**Supplementary material:** Instructions provided to participating beekeepers

***Sampling***

1. Light your smoker – bees don’t like being placed in a sample bag. If they become agitated, it’s nice to have some smoke on hand to use.
2. Have all your materials nearby – hive tool, sample bag, measuring cup, basin (you don’t want to have to run back to your truck for the bags or be searching for the measuring cup as your sample flies away!)
3. Check the hive tag and prepare the appropriate sample bag. We usually put the cup inside the open sample bag and lay next to the basin so we are not running after it as it blows across the apiary.
4. Remove the hive inner cover – usually there are enough bees on the inside of the inner cover for your sample. Don’t bump the inner cover, or the bees will fly off. If there aren’t enough bees on the inner cover, you can use bees from a frame inside the hive, preferably an outer frame.
5. Scan for the queen – chances are, the queen isn’t hanging out on the inner cover, but always look first. If you are using bees from a frame, take some extra time to look for the queen.
6. Shake the bees into a basin. We use an old wash basin because the sides are rounded and it’s easy for the measuring cup to gather the bees. Once you get more experienced/comfortable you may even choose to scrape bees directly off the inner cover or frames.
7. Bump the basin on one corner so all the bees will collect in one corner.
8. Using your measuring cup, scoop up the bees and hold them toward one side of the basin and get your sample bag ready with your other hand.
9. Quickly, empty the measuring cup into the sample bag.
10. Shake the bees to the bottom of the sample bag and close the top. Double check for the queen again. Make sure she didn’t get captured!
11. Double check that the sample bag tag matches the hive ID tag.
12. Lay the sample bags in the shade and place in the freezer as soon as possible. If you are out in the bee yard for the day, bringing a cooler with an ice pack and putting the bees in it until you get to a freezer will work as well.
13. We use this same technique for taking samples for mite testing, but instead of a sample bag, the bees are emptied into a shaker jar with alcohol wash.
14. After returning from the bee yard, place sample bags in freezer for at least 12 hours to ensure bees are dead.

***Shipping***

1. Find a size-appropriate box and put an ice pack in the bottom. Lay the bee samples on top of the ice pack (double check the freezer or count the bags to ensure they are all accounted for). Ensure the sample is secure by adding packing material such as balled up newspapers, plastic bags, bubble wrap, etc.
2. Fill out the bill of lading and stick it to the box.
3. Call the Purolator number on the bill for pick up. Sending the samples out for delivery is best if done on Mondays as this will prevent samples from sitting in a warehouse over the weekend.

**Supplementary material, Table S1.** Mean September 1981–2010 and 2020 temperatures (°Celsius) for three locations in Nova Scotia (NS), New Brunswick (NB), and Prince Edward Island (PEI), Canada (<https://climate.weather.gc.ca/>).

|  |  |  |  |
| --- | --- | --- | --- |
| **Location** | **1981–2010** | **2020** | **Difference** |
| Kentville, NS | 14.5 | 15.3 | +0.8 |
| Mactaquaq, NB | 13.5 | 14.7 | +1.2 |
| New Glasgow, PEI | 14.4 | 15.5 | +1.1 |

**Supplementary material, Table S2**. Millions of *Nosema* spp. spores (mean ± standard deviation, and (sample size)) from hives used in blueberry pollination (Blueberry) and hives that remained at a home apiary (Home), in Canada’s Maritime provinces, 2020.

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **Treatment** | **April** | **May** | **June** | **July** | **August** | **September** |
| Home | 3.06 ± 0.13 (44) | 2.33 ± 0.163 (45) | 0.386 ± 0.22 (45) | 0.101 ± 0.134 (33) | 0 ± 0.021 (43) | 0.003 ± 0.013 (31) |
| Blueberry | 1.70 ± 0.121 (82) | 3.12 ± 0.091 (94) | 1.04 ± 0.154 (81) | 0.112 ± 0.068 (47) | 0.011 ± 0.058 (65) | 0.014 ± 0.052 (45) |

**Supplementary material, Table S3.** Analysis of variance results showing the significance of the fixed effects.

| **Effect** | **Num *df*** | **Den *df*** | ***F*-value** | **Pr > *F*** |
| --- | --- | --- | --- | --- |
| **Month** | 5 | 139 | 64.45 | <.001 |
| **Pollination** | 1 | 139 | 1.33 | 0.251 |
| **Month × Pollination** | 5 | 139 | 3.40 | 0.006 |

Data Availability: