The Good, The Bad, And The Buzzy: The Impacts Of Pesticides On Pollinators And How To Protect Them

Riley Reed

Who cares?

- Insect pollination is required for 13 crops
- Increases yield in an additional 78 crops

  (Klein et al, 2007)

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More Than Just Honey Bees

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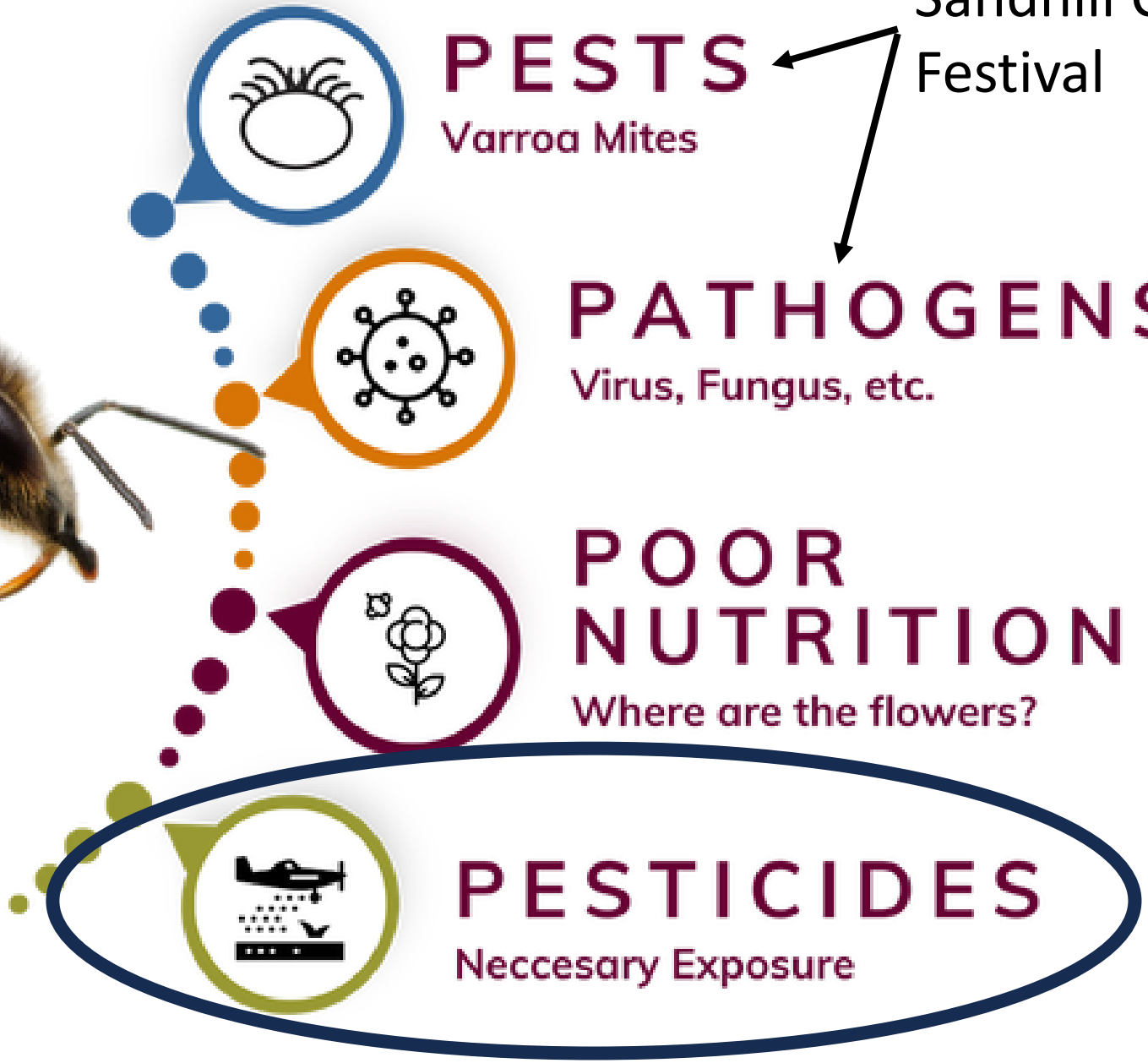
The 4 P's



Sandhill Crane Festival

Graphic courtesy of Project Apis m.

Bee kills in the news

The largest native bee kill to daye.

https://xerces.org/wilsonville-bee-kill

Treated seed is not restricted by the same disposal rules as pesticides

Photo: USDA-NRCS/Lance Cheung

https://www.xerces.org/blog/ethanol-plant-causes-severe-pesticide-contamination-in-nebraska

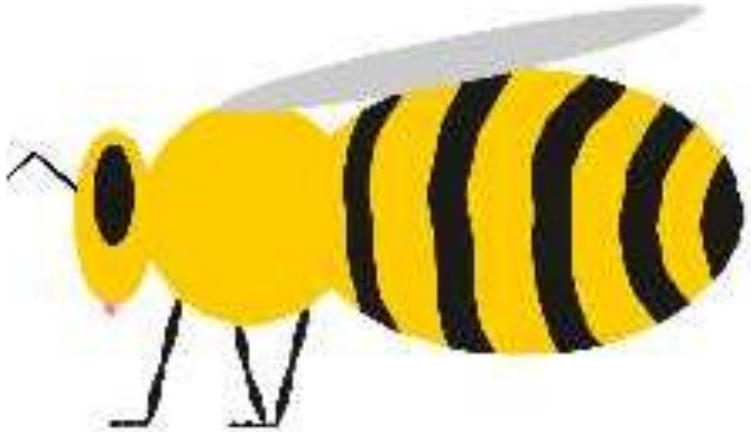
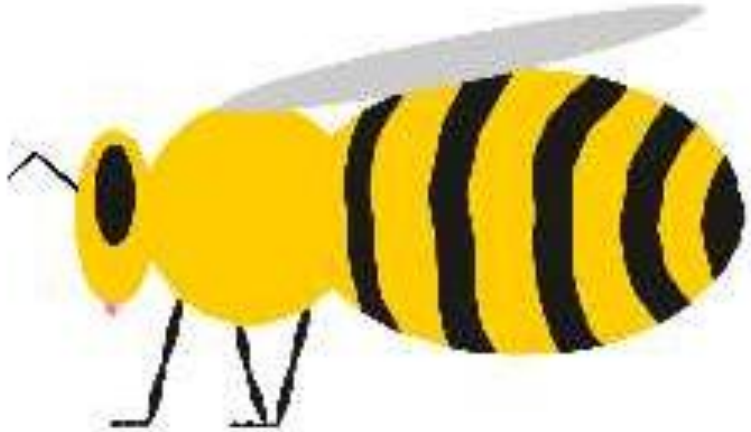
Nebraska ethanol plant

Photo: Judy Wu-Smart

https://www.xerces.org/blog/ethanol-plant-causes-severe-pesticide-contamination-in-nebraska

Lethal and sublethal effects

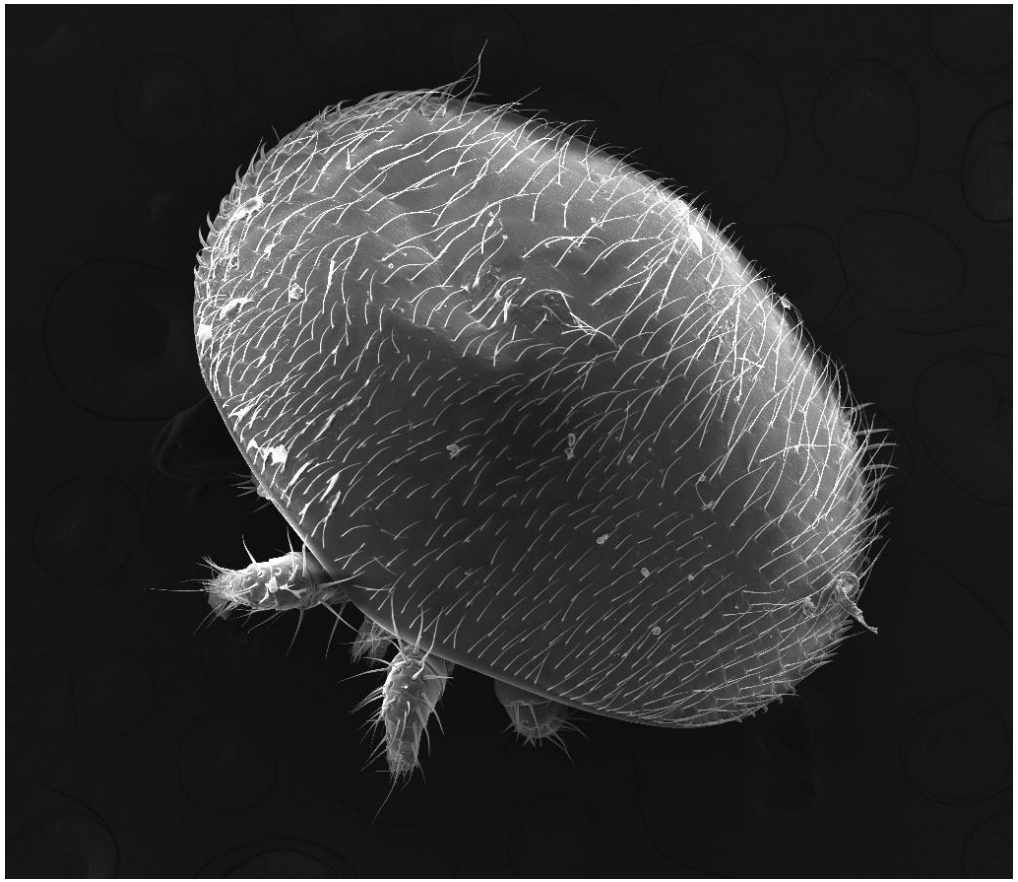
Fipronil effectively bioaccumulates in honey bees.

- 
- 

(Holder et al. 2018)

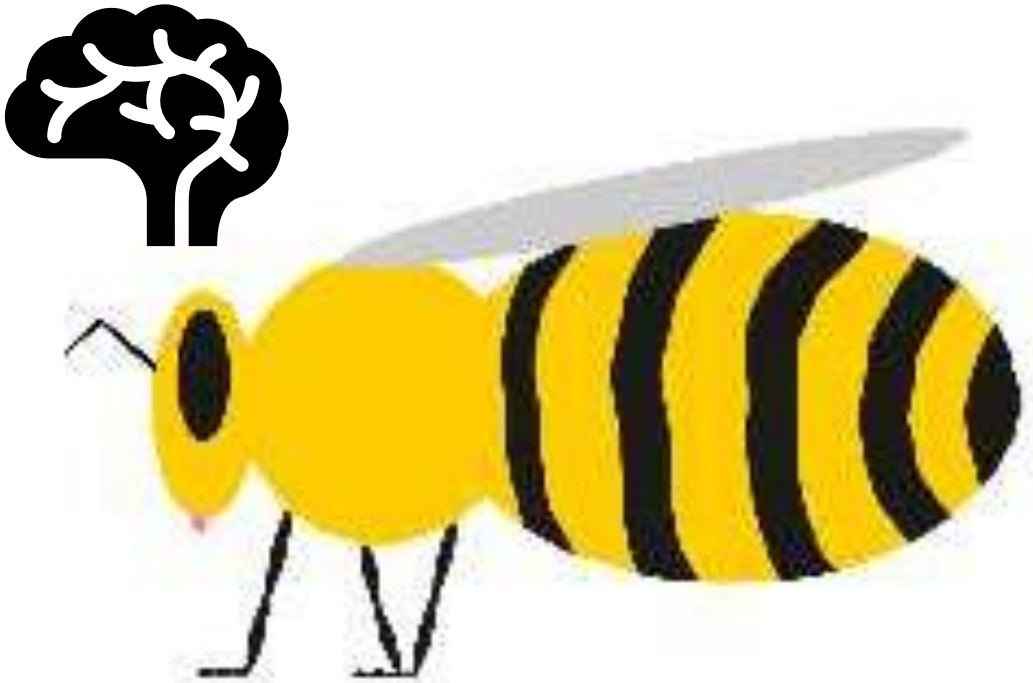
Chronic exposure to imidacloprid can decrease winter survival

Perfectbee.com

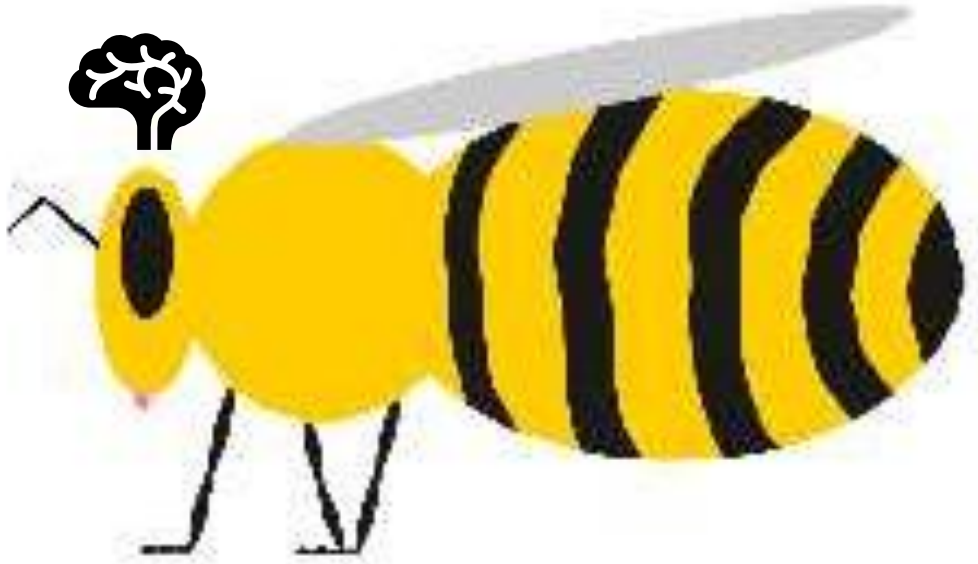


(Dively et al. 2015)

Tau-fluvalinate negatively impacts learning and memory in honey bees.



Without Tau-fluvalinate



With Tau-fluvalinate

(Frost et al. 2013)

Acetamiprid and clothianidin negatively impact honey bee learning and memory.

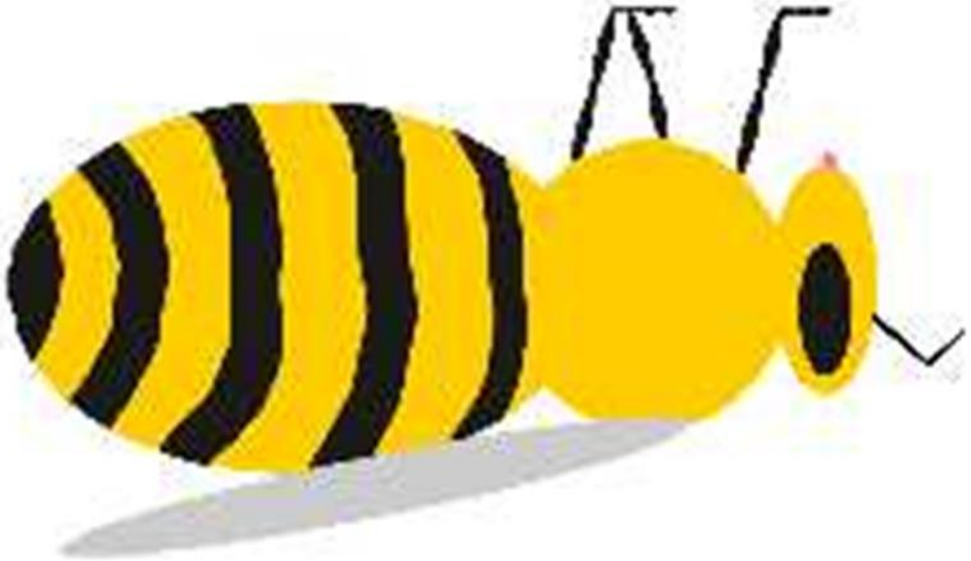
(Shi et al, 2019; Tison et al, 2019)

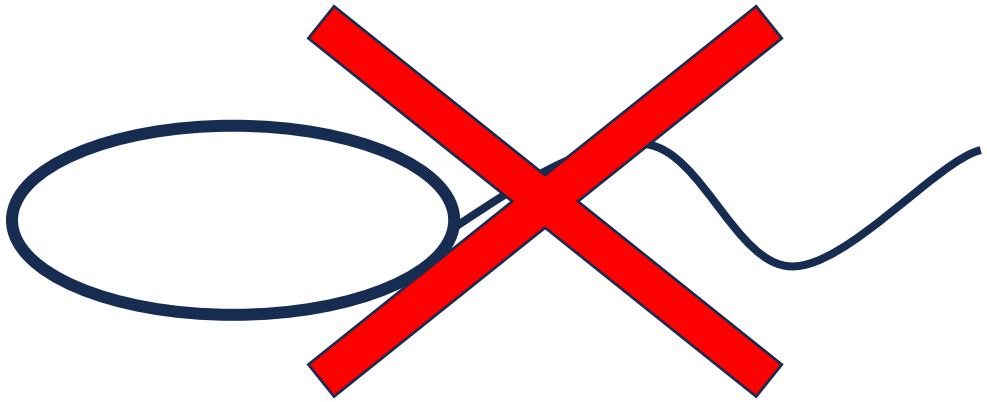
Exposure to thiamethoxam and clothianidin can negatively impact queen reproductive capacity

(Williams et al, 2015)

Beeswax 101

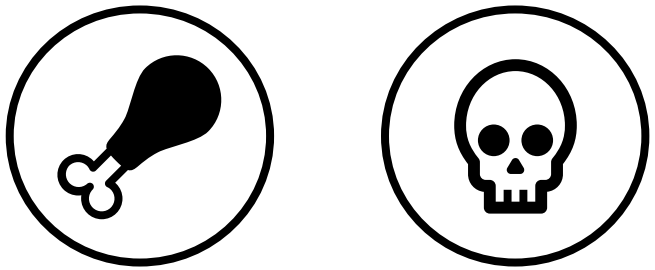
Chronic exposure through wax causes a variety of detrimental effects.

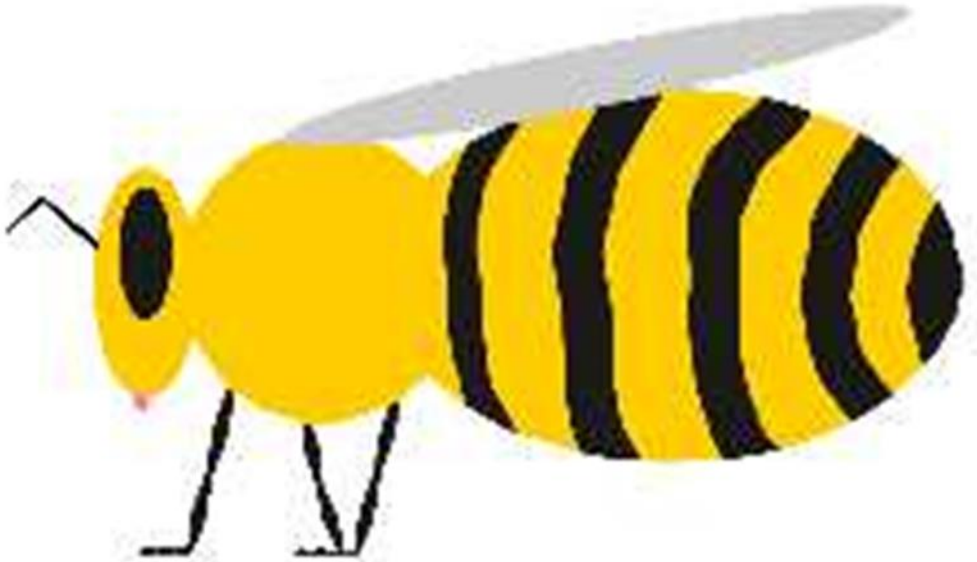




(Fisher II & Rangel, 2018)

Bees mistake microencapsulated pesticides for pollen, storing it in their hives.





(Burgett & Fisher 1980)

Most research studies honey bees, but other bees are also harmed.

Photo courtesy of https://www.gardenia.net/guide/mason-bees

(Nicholls et al, 2017; Sandrock et al, 2014; Stanley et al, 2015)

Does Bt corn kill Monarch caterpillars?

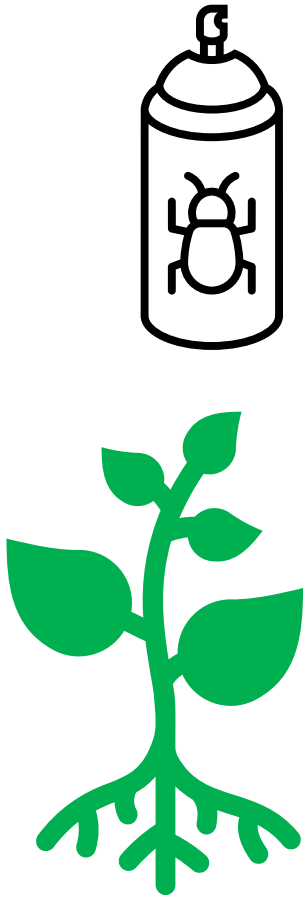
No.

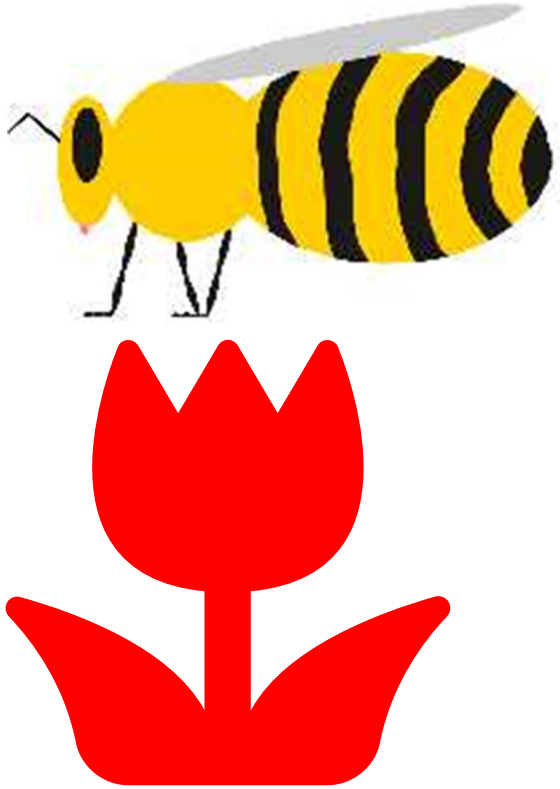
(Pleasants et al, 2001; Sears et al, 2001)

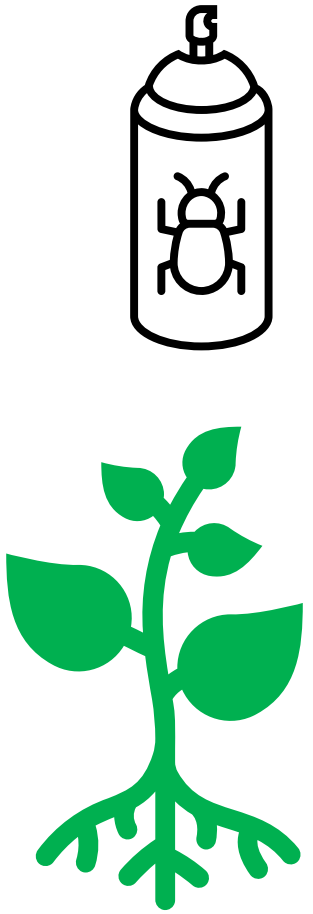
How to protect the bees

Disclaimer: These are all just general suggestions and not applicable to all pesticides or situations, always consult the label to make sure you are following the law and staying safe!

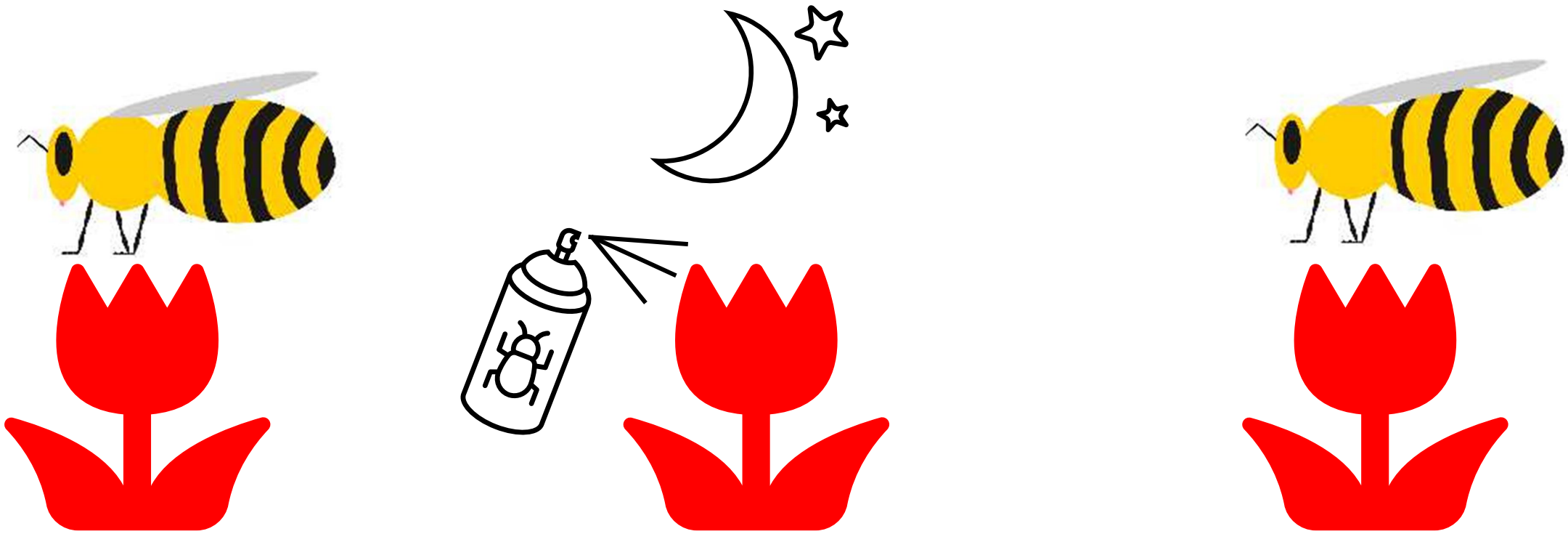
Try to apply pesticides before or after bloom.







Apply pesticides at sunset or at night when pollinators aren’t active.



Finally, communicate with beekeepers.

Photo credit:
Beeline Honey

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Questions?

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