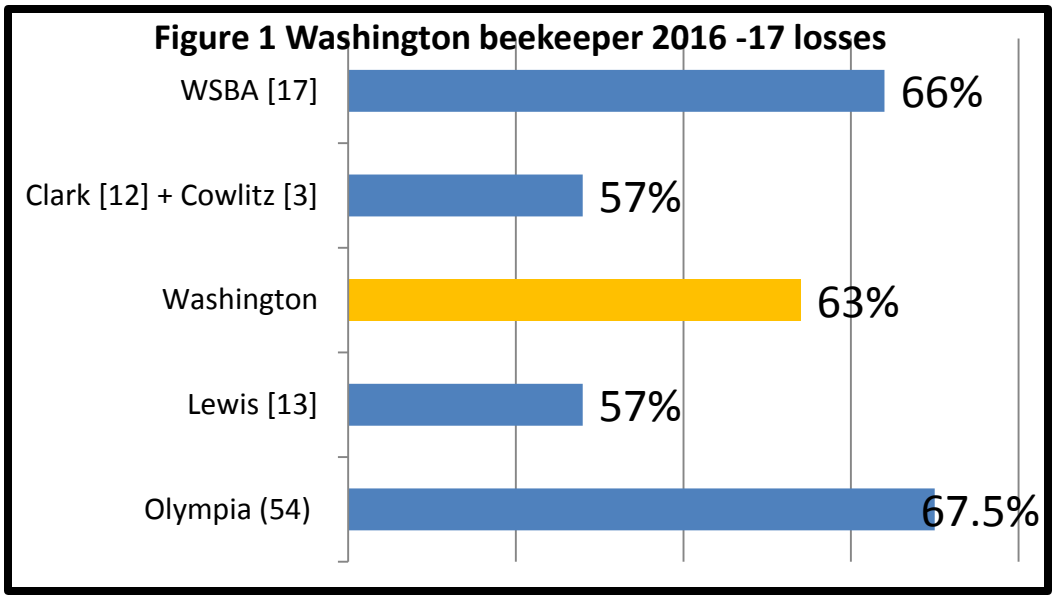
Olympic backyard beekeeper Losses 2016-17 Winter by Dewey Caron

Overwintering losses of small scale Washington beekeepers was up slightly from the previous loss level (60%) in 2015-2016 to 63.5%. Fifty-two WA beekeepers supplied information on winter losses and several managements related to bee health with an electronic honey bee survey instrument www.pnwhoneybeesurvey.com. This survey includes 5 Olympic Co respondents. An additional 49 Olympic beekeepers, surveyed by President Mechele Linehan for the club are included in this report.

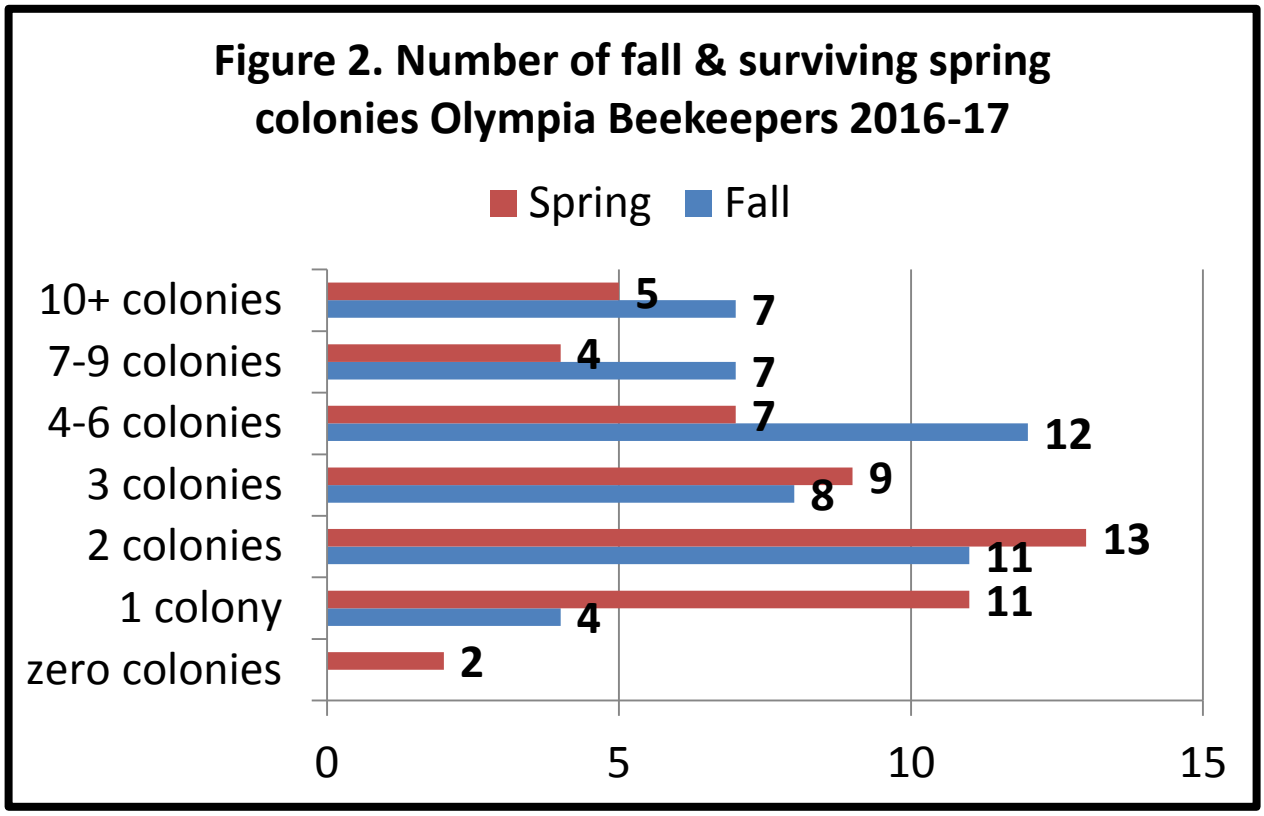
Figure 1 shows total WA response (52 total + 49 additional Olympic beekeepers). Number in ( ) to left of association name is number of individuals; % is overwinter losses by club. Total fall colony number was 164 and 301 for the Olympic beekeepers



The vast majority of respondents to the electronic survey were new beekeepers. 51% of 52 WA respondents (data not collected for 49 Olympia beekeepers) had 1 to 3 years of experience; 23% had 4 to 6 years of experience, 13 (25%) had 8 to 10 years and a similar percentage reported 14 + years of experience; 35 was greatest number of years.

Of a total of 465 fall colonies, 172 survived to spring (63% loss rate); 53.5% of those returning a survey had 1, or 2 or 3 fall colonies; 35.5% had 4 to 9 colonies, 11% had 10 or more colonies with 27 the largest number. 23 Olympic beekeepers (47%) had 1, 2 or 3 fall colonies, 12 (24.4%) had 4-6 colonies, 7 (14%) had 7 to 9 colonies and 7 (also 14%) had 10+ colonies including the individual with 27 colonies. Largest spring number was 16 colonies. Figure 2.

Last year 60% of 52 WA beekeepers had an experienced mentor available as they were learning beekeeping. This year 62% said they had a mentor available.



2015-2016 Overwinter Bee Losses

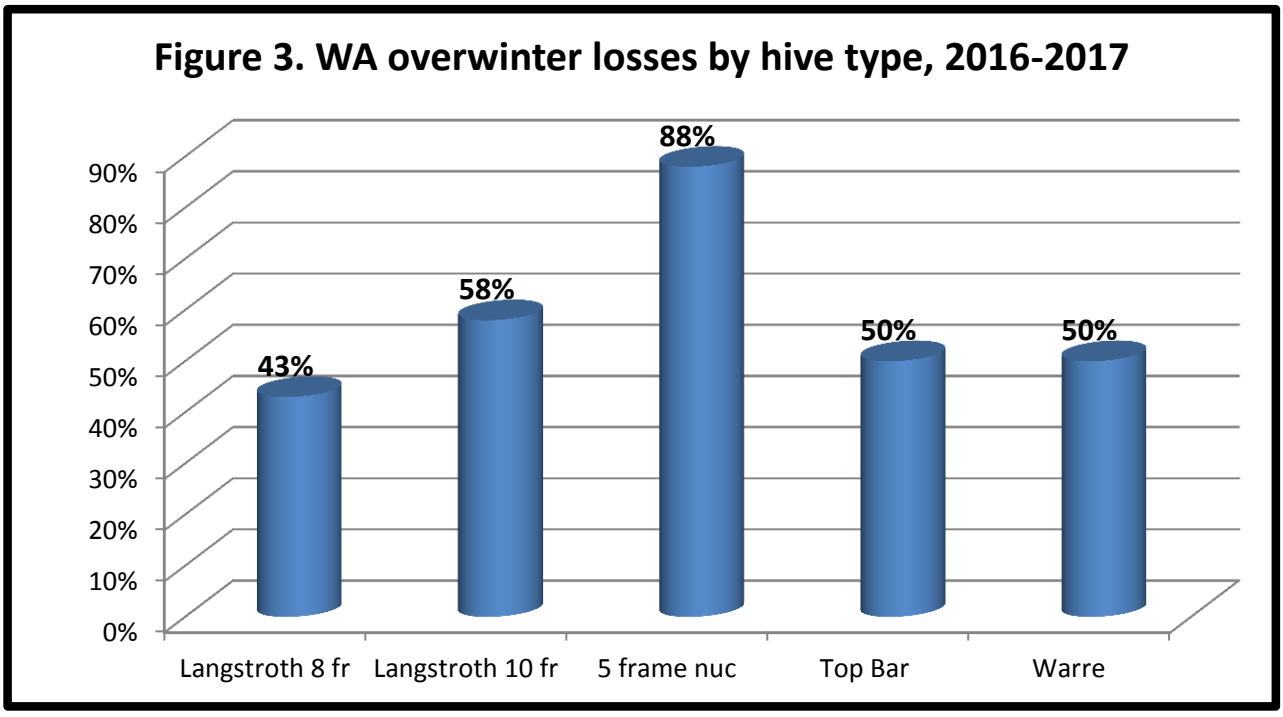
Total WA backyard beekeeper overwinter loss = 63% loss.

Olympic Loss rate = 67.5%

The WA survey overwintering loss statistic was developed by our asking number of fall colonies and surviving number in the spring by hive type. Results, shown in Figure 3 graph below, illustrates overwintering losses for 52 total WA beekeepers, including 5 from Olympia. Loss information for hive type was not collected in Olympic beekeeper survey.

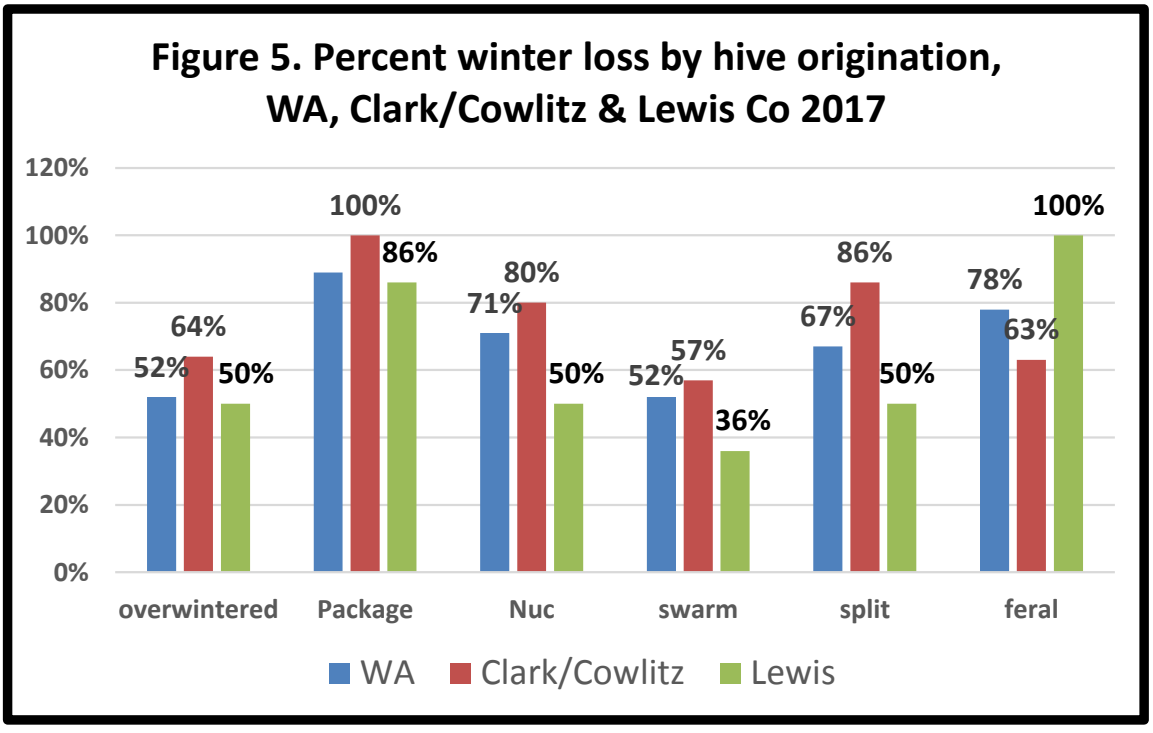
Among 52 total WA beekeepers, 7 individuals (14%) maintained more than one hive type. Numbers of 5 frame nucs included in data (8) Top bar hives (12) and Warré hives (4) are exceedingly small accounting for 13% of total hive numbers.

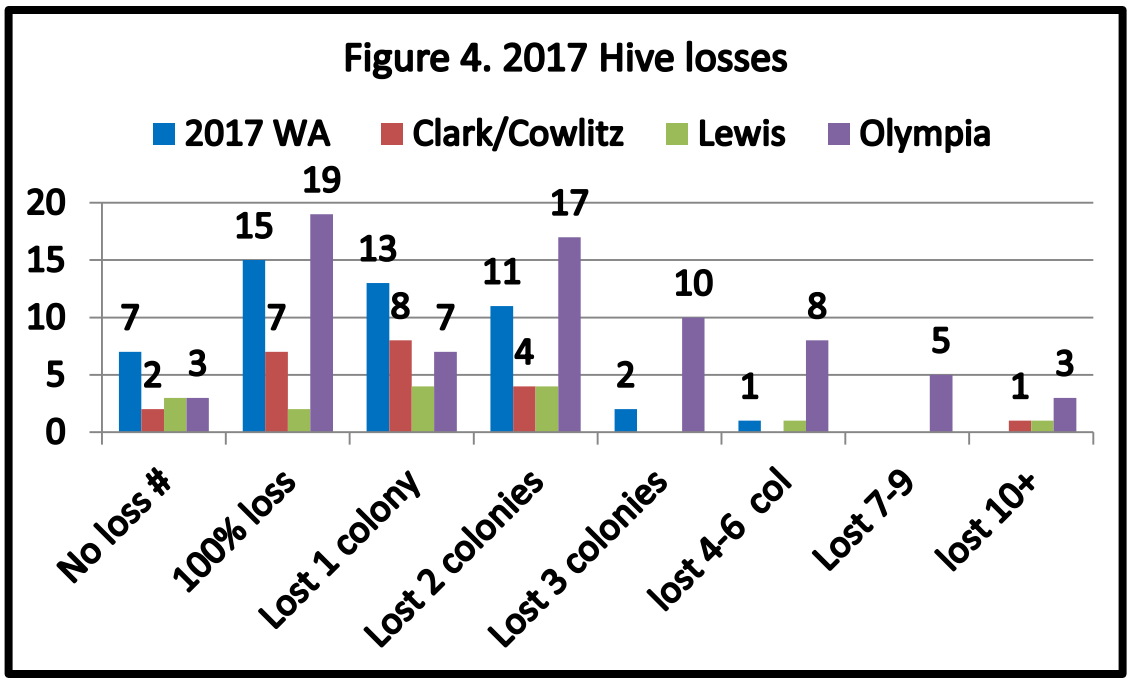
Statewide 7 of 52 beekeepers (13.5%) had no loss while double that number 15 (29%) had total loss. Comparable numbers for Clark Co (17% no loss and 54% total loss; Lewis Co (15% zero loss and 7.5% total loss; Olympia (6% total loss, 39% total loss). Numbers of individuals losing 1, 2, 3 and more colonies is shown in Figure 3. Heaviest loss in Clark/Cowlitz was 19 colonies, highest in Lewis was 10 and in Olympia 16 colonies. Both Clark/Cowlitz and Lewis had 57% overwintering losses, up from 47% in both last year (but with only 5 Clark Co respondents).



Fall colonies	30	132	8	12	4 = 188
Spring colonies	7	56	1	6	2 = 84

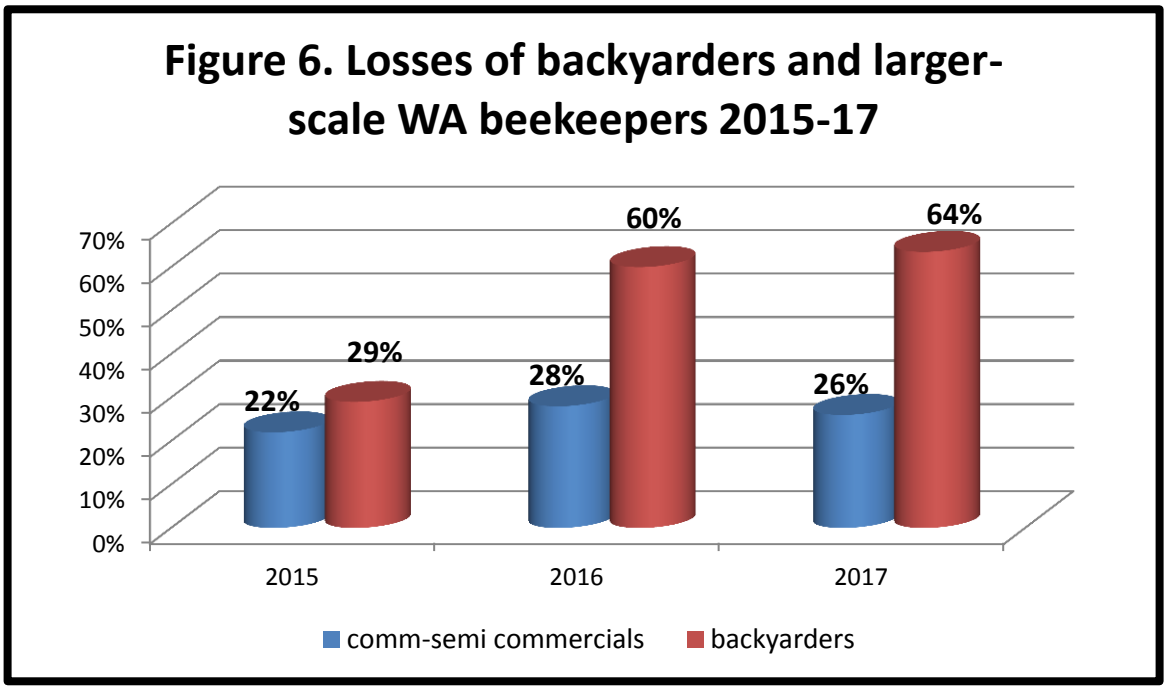
Loss by hive origination: The NW survey also included a question of beekeeper loss by hive origination. The Olympia survey did not include this question. The result is graphically presented below for both WA and Lewis Co beekeepers. Overwintered colonies, as expected, had the best survival. Swarm loses were comparable. Package losses were higher than nucs. Relative rates of loss by origination were the same for both survey years.





Comparison of backyarders and commercial/semi-commercial beekeepers

A different (paper) survey instrument was mailed to Pacific Northwest (PNW) semi-commercial (50-500 colonies) and commercial beekeepers (500+) asking about their overwintering

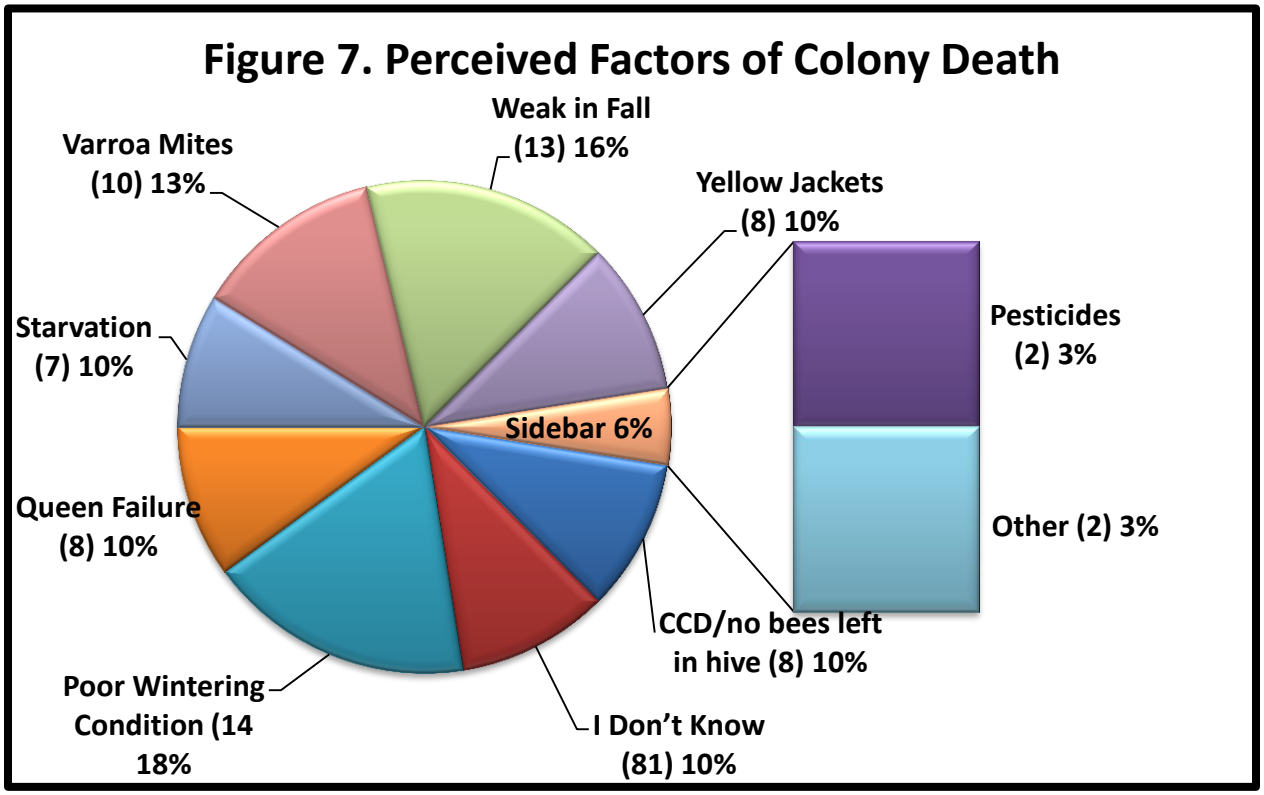


# Comm hives	~40,000	33,200	~16,600
# backyarders	31	52	101

losses. One Olympia sideliner sent in a loss report. Comparison is shown in Figure 6 for a 3-year period with approximate number of hives represented by the commercial/semi-commercial beekeepers and number of backyarders.

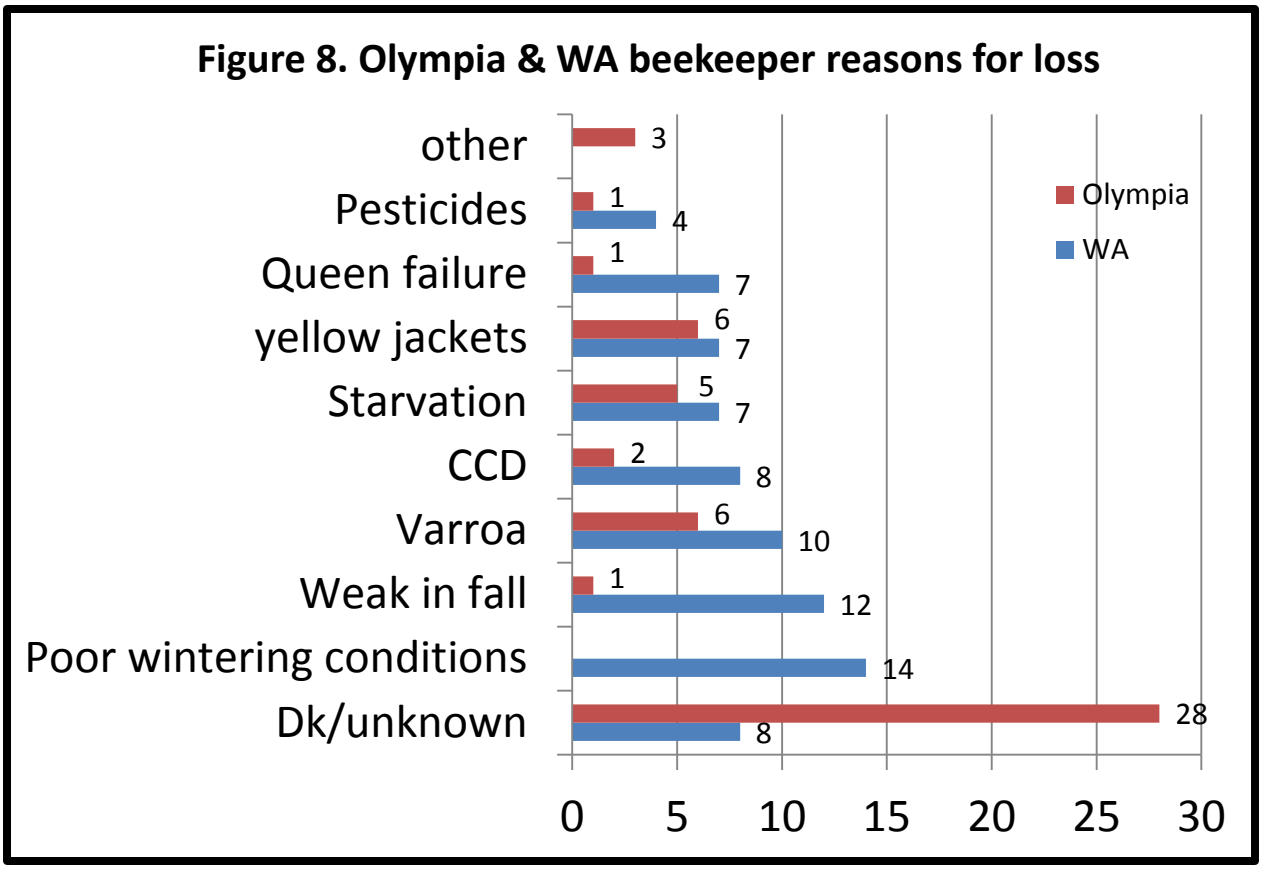
Backyard losses have consistently been higher, most years at least double the losses of larger-scale beekeepers, over 7 years of survey responses. The reasons why are complex but commercial and semi-commercial beekeepers examine colonies more frequently and they examine them first thing in the spring as they take virtually all of their colonies to Almonds in February. They also are more likely to manage to "take" losses in the fall and are more pro-active in varroa mite control management.

Self-reported "reasons" for colony losses: See the Figure 7 for the "reasons" WA respondents provided as the reasons for their overwintering losses. Weak in the fall and Poor wintering conditions were the major factors listed, closely followed by varroa mites. Other responses (number of individuals) and percent (more than one response was permitted) shown in Figure 7.

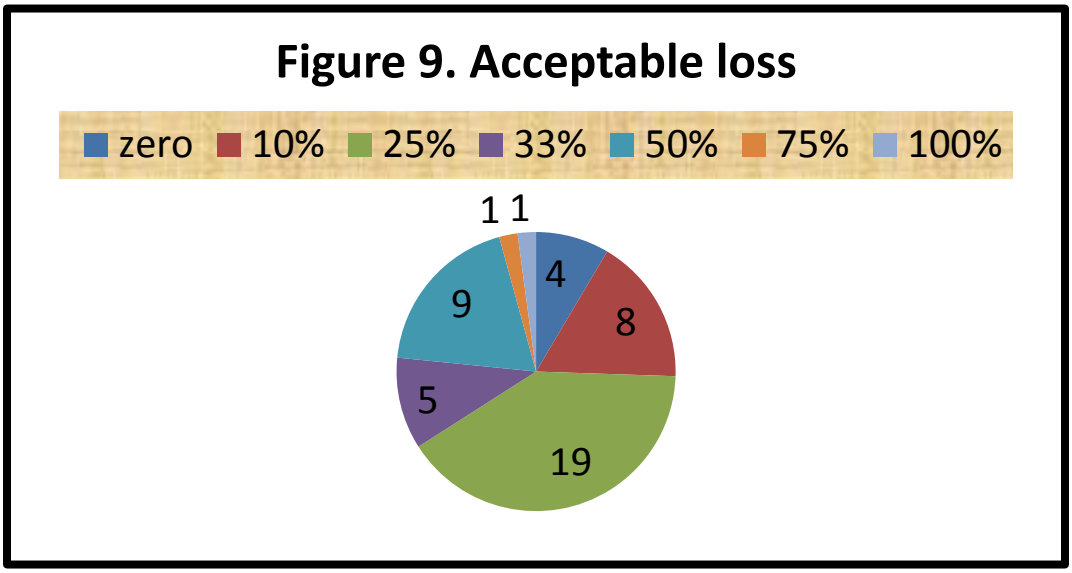


There is no easy way to verify reason(s) for colony loss. Colonies in the same apiary may die for different reasons. **Doing dead colony forensics is the first step in seeking to solve the heavy loss problem. More attention to colony strength and checking stores to help avoid winter starvation will help reduce some of the losses. Control of varroa mites will also help reduce losses**.

The reasons supplied by Olympia beekeepers for their over-wintering losses are shown in Figure 8. Greatest differences were only a single queen failure listing and weak in fall and no poor wintering conditions. Under other, excess cold/moisture, opening too much and various were indicated.



Respondents in the Statewide survey were asked to select an acceptable loss level, with categories to check (this question not included in Olympia beekeeper survey). Four individuals said zero, while 8 said 10% ((25% for both responses) 19 said 25% (40%), 5 said 33% and 9 said 50% loss (19%) was acceptable. One individual each said 75% and 100% (=4%). See figure 9.



Why do colonies die? There appears to be no single reason for loss and 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 are thought to be mites, pesticides, declining nutrition adequacy of the environment and diseases, especially viruses and Nosema. Management, failure to do something or doing things incorrectly, remains a factor in our losses.

What effects our alteration to the bee's natural environment and other external factors such as climate change or seasonal weather variations play in colony losses are not at all clear.

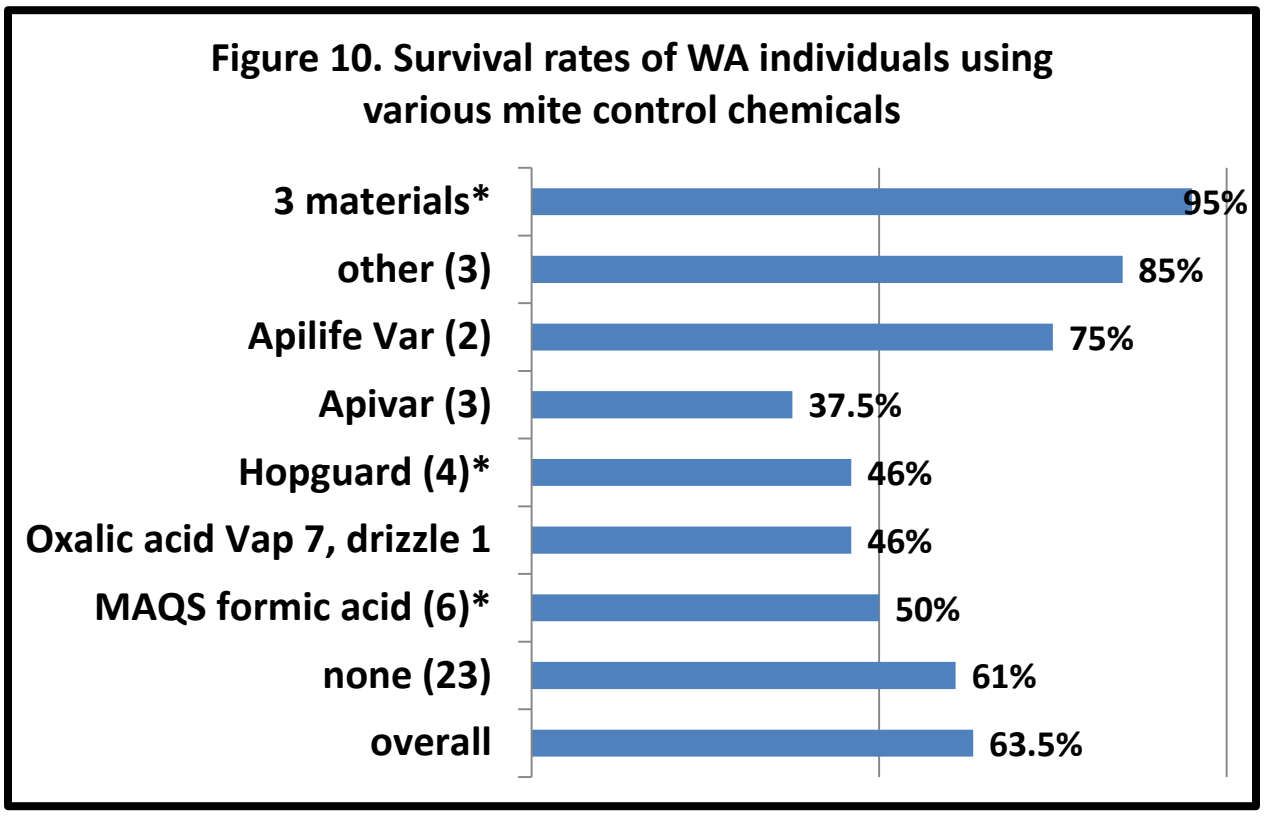
Langstroth wrote about the importance of taking losses in fall management saying if the beekeeper neglects such attention to his/her colonies 45% loss levels may occur, depending upon variable environmental conditions. It can be argued that losses of 30, 40, 50% or more might be "normal." Older, more experienced beekeepers recall when loss levels were 15% or less. Honey production fluctuates each year but, once again, seem to be declining on average. Numbers of U.S. bee colonies have declined since the 1940s, returning to numbers for 100 years ago but worldwide numbers of bee colonies are steadily increasing.

So there is no simple answer to explain the levels of current losses nor is it possible to demonstrate that they are excessive for all the issues facing honey bees in the current environment.

The WA report when posted to the website www.pnwhoneybeesurvey.com will include responses to management such as feeding, wintering colonies, sanitation, mite monitoring, non-chemical mite controls, including use of screen bottom boards and the effects of the chemical controls legally available for beekeeper use. That data is now posted on the website for 282 OR beekeeper respondents.

I presented at the June 12th Olympia meeting the loss rates of those 52 WA respondents (29 individuals = 56%) who indicated they used a chemical mite control (23 (44%) said they used no chemical control). Those 23 individuals lost 51% of their colonies, statistically the same as the 63% Olympia loss rate. One respondent used three chemicals and lost virtually all their colonies (95% loss). See Figure 10

Looking at use of other chemicals, 2 respondents who used ApilifeVar and the 3 who used something other (mineral oil & powdered sugar) also had heavy losses. The 3 individuals who indicated Apivar, the 4 using Hopguard, the 7 who used Oxalic vaporization and 1 individual using the Oxalic dribble method plus the 6 using formic acid (MAQS), had a significantly greater survival. In the case of Hopguard and MAQS one individual lost most of the colonies and if considered an outsider to the data then Hopguard users (3 remaining individuals) would have had a 5% loss and for MAQS, loss would have been 15% for the 5 remaining respondents.



Thanks to all Olympia beekeepers that completed a survey and shared their information.

Dewey Caron with Olympia information collected by Mechele Linehan June 2017

Report posted to www.pnwhoneybeesurvey.com under Individual Club reports