

Stressors That Result from Transporting Honey Bees

by

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Each year, millions of hives move across the United States to California, Texas, and other fruit and almond producing states as a part of commercial pollination, or migratory beekeeping. This occurs because of beekeepers trying to catch several honey flows, as a result of commercial pollination, or from beekeepers moving hives from apiary to apiary. Sometimes a hive simply needs moved across an apiary or to a different apiary because it is in a poor position. The amount of research done on stress that occurs in honeybees while they are in transit is very limited because of difficulty in obtaining data while the hives are on their way to the fields they will be pollinating. In this essay, we will first cover the stressors that can occur when hives are transported, no matter how small the distance they are transported is. Second, possible solutions to these stressors will be discussed.

While there are not many studies that have been done on the stressors that affect bees while they are moving, there are results that are visible to commercial beekeepers. During an interview with Matt Lance, who transports hundreds of hives to California each fall, the following information was gathered. “When the hives are on the truck, they can overheat from being packed together so tightly on the truck. The bees can also freeze if the truck passes through an area with very cold temperatures. This is due to wind chill. Being trapped in the hive for a couple of days does not put any stress on the bees, as they are trapped in the hive for days on end during rainstorms,” Matt said. When transporting hives shorter distances, for example from one apiary to another, there is not as much potential for the hives to overheat. In recent research conducted by Dacotah Melicher, Ph. D., it was shown that some of the consequences from transporting hives long distance are extreme heat and cold. The research also indicated that colony size prior to being shipped has a significant effect on the survival of the colony, both short term and long term. Bigger hives are able to thermoregulate better, keeping the hive at the necessary temperature to raise brood and to prevent any major population loss (Melicher et al., 2019).

According to Matt Lance, one of the main solutions to the hives overheating is making sure that the truck that has the hives on it never stops while it is traveling during the day. This way there is airflow around the hives, cooling them. It is also proven that where colonies are situated on the truck has significant influence on temperature. Making sure that the hives are properly ventilated helps with preventing overheating (Melicher et al., 2019). Another solution to this problem is to put sprinklers on racks above the hives, which spray water at intervals.

To solve bees freezing when the hives pass through areas with freezing temperatures, you can attach a tarp to the headache rack of the semi-truck, creating a shelter from the wind (Lance,

personal communication, March 28, 2022). If the tarp is black, it can also warm the hives. Using an insulated tarp to cover the hives could also be more effective, as the tarp would help to trap the heat that the hives are emitting.

It is also helpful if the beekeeper only sends large hives, ensuring that they are able to thermoregulate and keep the internal temperature of the hive right for raising brood and for the survival of the adult bees. You could also wrap each pallet of hives individually. However, while this would be more effective, it is certainly not practical for large scale movements. Where the hives are located on the trailer has a significant impact on the temperature deviations in the hive. Hives that are exposed to more airflow, such as the front of the trailer and sides, will tend to be colder than hives that are located on the inside rows. The orientation of the hive also makes a difference, as the hives which have entrances facing out will tend to be colder than hives facing in (Melicher et al., 2019).

According to Matt Lance, being moved in general is stressful to the bees. To help the bees to take the trip better overall, whether long or short distance, beekeepers can make sure that they are well fed before the trip. Well fed, happy bees will be hardier. Another potential stressor is the vibration that is caused by the movement of the truck. To keep hive boxes and frames from breaking apart, the beekeeper can keep from opening the hive prior to departure for about a week, avoiding separating frames and boxes. The bees will seal frames and boxes together with propolis, making sure that frames don't bounce. This minimizes the chance of the queen being accidentally crushed while in transit.

In conclusion, these are the stressors that we have discussed. Temperature extremes are the main stressor. Some of the possible solutions to hives overheating are making sure that the hives are properly ventilated, sprinklers, and constant airflow over and around the hives. Possible solutions to the hives freezing are using a tarp to shield them from the wind and using an insulated tarp to trap heat from the hives. While there is not really a cost-effective solution to hives vibrating while moving, the beekeeper can avoid boxes and frames shifting by not breaking them apart for a week or two before the shipment. Although these are the obvious stressors that have visible affects on bee hives, there are likely more that have simply not been discovered yet, due to lack of significant research done in the field of transporting beehives. However, there are things that beekeepers can do to remedy the stressors that we do know exist.

Cited Sources:

Lance, M. (2022, March 28) Personal communication [Phone interview]

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