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**Transportation: Minimizing stress on bees while getting them where they need to be.**

**By Titus Sander**

Whether transporting hives en masse for commercial purposes, or on a smaller scale for a modest beekeeper; covering enormous distances on a trailer, or simply dragging bees a few feet within an apiary, the movement of bees is an intricate and delicate task. This essay will cover some particulars of hive movement, both on a large scale as well as smaller degrees of hive relocation, including inter-apiary transition.

Each year, millions of beehives are transported to and from California from other states, mostly via truck and trailer(1,2). Strapped four to a pallet, netted over, with hundreds of hives on a single semi-trailer(2). The purpose? Pollination of commercial crops, mainly almonds(3). California produces 100% of the commercial almonds in the U.S. In addition producing 80% of the world's almond crop(4). Almond orchards are entirely dependent on imported honeybees for pollination(5). And “. . . without bees, there would be no almonds”(6). Honey bees are also important in producing more than 90 other crops(7).

Because they're in high demand, bees are trucked all over the country, though mainly to and from California. Most of the bees rotate between California in winter, and the northern great plains, chiefly North Dakota, in summer(8). All that movement puts stress on the bees. They go for days without forage, sometimes the hives have faulty ventilation or lack of water. The bees have difficulty regulating temperature while on the move due to changing regions and altitudes as well as turbulent airflow(2). All those factors could contribute to heavy colony losses while on the road if care is not exerted.

Hive placement on a trailer has little bearing on temperature retention, but rather colony size and strength have greater effects on bee health in transit(2). Additionally, poorly ventilated hives suffer serious losses on account of overheating. In some states, hives undergo checks at the border to inspect for pests(9). They also endure more thorough inspections at their destination. On top of an already stressing situation, bees have to reorient to an entirely new location and environment upon arrival. Long distance transportation therefore results in the most stress for the hive.

Moving a hive of bees over intermediate distances (more than three miles, yet less than a day's drive) is not as complicated as long or short distance moves. The recommended procedure is to strap hive(s) securely on a truck or trailer bed after sealing up entrances(10). It is highly discouraged to transport bees inside a vehicle, because if they found a way out they could disrupt the driver(10). Reorienting the bees to their new location is easier as well, seeing as they likely remained in the same region and only lost a single day's forage. Moreover they won't have to deal with the inclination of bees who have only been moved a short distance, that is, to return to the former hive site. Intermediate hive transportation is in every way the simplest form of hive movement.

It is said that you can move a beehive less than three feet or more than three miles, but any distance in between will be difficult(11). There are several approaches taken to the issue of the bees returning to their former haunt. One solution is to move

the bees a few miles away, then move them back(10,11). Another recommendation is to move them in the dark, then place branches or other materials over the entrance to alert the bees to a change of location(10,11). If moving hives in daylight, it is good to seal off the entrances in the early morning before the bees are awake.

Regardless of time, a worthwhile consideration if moving a hive only a few dozen feet is dragging the hive only a few feet on a daily or weekly basis and eventually reaching the destination after an extended period of time(10,11). That procedure takes time but limits disoriented bees and hive stress in general. When moving beehives over a longer distance, confused bees will inevitably return to the former hive site. In order not to lose foragers, it is suggested to collect the wayward pollinators and return them to the hive in a box(10). Short distance hive movement is difficult, but there are numerous ways to minimize stress on the bees.

In conclusion, hive transportation can be a difficult and daunting task, but much can be done to minimize stress on the bees. Checking hives frequently to ensure proper

ventilation while moving them long distances could reduce hive losses. Precautions to diminish stress, such as forcing bees to reorient to their new home or carefully returning lost bees to their new quarters, can make a difference in a hive. Moving hives is an important part of honey bee management, especially with the emergence of truck transportation for pollination purposes. While it is obvious that moving bees stresses them, thankfully there are also ways to minimize negative transportation effects. The more we can do to limit stress on bees while managing them, the better their service and production will be. How well we care for our bees will have immediate reflections on honey and crop production, and in turn world health and economy. We cannot stop moving the bees or stop it from being a stressful situation, but we can do our best to lessen its effects on our precious pollinators.

**Sources :**

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**Biographical statement**

Hello! I'm Titus Sander. I live near Lincoln, Nebraska, am homeschooled and in the ninth grade. I enjoy music, books, football, and camping. I first became interested in bees through the scholarship program and learned a lot in researching for this paper. I am thrilled to have the opportunity to learn more about bees and their ways through the scholarship program at the University of Nebraska.