

The Bee Line

Vol.13 No. 5

Oregon Beekeepers Association Newsletter

June 1989

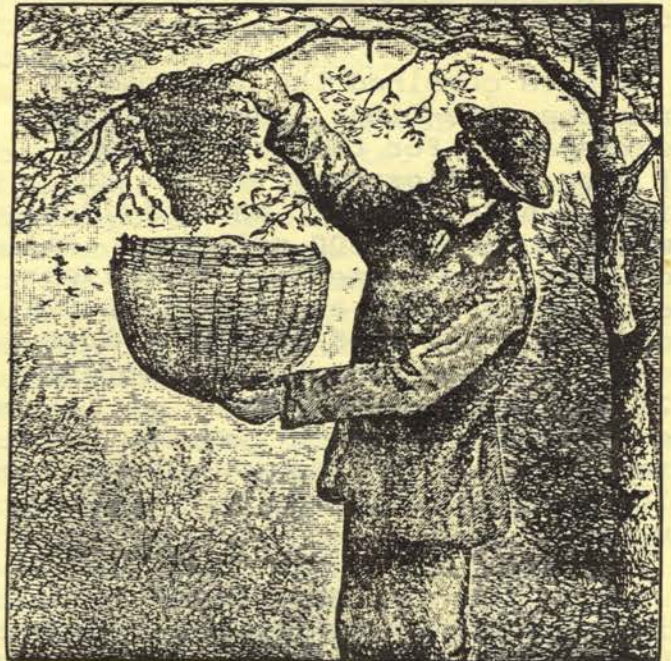
Winter Loss Survey Results

by
D.M. Burgett and B.A. Stringer

The March issue of The Bee Line included a survey designed to pinpoint some of the factors contributing to the high winter losses experienced by many beekeepers recently. Findings from the survey responses are presented below.

During the winter of 1988 and the early spring of 1989, unusually high colony losses were reported by many beekeepers in the Pacific Northwest of the U.S. Several experienced commercial and side-liner beekeepers described colony losses in excess of 50% which is well above the 5-10% normal winter mortality. Most beekeepers believed there to be a connection between the losses and infestations of the honey bee tracheal mite (*Acarapis woodi*). Several other associated factors were also suggested as contributing to the high losses, such as an increased occurrence of dysentery and noseema, and extended cold periods especially in late January and early February of 1989.

The tracheal mite was first discovered in the Pacific Northwest in November of 1985 and has continued to spread to where it is now considered well established in all beekeeping areas of the region.



'Hiving a swarm', a wicker hive in use in England, from F.G. Jenyns, *A book about bees*, 1886.

The Chief Apiary Inspector of the Oregon Department of Agriculture has informed us that the tracheal mite is probably present in all counties in Oregon, although not all apiaries in each county are yet infested. We assume, then, a fairly even distribution of the mite throughout the beekeeping areas of the state.

For beekeepers in the Pacific Northwest as well as throughout the U.S., effective control measures for the tracheal mite would be welcomed. While menthol is not yet approved for use in Oregon, many beekeepers were administering this material to their colonies as a preventative treatment in 1988.

Respondents to the survey included a mix of hobbyist, side-liner and commercial beekeepers. The 13 hobbyist respondents, defined as those owning fewer than

100 colonies, represented a small proportion of the colony losses. None of the hobbyists had treated their colonies with menthol in 1988. Winter loss in the hobbyists' combined 291 hives was 38 colonies (13.0%), which we do not consider as a significant increase over expected winter colony losses.

We have combined the information from the side-liner and commercial beekeepers. For this group, most of whom are migratory, we set a minimum size limit of an individual owning more than 100 colonies. All together, the commercial/side-liner respondents owned a total of 10,521 colonies. The 1988/89 winter loss for this group was 2,288 colonies (21.7%). The majority of beekeepers responding live in Oregon, but a few Washingtonians also provided information to the survey.

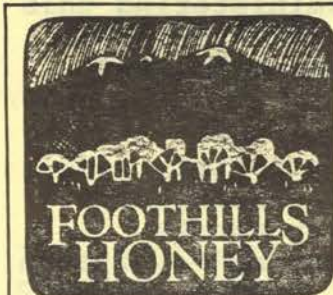
One of the most significant findings was the comparison of the average winter mortality between colonies from beekeepers who did and did not treat their colonies

with menthol in 1988. The number of hives treated with menthol was very similar to the number of colonies untreated, which allows a fair comparison. Table 1 displays the results of the findings. There was a significant difference in losses between those colonies treated with menthol and those not treated. Losses in untreated colonies were nearly three times higher than losses in colonies treated with menthol. Untreated colony losses averaged 31.9%, while treated colony losses averaged 10.7%. This is the most clear-cut observation to emerge from the survey.

While the results of this survey provide strong circumstantial evidence that the tracheal mite influenced an elevated winter mortality, other stresses in combination with the mite would further contribute to the high winter losses. Some of these factors were also considered in the survey. Because most of the hobbyist respondents did not provide information in these

Table 1. Colony mortality related to menthol treatment

	Treated 1988 -----	Not Treated -----	Combined -----
No. colonies owned:	4,925	5,596	10,521
Colony mortality:	559	1,729	2,288
Percent loss:	11.4%	30.9%	21.7%



**Custom Extracting
Crop Pollination
Honey**

George and Susan Hansen
30576 Oswalt Rd.
Colton, Oregon 97017

Telephone (503) 824-2265

ACTION BOTTLE & CONTAINER



RYCO PACKAGING

All Sizes Available

- GLASS PLASTIC - Bottles, Jars
- Caps, Pails, Specialty Products
- CLOSURES - Metal & Plastic
- Honey Bears

Large Stock In The Northwest

7926 NE Killingsworth-----255-5057

categories, our findings are derived from the commercial/side-liner group reports.

Those beekeepers who treated hives with fumagillin for nosema control in 1988 had a lower colony mortality compared to those beekeepers who did not treat (Table 2). This is not an unexpected finding.

We examined the effect of menthol and fumagillin treatments on colony mortality. Beekeepers who treated for both tracheal mite and nosema had an average winter loss of 11.4%. Beekeepers who treated for neither condition had an average loss of 31.3%. Beekeepers who treated for nosema but not for mites had an average loss of 27.9%, and finally beekeepers who treated for mites but not for nosema had an average colony loss of 9.1%. This evidence suggests that while nosema disease had some influence on winter losses, the major contributing factor was use of menthol in 1988 as a preventative or control against tracheal mites.

Evidence of dysentery was apparent in only 13.3% of the dead hives. Beekeepers who had treated

for nosema disease in 1988 reported a dysentery rate of 8.7%, while those who had not treated reported a rate of 15.3%. While a strict interpretation of these results is difficult, it would appear that medicating colonies for nosema control reduces the incidence of dysentery during the wintering period. No relationship between the presence of mites and dysentery could be established.

Knowing whether or not their colonies were infested with tracheal mites strongly influenced beekeepers' decisions to treat with menthol. All beekeepers who were aware of the presence of mites in their operations treated with menthol in 1988. This group of individuals averaged a 12.5% colony mortality. For those beekeepers whose colonies had been tested and did not have mites, 19.8% of their combined 3744 colonies died. None of this group of beekeepers treated with menthol. Considering that some of the testing for mites was done 18 months to two years ago and that the tracheal mite has rapidly spread throughout the state; it is probable that several of the previously mite-free operations had unknowingly become infested by the

Table 2. Colony mortality related to nosema treatment

	Treated 1988 -----	Not Treated -----
No. colonies:	5,155	5,366
Colony mortality:	857	1,431
Percent loss:	16.6%	26.7%

Smith Apiaries



Package Bees
Brood Nucs
Queens

Italian & Carniolan
Mite Certified

6801 Belleview, Paradise, CA 95969
(916) 872-4483

SNOW PEAK APIARIES
Clean Cut, Quality Wooden Ware

Commercial	100	1,000
9% supers	\$3.25 ea.	quote
6% supers	\$2.35 ea.	quote
Frames — all sizes	\$0.28 ea.	\$0.27 ea.
Tops & bottoms	\$2.15 ea.	quote

Write or call for price list, ph. 503-451-3752.

SNOW PEAK APIARIES
2733 S. Main Rd.
LEBANON, OREGON 97355

end of last year. Responding beekeepers who did not know whether or not their colonies were infested with mites represented a total of 2872 colonies, in which there was 24% mortality. None of these beekeepers treated with menthol, and it is likely that many of these apiaries had become infested with tracheal mites. This situation emphasizes the importance of continuing survey programs for the presence of tracheal mites throughout the region. Individual beekeepers are well advised to have their operations examined for the presence of tracheal mites. Although menthol treatment is relatively expensive, the loss of entire colonies is more costly.

Reports of high losses during the almond pollination period in California led us to question when and where the Oregon-registered hives had died. Using information from 12 migratory beekeepers in the survey, we found that almost 85% of their losses took place in Oregon before the beekeepers moved their hives to California where the remaining 15% of the losses occurred. Respondents reported many more dead colonies with very few bees remaining, as opposed to those with large numbers of dead bees inside the hive.

Pacific Northwest commercial beekeepers and especially those who pollinate almonds, impose many stresses on their hives. To check colony strength and condition prior to moving colonies to California, beekeepers open the hive in mid-

winter, often disturbing the cluster. Transportation of colonies many hundreds of miles during the winter is another stress. Nosema, food shortages, the shock to Pacific Northwest colonies exposed to the instant "Spring" in California at almond pollination combined with the presence of tracheal mites, can tip the scales to where even experienced beekeepers will suffer increased winter mortality.

Conclusions from the results of the survey suggest that the tracheal mite exerted a strong influence on the colony losses during the winter of 1988/89 and that all beekeepers in the region should begin a treatment program for mite control that utilizes menthol as a fumigant as soon as honey removal is completed in the late summer of 1989.

We wish to thank all the beekeepers who responded to our survey. Their participation has helped to clarify some of the factors that affected the elevated colony winter losses experienced by the Pacific Northwest beekeeping industry.





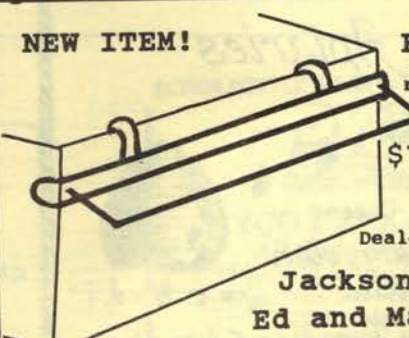
QUEEN SHIPPER™
P.O. Box 44, Amity OR 97101 • (503) 835-5300



Ask your Queen Breeder to ship your queens the **RITWAY** to maintain quality

* Dave and Rose Kerr *

NEW ITEM!



All steel FRAME HOLDER
saves first comb removed from damage

\$7.95 + \$1.25 shipping

Dealer Inquiries Welcome

Jackson Creek Honey
Ed and Maxine Swanson
29696 S. Gordon Rd.
Colton, OR 97017

US sales only