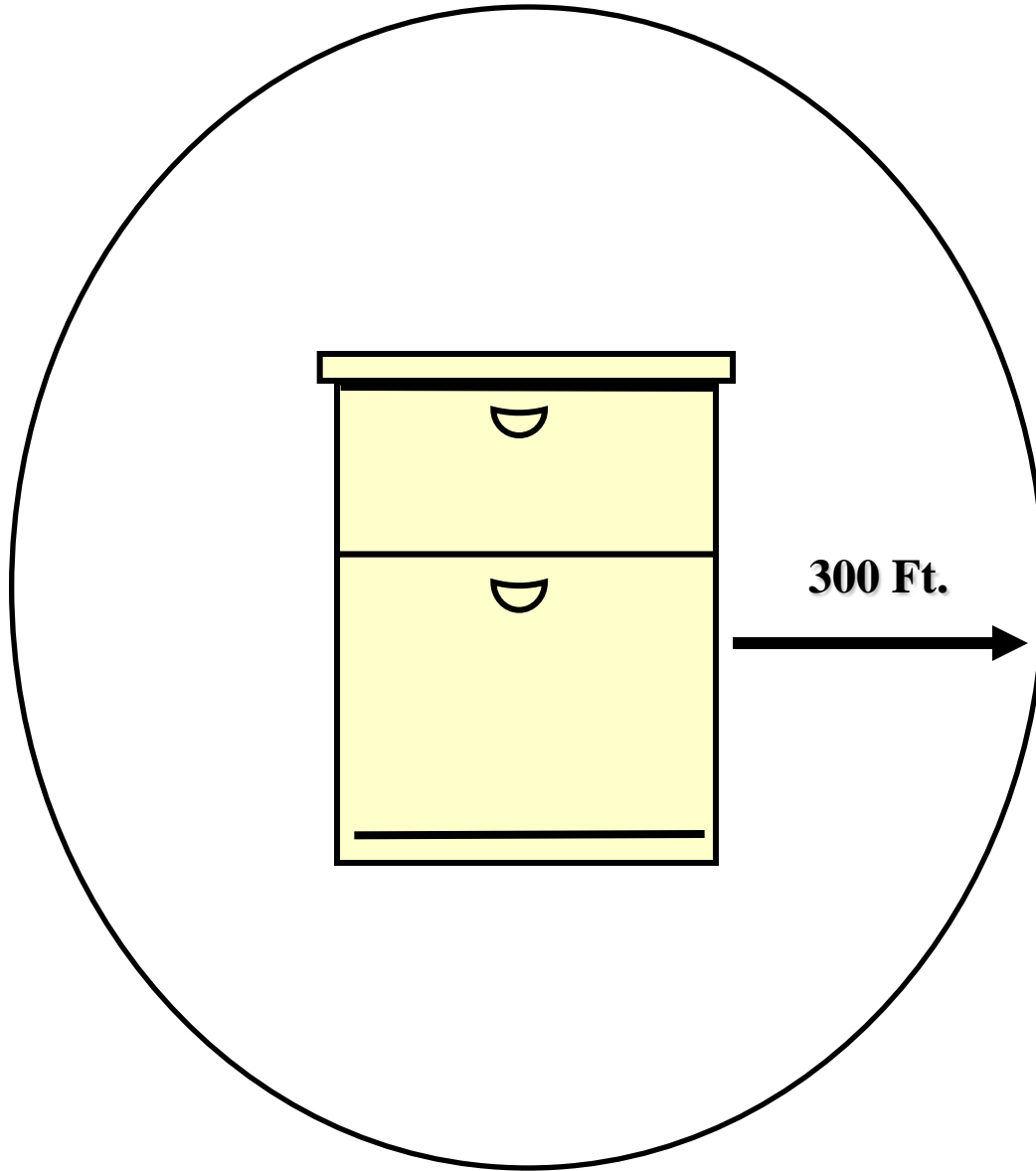
What Does This Mean?

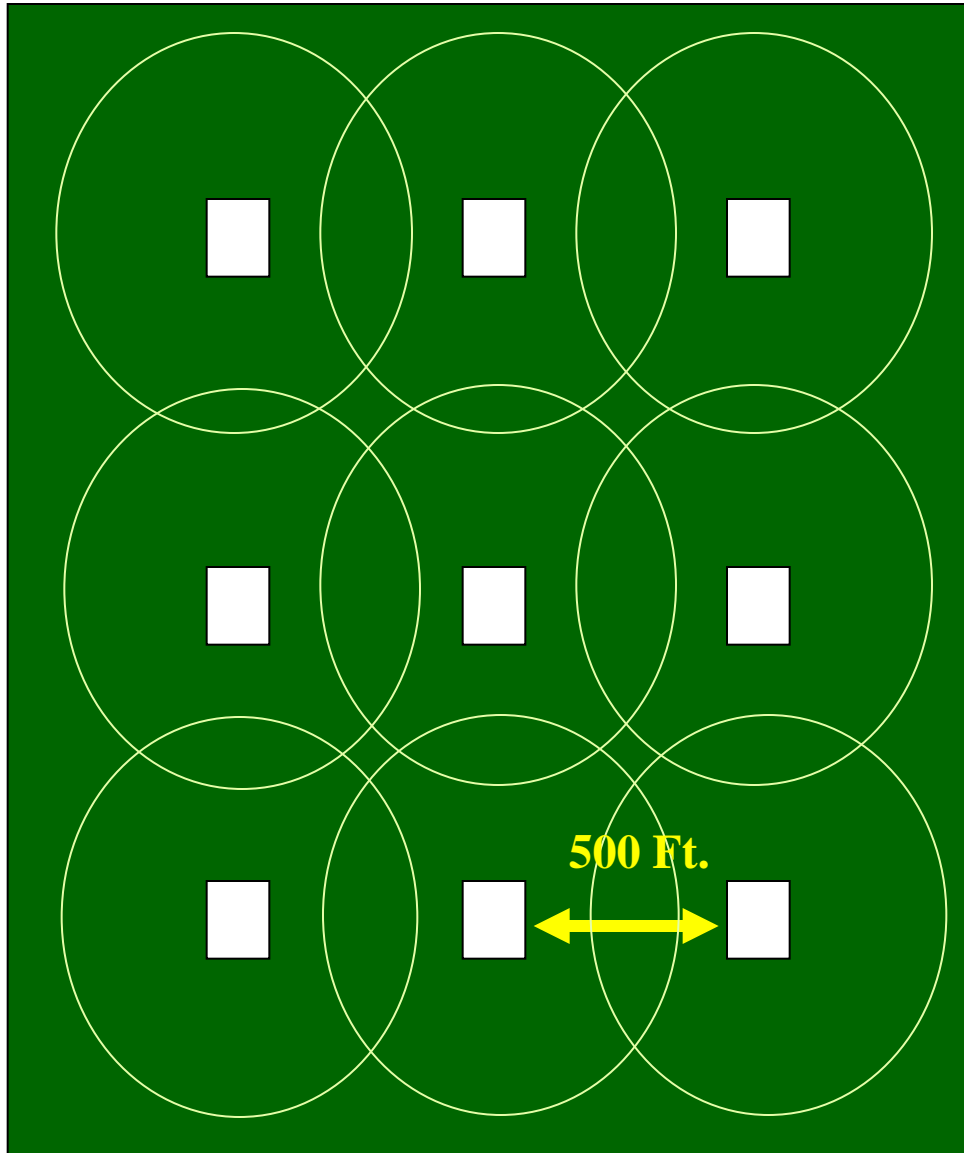
- More visits per flower = Better pollination
- The more pollinators the better fruit set!

Minimum hive strength standards

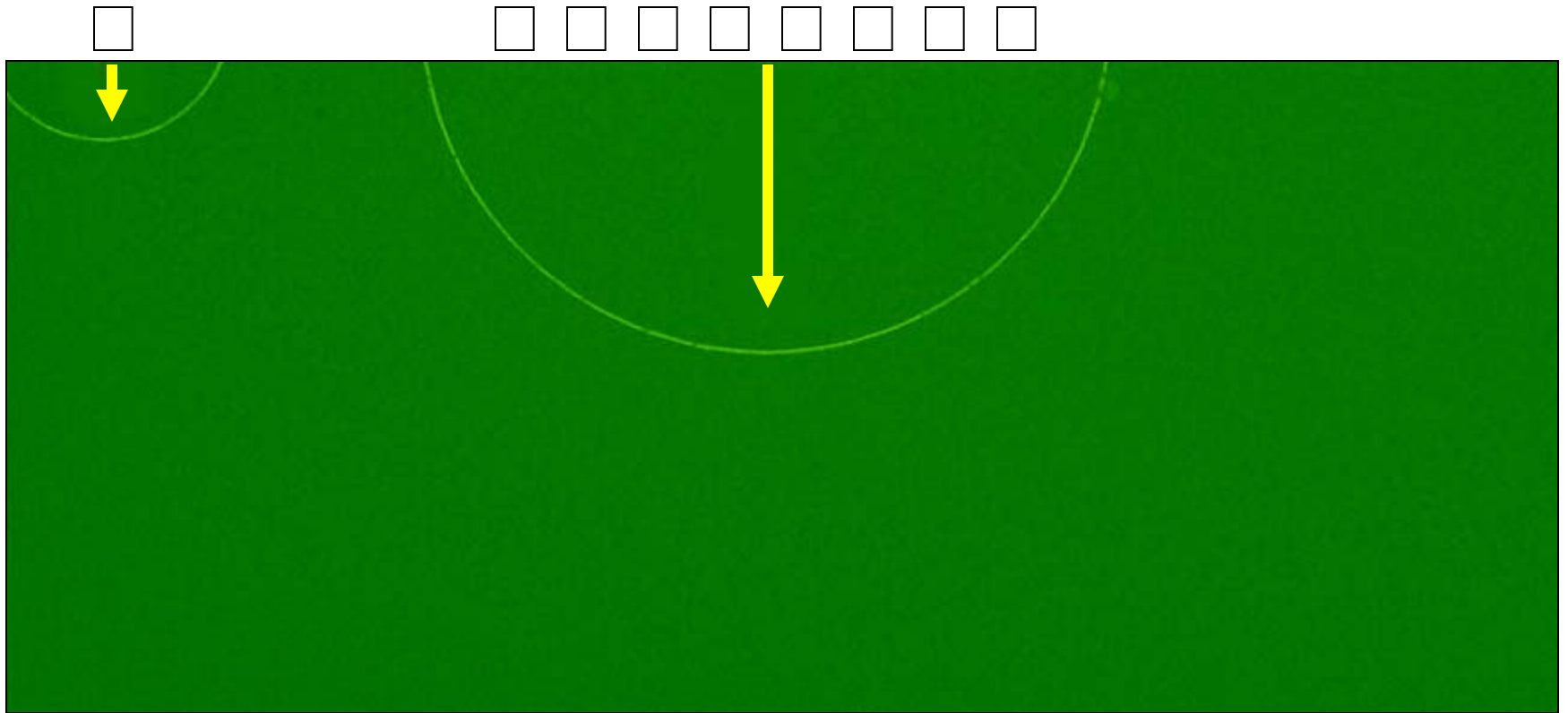
- Bees blanket tops of 6-10 frames.
- Brood fills 4-6 frames, preferably young brood.
- Queen right
- No uncontrolled disease or parasites

Foraging Distance





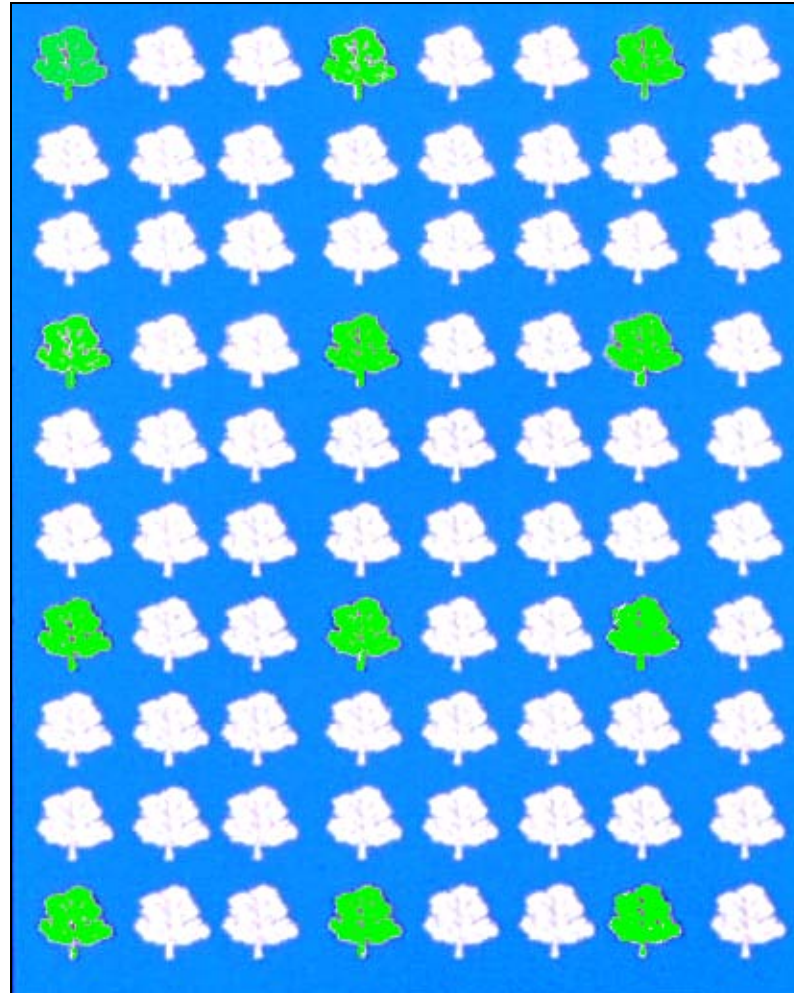
Competition increases coverage



Every other tree is a pollenizer



Every third tree in every third row is a pollenizer



Once again...A “good” pollinator

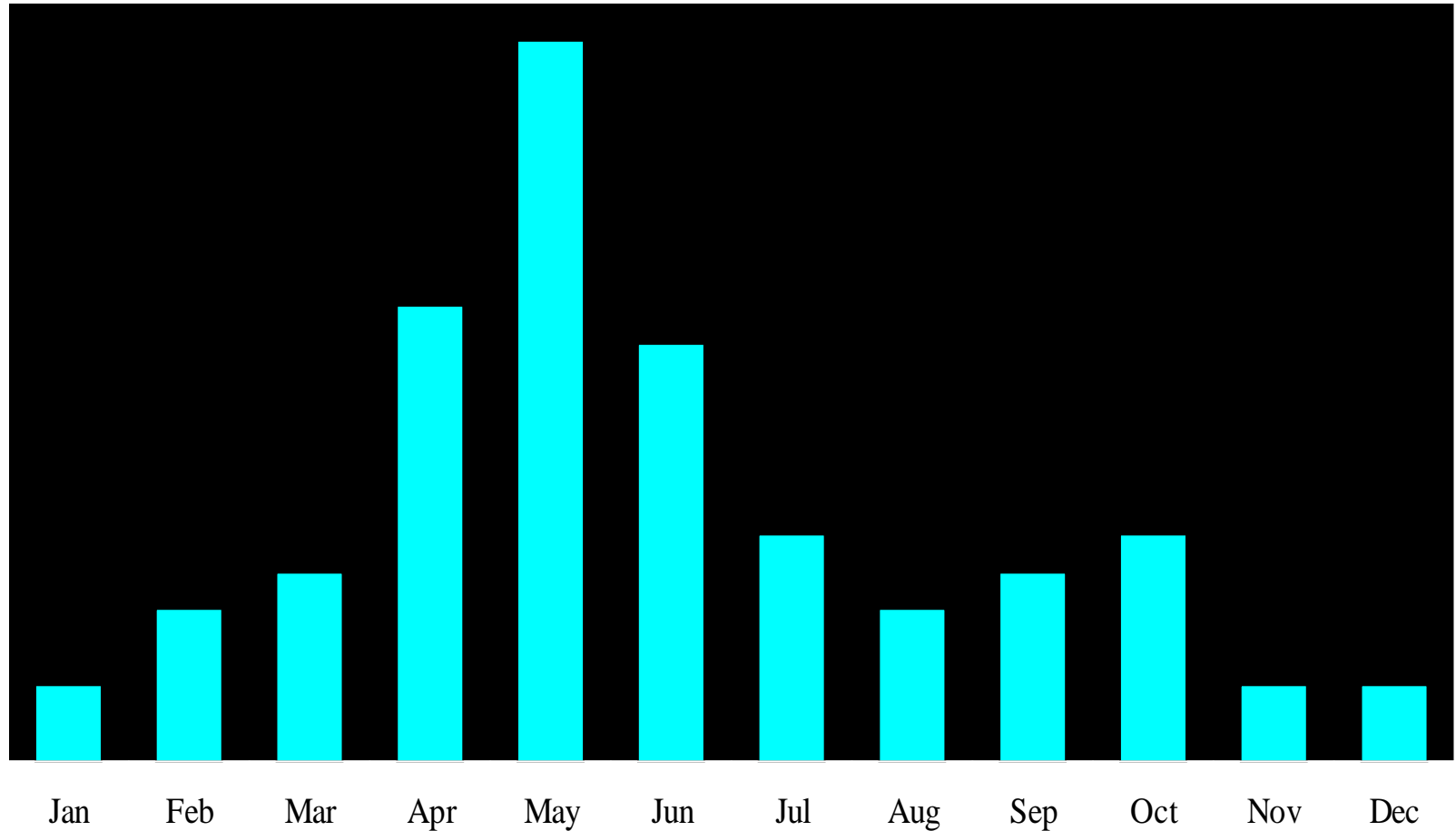
- Carries a high percentage of donor pollen.
- Visits a high percentage of receptive stigmas.
- Visits pollen-donor and pollen-receiver flowers successively.
- Covers stigmatic surfaces.
- Works rapidly.
- Works long hours.

Bee Attractants...

- Must have bees in the first place...either managed or wild.
- Will not make bees appear!



Seasonal nectar availability



Bumblebees as pollinators...?

- Best effectiveness is in the green house.
- Some scent mark flowers warning other bees to stay away...
- Field situation
 - Numbers?
 - Flower visits?









Any Questions?