

“The Power of Pollen”

To most, pollen is a pesky yellow dust that covers the hood of cars, and it is a huge health issue to more than sixteen percent of Americans who suffer from pollen related allergies. Many people find pollen annoying, but to bees; pollen is essential for life. Pollen is crucial to the survival of the hive. Humans may not easily observe much of a difference in the amount of pollen or types of pollen over time, but changes in landscapes and plants have changed pollen and bees' access to pollen over the years.

Let's start off by talking about just how important pollen is to bees. Pollen is a honey bee's main source of protein. The consumption of pollen to build protein levels begins early in a honey bee's life. Bees begin consuming stored pollen among the brood soon after emerging to begin the process of building up protein levels in their bodies. (Oliver, 2007) Protein sourced from pollen impacts brood rearing, nurse bee health, royal jelly production, and proper growth and development. The nutritional needs of pollen and protein vary according to age, but adequate consumptions increase longevity and decrease pesticide sensitivity. (Ansaloni et al, 2025) For a colony of 20,000 bees approximately 125 pounds of pollen is needed annually. That number varies some because of the different protein content and amino acid profiles of commonly collected pollen. (Tsuruda, 2021) Pollen is bee food. The protein, lipids, vitamins, sterols, minerals, and micronutrients found in pollen are needed for growth and health. (Oliver, 2007) All beekeepers are encouraged by the sight of bees entering hives with full pollen baskets. Those bees are prompted to forage for pollen because a queen and brood are present in the hive, and they are sending out the unspoken command to gather and bring back pollen. Bees need a massive amount of pollen to sustain a healthy and growing colony.

Now that we know the importance of pollen to the honeybee, we need to talk about how pollen has changed in our plants and landscapes over the years and the impact it has on honey bees. Over the past 40 years, climate change directly and indirectly has impacted the survival and success of honeybees. Plants in landscapes are now impacted by seasonal timing shifts and blooming prematurely or struggling to bloom. The changes in blooming are leaving limited access to pollen. Colonies are dwindling in population or even starving due to a lack of pollen. (Borg, 2024) Humans are also negatively impacting diversity by moving towards more tidy landscapes and away from floral diversity. (Mull et al, 2022) The tidy bushes and shrubs they are choosing for their landscape are not rich pollen producers; therefore, the bees are struggling to find the key component they need to live. Habitat loss is also decreasing the amount of plants. Roads and homes are springing up where plants once thrived. One other reason pollen producing plants are shrinking in landscapes is due to the misery pollen spells for allergy sufferers. To create better environments for these allergy sufferers the OPALS rating scale was developed to help individuals determine if a plant would be a good fit for their landscape, but this has contributed to leading individuals away from adding pollen rich plants to their landscape. (Hansen, 2016) Through a combination of environmental factors and human factors, pollen is becoming less accessible to bees in landscapes.

Have you ever wondered when one might find more or less pollen in a colony? Since allergy sufferers have the most symptoms in early Spring; it might be easy to conclude that pollen is most readily observed in the Spring. Yes, Spring is the most abundant time of year to find pollen in the colony. Plants are blooming and pollen levels are high. The pollen is necessary in Spring to boost brood production, and it calms the bees. High levels of pollen in the colony increase brood production which increases the population of the hive. The larger population

makes the colony highly productive and can even lead to overcrowding and swarming. The temperament of the bees will change due to weather and seasonal changes. High humidity and changes in barometric pressure can make bees more irritable and do less foraging. Also, when temperatures become extremely high, bees become more agitated. In late summer and early fall, when pollen becomes scarce; the bees also get stressed out and become more aggressive. The reduction in pollen coming into the hive slows brood production and the population of the hive decreases. Not only is there less pollen, it is hot and humid, and there is always the threat of other bees robbing the hive. I learned first-hand from an experienced bee keeper that weather plays a big role in Spring pollen collection. This past week I attended the local Elk Valley Bee Keepers March meeting and sat down with an experienced member who has a large number of hives. When asked about how his bees did in Spring 2025, Mr. Syler told that the honey harvest was not that great. He said a very rainy spring kept bees from going out and gathering pollen and nectar. Rain washed pollen away and plant blossoms even fell off without getting pollinated due to multiple rainy days. Of the 1,200 pounds he collected more came from an unusual fall harvest. (Syler) Weather plays a big role in pollen collection, hive health, and bee temperament.

Pollen truly has power. Pollen is crucial to the survival of honey bees. It can help keep a bee hive healthy and flourishing. Individuals need to be responsible in planning and planting landscapes to provide bees the pollen they need. If bees can't find it; they will not survive. As we enter the Spring season; we should all do our part to provide these very important members of our ecosystem a pollen rich environment.

I verify that AI was not used to create this essay.

Andrew Boswell

Bibliography

Ansaloni, Leticia et al., “An Overview of the Nutritional Requirements of Honey Bees” *MDPI*, January 2025 <https://pmc.ncbi.nlm.nih.gov/articles/PMC11766133/>

Borg, Zoleigh. “Climate Change and Bees: The Effects of A Changing Planet” *Best Bees Company*, May 2024 <https://bestbees.com/climate-change-and-bees/>

Hansen, Jolene. “Put Pollen in its Place” *National Wildlife Federation*, June 2016 <https://www.gardencentermag.com/article/put-pollen-in-its-place/>

Kaplan, Kim. “Pollens to Fit a Honey Bee’s Every Season” *U.S. Department of Agriculture*, June 2021 <https://www.ars.usda.gov/news-events/news/research-news/2021/pollens-to-fit-a-honey-bee-s-every-season/>

Marinelli, Janet. “Create An Allergy-Friendly Garden” *National Wildlife Federation*, April 2007 <https://www.nwf.org/Magazines/National-Wildlife/2007/Allergy-Friendly-Gardening>

Mull, Ann et al., “Factors Contributing to Bee Decline” *Utah State University Extension*, February 2022 <https://extension.usu.edu/planthealth/research/factors-contributi...nators%20can,bees%20were%20required%20for%20pollination>.

Oliver, Randy. “Fat Bees-Part 1” *American Bee Journal*, Aug. 2007 <https://scientificbeekeeping.com/fat-bees-part-1/>

Syler, Craig. Personal Interview March 9, 2026

Tsuruda, Jennifer. “Honey Bee Nutrition Basics” *Honey Bee Nutrition*, 2021 <https://utia.tennessee.edu/publications/wp-content/uploads/sites/269/2023/10/W1152.pdf>

Vaudo, Anthony. “Pollen nutrition structures bee and plant community interactions” *USDA Forest Service*, November 2024 <https://research.fs.usda.gov/rmrs/articles/pollen-nutrition-structures-bee-and-plant-community-interactions>