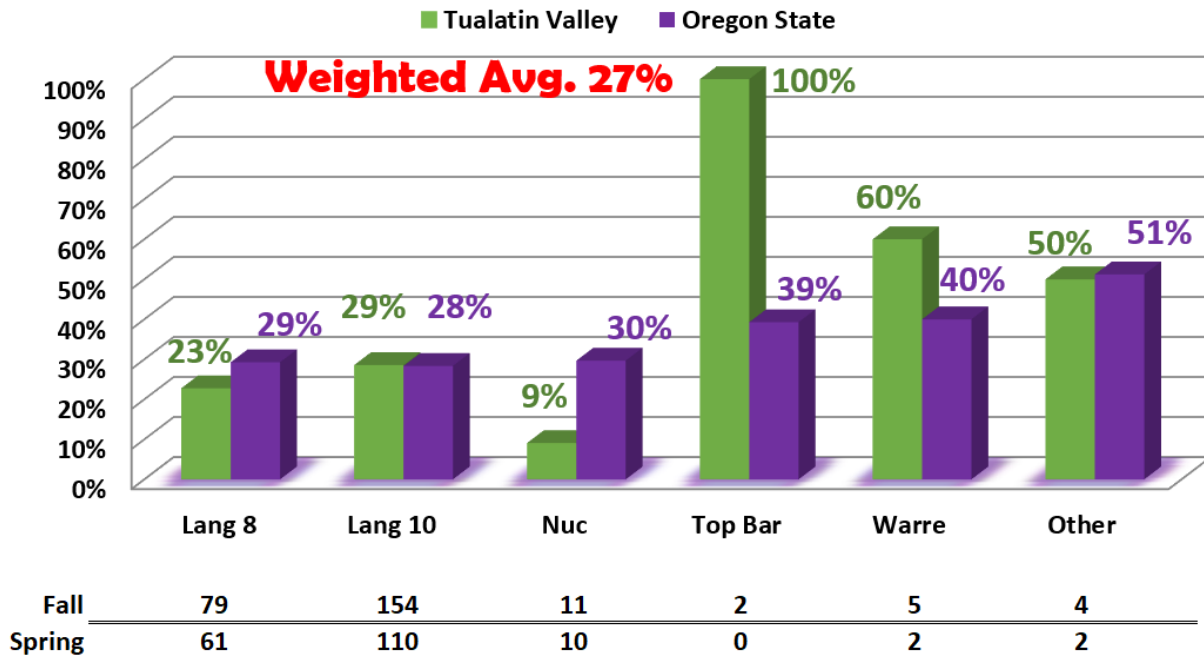


2022-2023 TVBA Winter Loss Report by Dewey M. Caron

Tualatin Valley Beekeepers were encouraged to complete a web-based survey document in a continuing effort to define overwintering losses/successes of backyard beekeepers in Oregon and Washington. This was the 14th year of such survey activity. I received 233 responses, 13 fewer responses, from OR backyarders, keeping anywhere from 1 to 40 colonies; TVBA members sent in 48 surveys, 5 more than last year, reporting on 255 fall colonies.

Overwintering losses of TVBA respondents =27 %, the same level as last two years. Loss level was 11 percentage points lower than the 12-year average losses of 38.3% (statewide average =37.5%). Percent losses, determined by hive types were 23% Langstroth 8 and 29% for Langstroth 10 frames hives (Statewide 8-year average loss of 8 frame hives is 36% and Langstroth 10 frame hives=40%). Nuc losses (11 total) were 9% (statewide loss level was 30%). Both Top bar hives were lost and three of five Warré hives did not survive. One of two Valykre (long) hives survived; the other two were Slovenian (died) and log (survived).

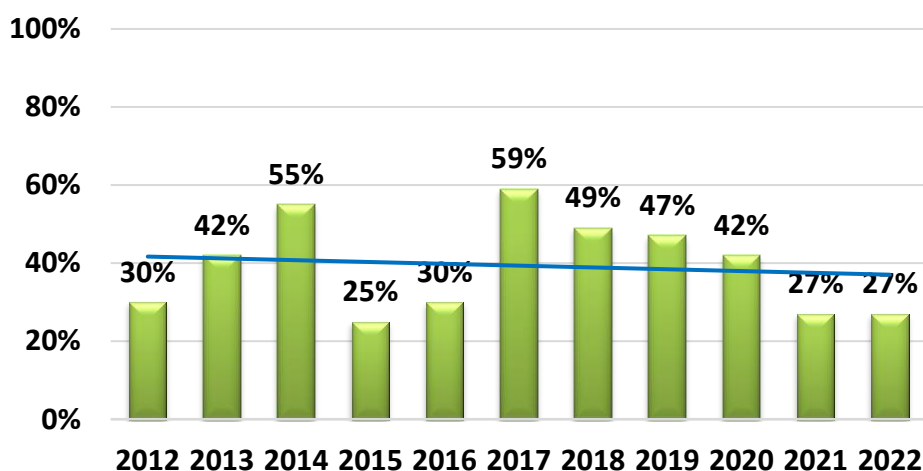
Winter Honeybee Loss % by Hive Type, 2022-23



The attached figure below shows TVBA losses for past 12 years. Solid line is loss trend – with lower losses the 2-years, average losses have decreased to 39% and the trend line is downward.

Figure 3

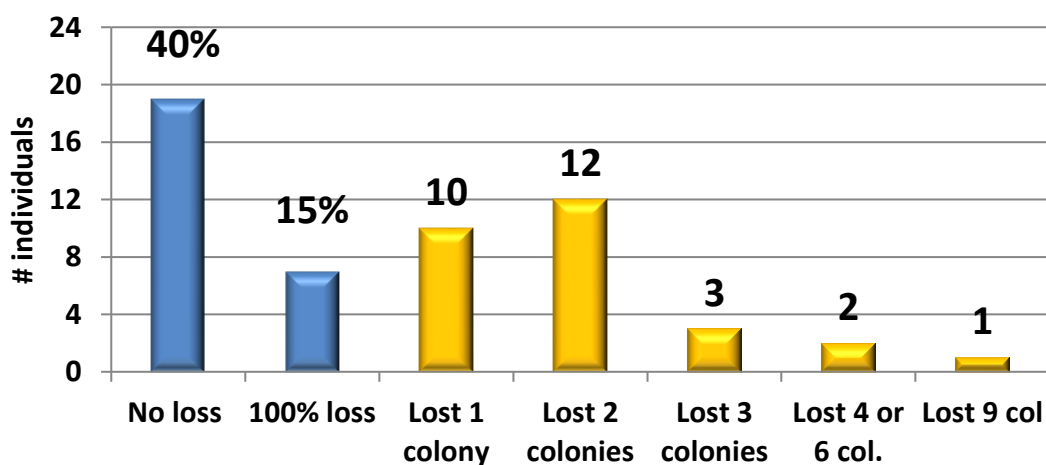
Tualatin Valley Loss History



Not everyone had loss. In fact, 190 members (39.5%) reported NO LOSS (39.5% of survey respondents -total of 97 colonies) while only 7 respondents (14.5%) reported total winter loss of colonies (but this was only 17 colonies total). Ten individuals lost one colony, 12 individuals lost 2 colonies followed by 3 individuals losing three, 2 lost 4 and another 2 lost 6 with one loss of 9 colonies, the heaviest.

Figure 4

Individual colony losses TVBA 2022-23

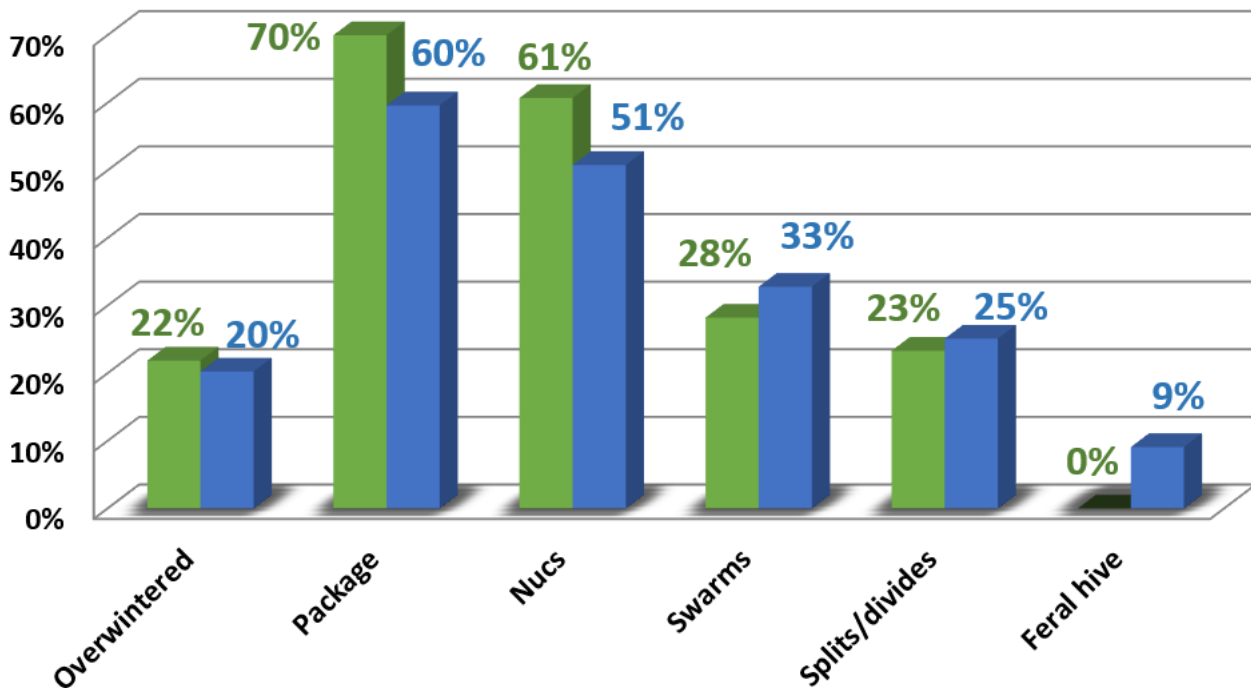


The survey also asked for hive loss by hive origination. The members reported 16% loss of previously overwintered colonies (compared to 20% statewide), 23% loss of the 13 packages (three did one survive) and 41% loss of nucs (16 survivors of 27 hived. Swarm loses were same as statewide (1/3rd), with splits having heavy loss by TVBA members, double that of statewide beekeepers.

Figure 5

Winter Honeybee Loss % by Origination, 2022-23

■ Tualatin Valley ■ Oregon State



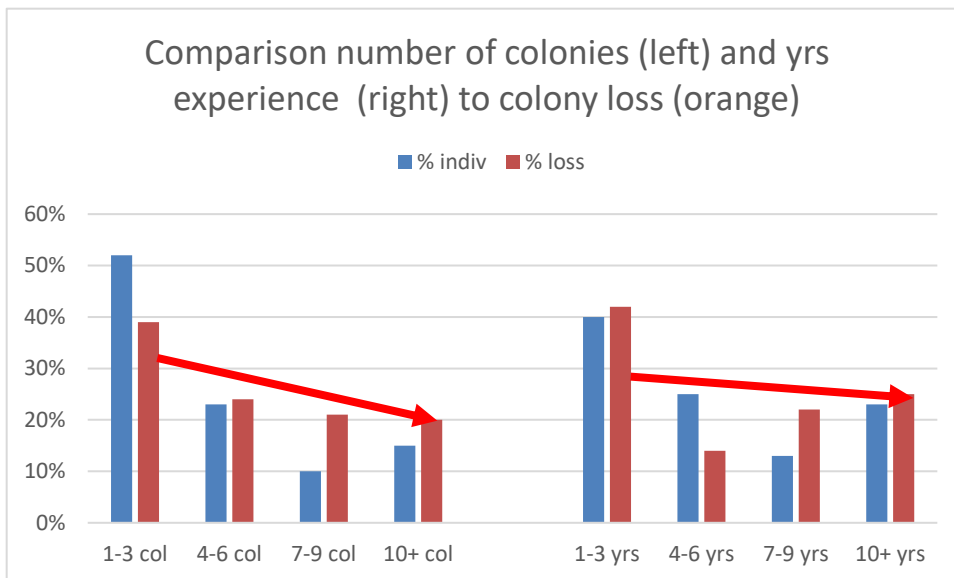
Fall	96	10	28	85	30	0
Spring	75	3	11	61	23	0

Typical of the statewide data, the TVBA respondents are largely new beekeepers. 25 of 48 TVBA respondents (52%) had 1 to 3 fall colonies; they had 39% loss level. Eleven (23%) had 4 to 6 colonies (loss level 24%). Five respondents (10.5%) had 7 to 9 colonies (21% loss level) and 7 individuals (14.5%) had 12-17 colonies— maximum number for any respondent was 17 colonies. Loss level of this group with the largest colony numbers was 19.5%. As colony numbers increase percent of colony losses decrease.

The TVBA beekeepers are also typical of statewide in years experience. Nineteen individuals (39.5% of respondents) had 1-3 years experience (loss level 42%), 12 had 4-6 years experience (loss level 14%), six had 7 to 9 years (loss level 22%) and 11 respondents had 10+ (24.5% loss level). Forty-six years experience was the largest number of years experience. Colony losses did not decline with

higher of experience (see Figure 6).

Figure 6



Five individuals (10.5%) had more than a single apiary location. Loss level at 2nd apiary was double the loss level (52%); the two with a 3rd apiary had only one colony in 6 survive ((83% loss). Seventy-nine percent (79%.) of respondents (same as last year) said they had a mentor available as they were learning beekeeping. Four individuals (8%) moved their bees. One to strengthen colony at another apiary, one for pollination, another to expand and the fourth to avoid robbing. Distances were 4 to 15 miles.

We asked individuals that had colony loss to estimate what the likely reason(s) might have been, Multiple responses were permitted. Eleven individuals said varroa queens (38% of those with loss), 10 said weak in fall followed by 8 (27.5% of those with loss). Six said starvation while Five (17%) each said don't know and yellow jackets. Three indicated starvation, while 2 each said CCD and nosema. One indicated pesticides, one other said swarming and 2 had other reasons listed. See Figure 7 above.

When asked about an acceptable level of loss (acceptable not defined – discretion of individual respondent), five individuals (9%) said none. The greatest selection was 10%. Twenty percent was the median. Three individuals said 50% was acceptable.

Loss level	5%	10%	15%	20%	25%	33%	50%	75%	100%	None	Other
#	2	9	5	7	8	6	3	1	0	5	0
%	4%	20	11%	15%	26%	17%	7	1%	0%	11%	0%

Reasons for Colony Loss/Acceptable loss

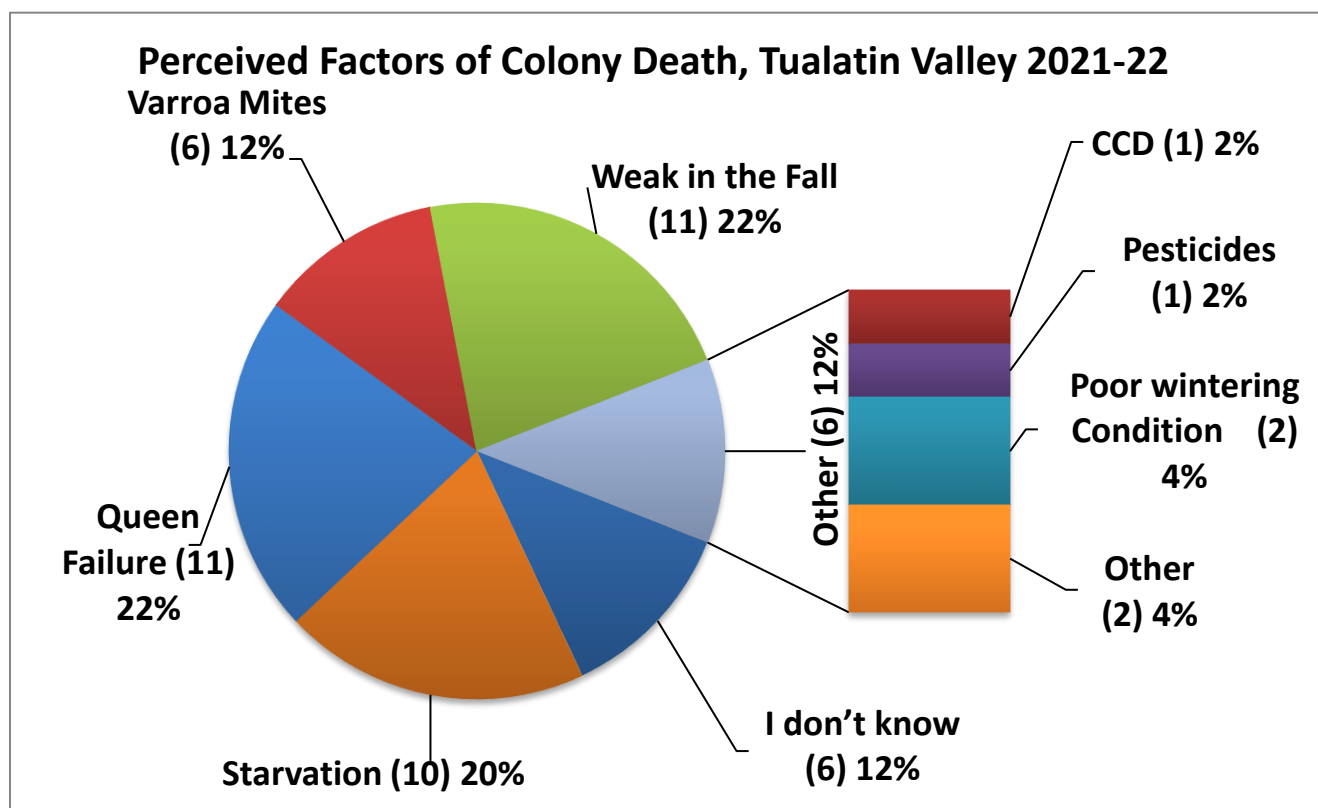


Figure 7

We asked of individuals that had colony loss to estimate what the likely reason(s) might have been, Multiple responses were permitted. Eleven individuals said queens (33% of those with loss, 22% of selections) of those having losses (recall that 10 individuals had no loss) and 11 individuals said weak in the fall closely followed by 10 individuals who said starvation (20% of selections). Six said Varroa mites (25% of individuals, 12% of total choices) the same number who indicated I do not know. See Figure 7 above.

When asked about an acceptable level of loss (acceptable not defined – discretion of individual respondent), four individuals (9%) said none. The greatest selection was 25 by 11 individuals. Twenty percent was the median. Four individuals said 50% loss was acceptable. See numbers below in table.

Acceptable Overwinter Loss per 43 Beekeepers in Tualatin Valley during 2021-22											
Loss level	5%	10%	15%	20%	25%	33%	50%	75%	100%	None	Other
#	3	7	2	9	11	3	4	0	0	4	0
%	7%	16%	5%	21%	26%	7%	9%	0%	0%	9%	0%

Why do colonies die?

There is no straightforward way to verify reason(s) for colony loss. Colonies in the same apiary may die for several reasons. Examination of dead colonies is, at best confusing, and, although some options may be ruled out, we are often left with two or more possible reasons for losses. There is a good deal of variance in opinion as to what might be an acceptable loss level. We are dealing with living animals which are constantly exposed to many different challenges, both in the natural environment and the beekeeper’s apiary.

Major factors in colony loss are mites and their enhancement of viruses especially DWV (deformed wing virus) and declining nutritional adequacy/forage and diseases. Pesticide exposure in the agricultural environment weakens colonies. Yellow jacket predation is a constant danger to weaker fall colonies, Management, especially learning proper bee care in the first years of beekeeping, remains a factor in losses. What effects our changing environment such as global warming and other factors, play in colony losses are not at all clear. There is no simple answer to explain the levels of current losses nor is it possible to demonstrate that they are necessarily excessive for all the issues facing honey bees in the current environment.

Management selections and losses

The survey inquired about feeding practices, wintering preparations, sanitation measures utilized, screen bottom board usage, queens, mite monitoring and both non-chemical mite control techniques (such as screen bottom board use, drone brood removal efforts, etc.) and chemical mite controls utilized. Individuals could check none or more than one response; most TVBA and OR beekeepers do not perform just one thing/management to their colony (ies) to control mites toward improving overwintering success. This analysis however is of a single factor equated with loss level. Such analysis is correlative and doing similar managements does not necessarily mean you too will improve success.

I direct you to the statewide analysis which compares a single factor equated with loss level. It is evident that some things can be done to reduce losses. If you wish a copy of these exclusively for the 48 TVBA respondents please get in touch with me --- dmcaron@udel.edu. For the overall OR responses see: <https://pnwhoneybeesurvey.com/survey-results/2022-23-survey-reports/>

Closing comments

This survey is designed to ‘ground truth’ the larger, national Bee Informed loss survey. Some similar information is additionally available on the BeeInformed website www.beeinformed.org and individuals are encouraged to examine that data base as well. Recall that the BeeInformed survey is measuring the larger scale OR beekeepers not the backyarders (See *American Bee Journal* April 2020 article by Dewey). Reports for individual bee groups are customized and posted to the PNW website.

We intend to continue to refine this instrument each season and hope you will join in response next April. If you would like a reminder when survey is open, please email us at info@pnwhoneybeesurvey.com with “REMINDER” in the subject line. We have a blog on the pnwhoneybeesurvey.com and will respond to any questions or concerns you might have.

Thank You to all who participated. If you find any of this information of value, please consider adding your voice to the survey in a subsequent season. Dewey Caron July 2023