



Presentation for the State Board of Agricultural Research and Extension
 Dickinson, ND
 November 9, 2023

Good morning. My name is Tim Hiatt, a second generation beekeeper. Thank you for being here in Dickinson today, I only had to come up from Bowman. My brothers and I operate 18,000 hives in southwest North Dakota. I'm representing myself as well as the North Dakota Beekeepers Association.

Top Ten States	2022 Honey Production in pounds	North Dakota Top Revenue Crops, 2022
NORTH DAKOTA	31,200,000	soybeans \$2,300,000,000
CALIFORNIA	11,590,000	corn \$2,000,000,000
TEXAS	8,321,000	wheat \$1,800,000,000
MONTANA	7,503,000	canola \$751,000,000
FLORIDA	7,350,000	hay \$280,000,000
SOUTH DAKOTA	7,215,000	potato \$248,000,000
MINNESOTA	5,202,000	sunflower \$241,000,000
OREGON	3,404,000	barley \$115,000,000
MICHIGAN	3,362,000	honey \$82,000,000
GEORGIA	3,296,000	peas \$66,000,000

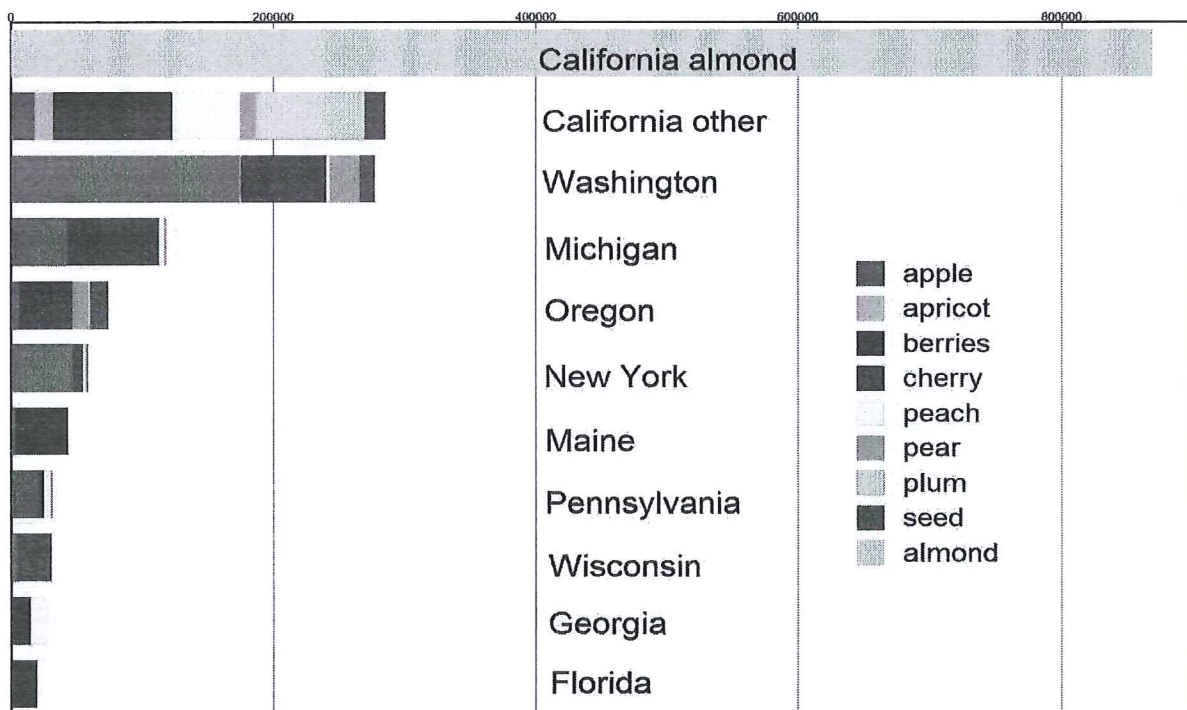
source: NASS

NASS, KX News

North Dakota lead the nation in honey production last year and has for last 19 years, and honey was the ninth largest crop in the state with \$82 million in revenue, more than peas, less than barley. More than 800,000 hives are brought here every summer for this honey production.

Honey revenue keeps beekeepers in business and keeps local economies going with our activities and those of our employees. More important than honey, however, is healthy forage for the hives. North Dakota agriculture uses few insecticides compared to most places that require honey bee pollination, and wild areas and pastures provide natural feed for the bees. Instead of recovering from insecticide kills all summer in areas of intensive insect control, bee hives flourish and grow here. My father quit spending summers in eastern Washington in the 1970s and brought his bees here instead when insecticide kills became too difficult to overcome. My family has been spending late spring to early winter here every year since then.

Pollinated Acres by State



Keeping hives healthy is important because more than 80 percent of all flowering plants are pollinated by honey bees, including more than 130 types of fruits and vegetables. ND, so far, isn't a top crops pollinated state, but the benefit of healthy hives spending the summers here is felt nationwide. The human diet requires a variety of foods, and pollinated crops like apples, cherries, pears; carrots, onions, almonds and berries offer vitamins and nutrients, and variety that a rice/corn/wheat/potato diet lacks. Not that pollinated foods would disappear if honey bees were more scarce. Pollinated foods would be much more expensive if honey bee populations drop below the level needed to pollinate these crops. Currently, honey bees pollinate \$15 billion worth of crops in the US. North Dakota plays the role of a safe haven where honey bees can thrive and prepare for winter, to successfully begin the new pollination year in February.

These facts are why I and the North Dakota Beekeepers Association support the creation of a honey bee research and extension position at the Hettinger Research and Extension Center. Nationwide, there is a handful of land grant colleges that conduct honey bee research. There is no one in the NDSU system looking at applied honey bee research and how honey bee health relates to the crops we pollinate. This is an oversight which must be remedied.

What would a honey bee research and extension person study? Probably not honey production, we're already pretty good at that.

Honey bee health would be the major area of investigation.

In the early 1980s our winter losses were 5% annually from which we easily recovered. An increase in colony death began in the 1990s to levels around 15-20%. This increased mortality is associated with the arrival of the Varroa mite from Asia.



This parasite consumes the bees' stored nutrients, decreasing their lifespan, and moves from bee to bee, acting as a vector for viruses which sicken honey bees. Imagine if the one person in this room with a cold had parasites that visited each person in the room. We'd all leave with a cold. And if we left with the parasite as well, we'd spread disease wherever we go.

In the mid-2000s, Colony Collapse Disorder was described and more attention began to be focused on colony losses. Annual losses have been around 35% since then, or more.

Colony losses show no sign of decreasing. Today, keeping enough hives alive and healthy to pollinate crops essential to human health is a challenge. I expect this research and extension position would look at factors in North Dakota which will improve hive survival, such as

- the influence of crop pollen and prairie pollen gathered on survival
- effects of varroa mite control measures on hive survival
- impact of weather extremes on colony health as we go from spring and summer to fall and winter
- investigating miticides from other livestock industries as treatments for Varroa and for other parasites which may soon breach our country from overseas
- selecting for traits in honey bee genetics for increased survival/fitness

All these could contribute to increased survival when coupled with an effective extension outreach.

Investigating pollinator/crop interactions would also be important. A few studies have shown benefits of honey bees to ND crops, like increasing sunflower quality and yield. Most of these studies have not been conducted in the Northern Plains with varieties used here. For crops which could benefit from pollination, this position would find and quantify those benefits and publish the results for growers to be informed, and act as liaison between growers, beekeepers, and other researchers.

Therefore we urge you to recommend to the legislature this 2 FTE proposal on honey bee research and extension for the Hettinger REC.

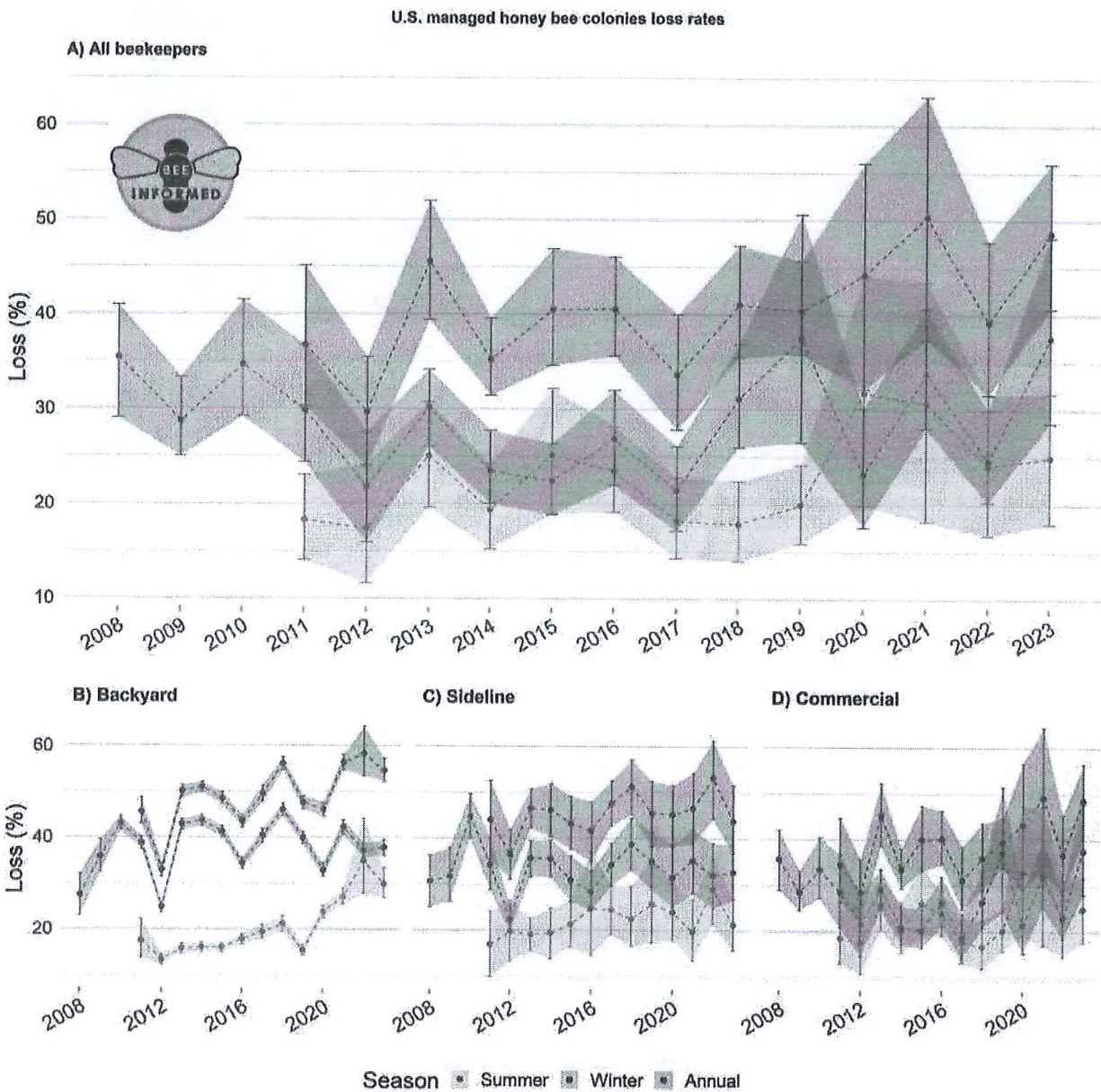


Figure 1. Seasonal managed honey bee colony loss rates in the United States across years (A), and by operation type (B-D): backyard (managing up to 50 colonies), sideline (managing 51-500), and commercial (managing >500 colonies) beekeepers. The loss rate was calculated as the total number of colonies lost divided by the number of colonies at risk during the season. Colonies at risk were composed of living colonies at the start of a period, as well as new colonies made or acquired, while excluding colonies sold or parted with. Annual loss covers the whole period from one 1 April to the next 1 April (in red); summer (1 April – 1 October, in yellow); winter (1 October – 1 April, in blue). Error bars represent the 95% confidence interval obtained from a bootstrap resampling of the data (n-out-of-n, 1000 rep).