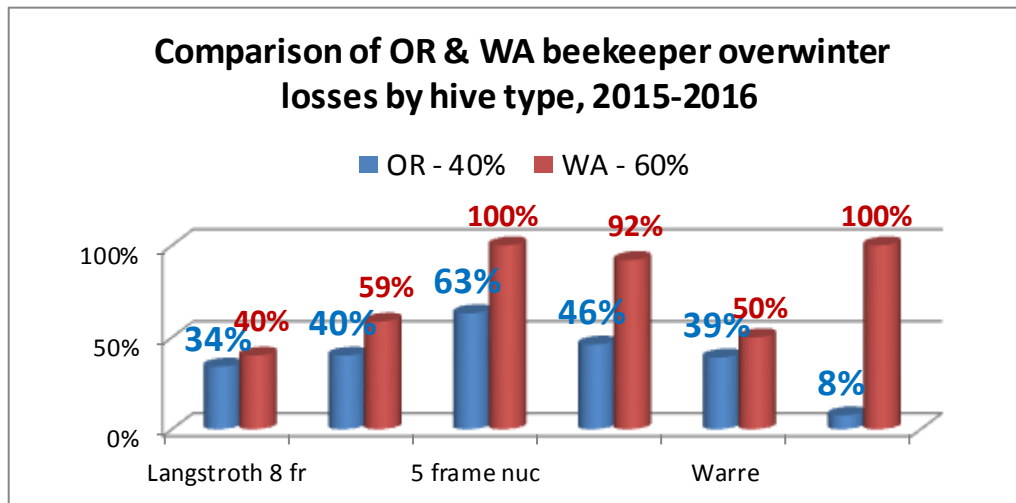


Varroa Mite Control - What worked in 2015-2016 winter by Dewey M. Caron

The pnwhoneybeesurvey received responses from 219 OR small scale backyard beekeepers and 52 Washington backyarders. Overwinter losses by hive type for the 271 individuals is shown in Figure below. Langstroth 10 frame hive losses were 19 percentage points higher than the loss level for 8 frame Langstroth boxes (in 2015 they were equal). Nuc and top bar losses were higher, while Warre hive losses were comparable to Langstroth 10 frame hives.

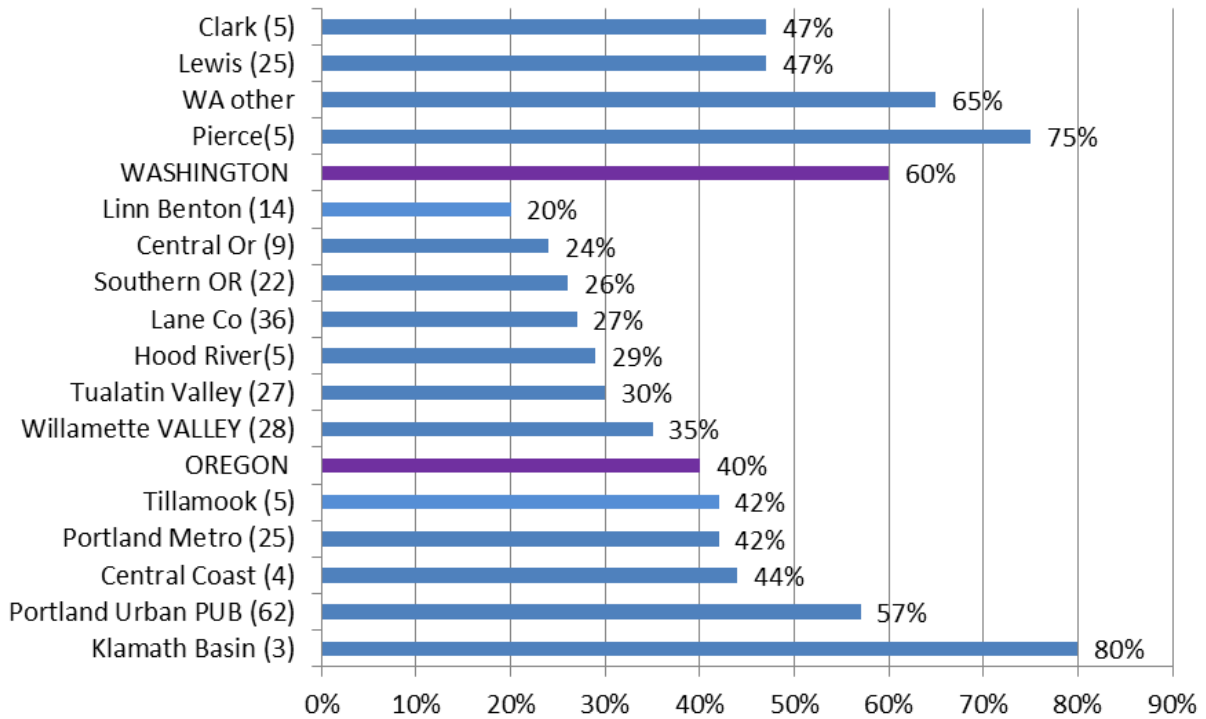
Overall loss were 43.7%.



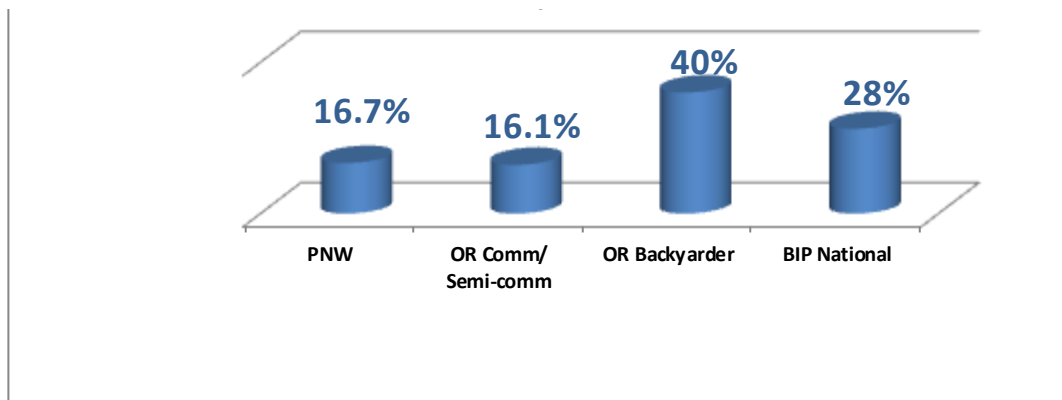
In addition to hive type differences, losses vary by size of colony holdings, and location as illustrated in graph below. Washington backyard beekeepers had higher losses (60%) than did Oregon backyard beekeepers. Loss by local association Oregon beekeepers varied from a low of 20% to a high of 80% (which included only 3 respondents). Losses of associations with 20 or more survey respondents varied from 26% (Southern Oregon) to 57% PUB of Portland.

See next graph (Figure 7) for loss by location.

Figure 7. % Overwinter loss by Association, 2016

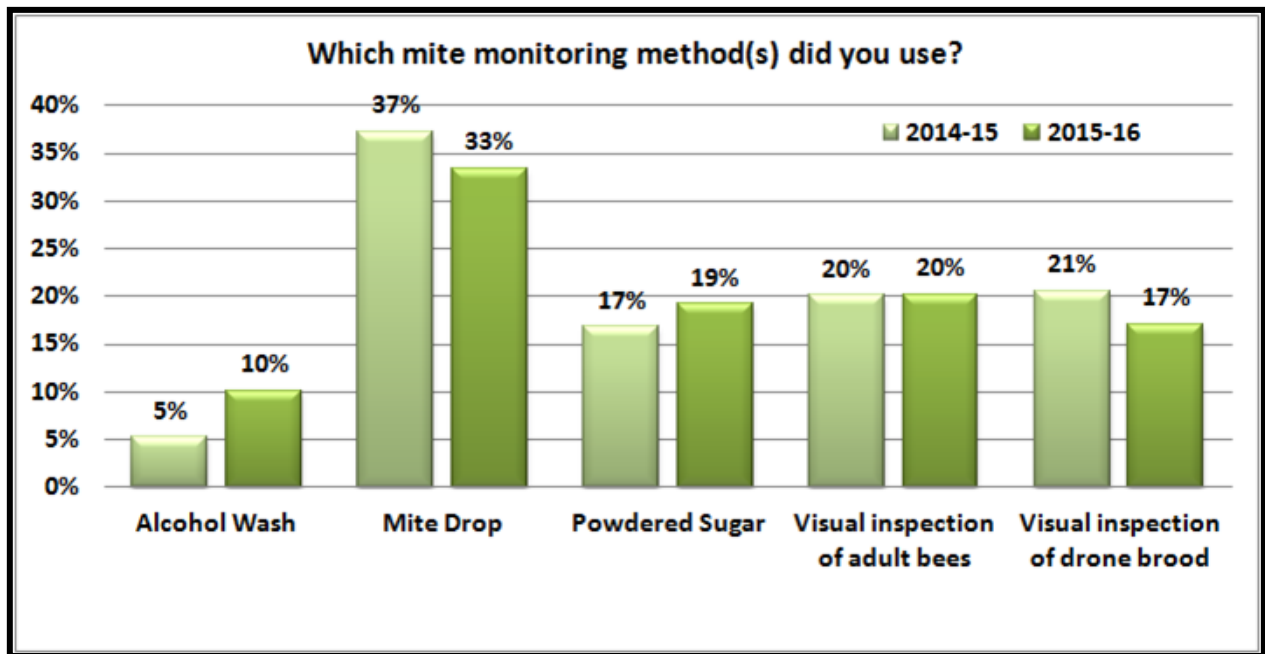


As has been the case in each of the 8 years of survey of PNW/OR beekeepers, the beekeepers with the fewest numbers, the backyarders have the heaviest loss compared to commercial (500+ colonies) or sideline beekeepers (50-500 colonies). Graph below illustrates the loss rates relative to hive holdings of this past overwinter.



Mite monitoring

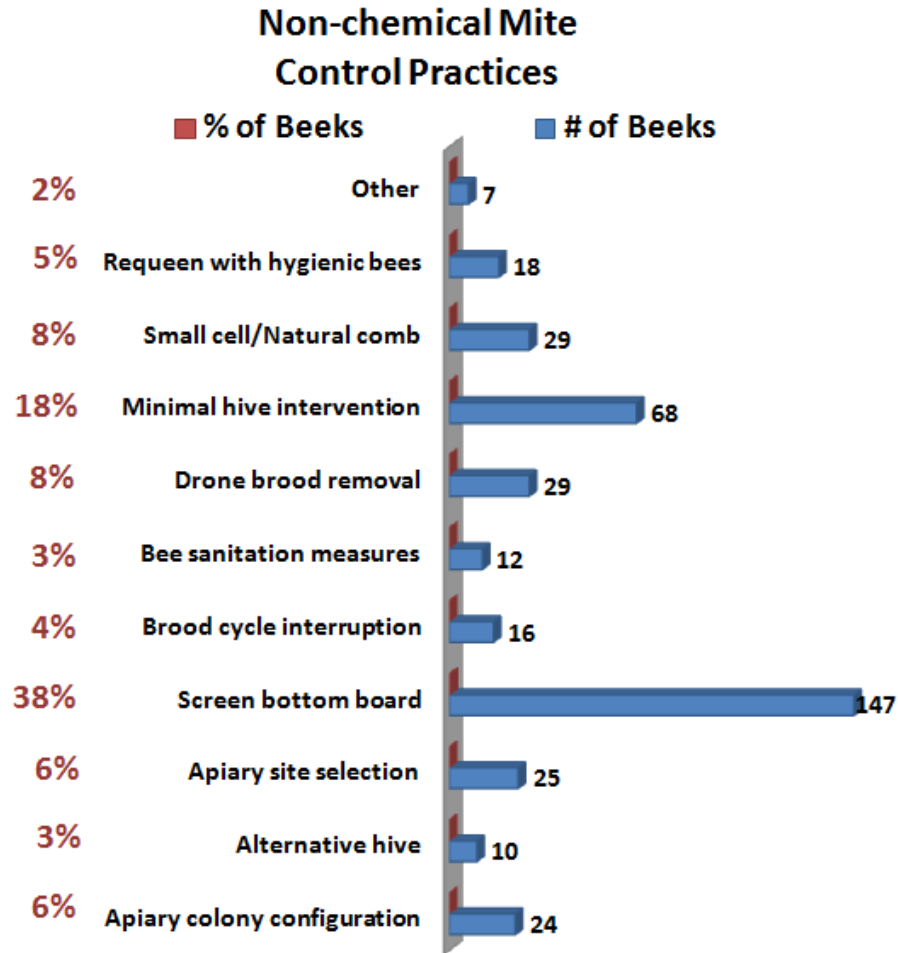
There was little difference in how individuals monitored for mites the past two survey seasons as shown in next graphic. Not included is the 39% of individuals who did not monitor; these 107 individuals lost 50% of their colonies overwinter, compared to 50% loss of individuals who did monitor.



Use of alternative control

In the survey we asked about use of non-chemical alternatives. Individuals could choose from 12 choices including none; 62 Oregon individuals (28%) did not check any of the choices and they lost 62% of their colonies. For Oregon beekeepers choosing one of the other 11 alternatives (see listing of next graphic) overwinter losses were 150 colonies from a total of 266 fall colonies for a 56% loss level, a 6 percentage point improvement in survival.. For Washington individual respondents, 19 (37%) did not employ any of the choices and reported a loss of 62% overwinter. Those 33 individuals who did use one or more alternative had a lower winter loss of 50%. Taken together the larger data base of beekeepers in both states did not improve overwintering, relative to losses, by use of alternatives.

The selections of alternatives utilized is shown in the following graph. Eighty individuals (42%) checked a single selection, while 61 individuals indicated 2 and 22 individuals checked 3 alternatives; 12% chose 4 or more of which 2 indicated 8 alternatives.



Among the alternative selections, Screen bottom board (15% of respondents) had a loss rate of 41%. The highly interventive managements of requeen with hygienic bees, drone brood removal and brood cycle interruption (collectively 19% of respondents) had a loss rate of 34%. These managements and to a lesser degree use of screen bottom boards were the alternatives that provided the better survival rates.

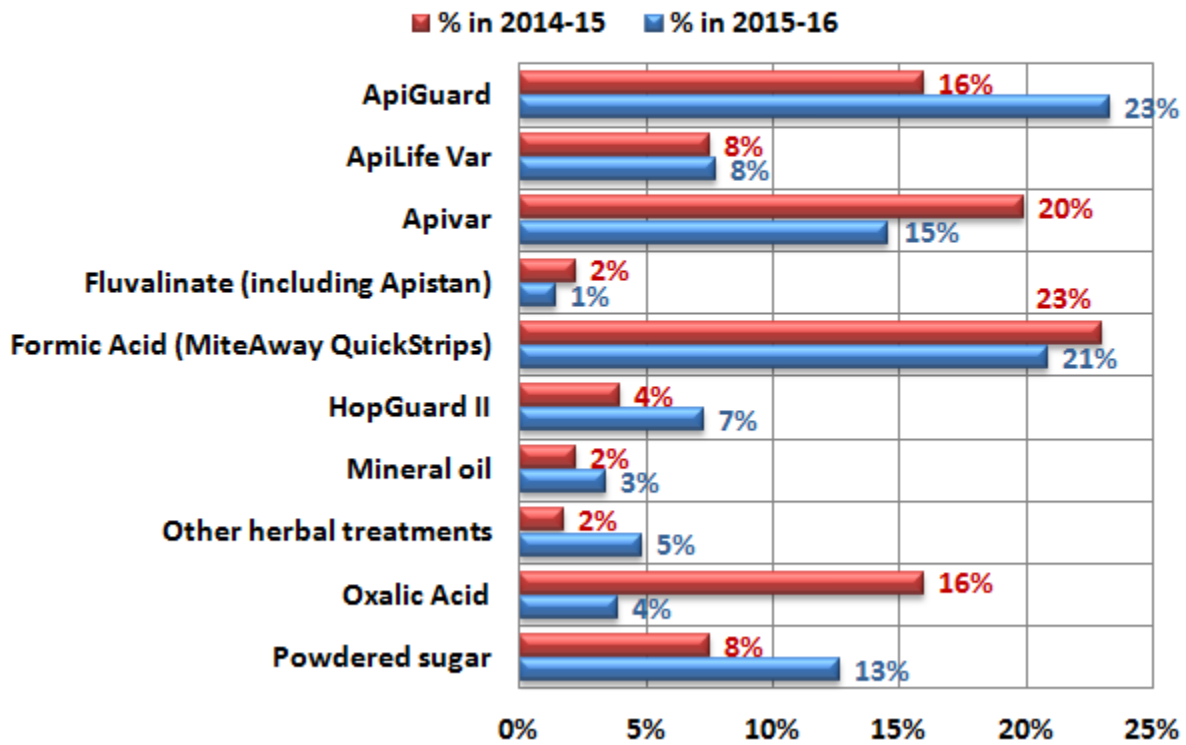
Mite Chemical Controls

Among survey respondents, 89 individuals indicated they did not use any chemical controls; they had a loss rate of 59%. Apivar, the synthetic amitraz chemical, was used by 43 individuals and they had a much better survival rate with only a 23% loss rate. Twenty one individuals used ONLY Apivar, 15 used 2 chemical materials, 5 used 3 chemicals and 1 each used 4 & 5 chemicals. MAQS (Formic acid) was used by 42 individuals who also had significantly better survival rate with a loss rate of 23%; among the 42 individuals, 17 used ONLY MAQS, 16 used 2 chemicals, 9 individuals used 3 and 1 each used 4 & 5 chemicals.

The essential oil Apiguard was used by 32 individuals and they had a 26% loss; 14 individuals used ONLY Apiguard, 10 used 2 chemicals, 7 used 3 and 1 used 5 chemicals. Oxalic acid was used by 30 individuals; they had a loss rate of 35%; 7 of these individuals used ONLY Oxalic acid, 15 used 2 chemicals, 7 used 3 and 1 used 4. Powdered sugar was the chemical choice of 16 individuals; their loss rate was 29% of the 16 individuals, 7 used ONLY PS, 2 chemicals were used by 3 individuals and 4 used 5 chemicals.

Thus chemical use rather clearly improved overwintering of Oregon beekeepers. Significant numbers of individuals used more than one chemical. How such integration of chemicals with non-chemical alternative or different chemicals needs to be more clearly determined.

Mite Control Products Used



Beekeepers have various options for Varroa control. The key to better overwintering is to monitor using sugar shake or alcohol wash to determine infestation level of a colony and then, depending upon the season, deciding on what might be an appropriate chemical or non-chemical technique to use to reduce mite populations. In this survey response we were unable to demonstrate the usefulness of chemicals and some non-chemical alternatives to reduce overwintering losses. The BeeInformed Survey [2014-2015 preliminary results](#) does support our belief that non-chemical approaches can be useful and the Honey Bee Health Coalition website Tolls for Varroa Management guide [Varroa management guide](#) provides information on usefulness of an integrated non-chemical and chemical control approach to varroa mite population management.

Dewey M. Caron Aug 2016