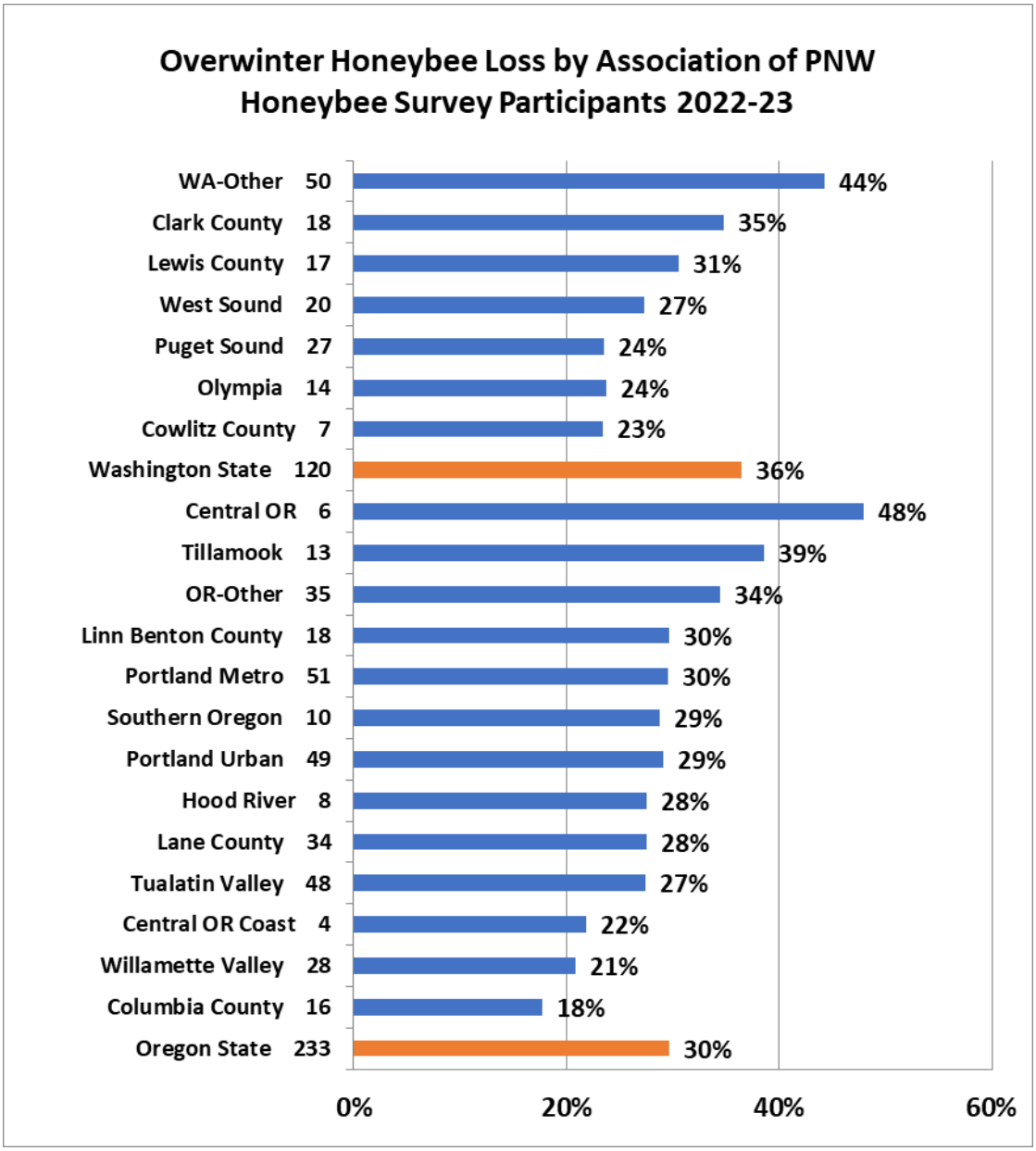
Winter Bee Losses of Olympia Washington Backyard Beekeepers for 2022-2023

by Dewey M. Caron

Overwintering losses of small-scale Washington backyard beekeepers=36%, an increase of a single percentage point from last year, 11.2 percentage points below the 8-year loss average. One hundred twenty Washington respondents completed a survey, 40 greater than last year. There were 12 Olympia beekeepers submitting a survey (2 were not usable) which is an increase of 3 from last year. Olympia beekeeper losses were 24%. www.pnwhoneybeesurvey.com.

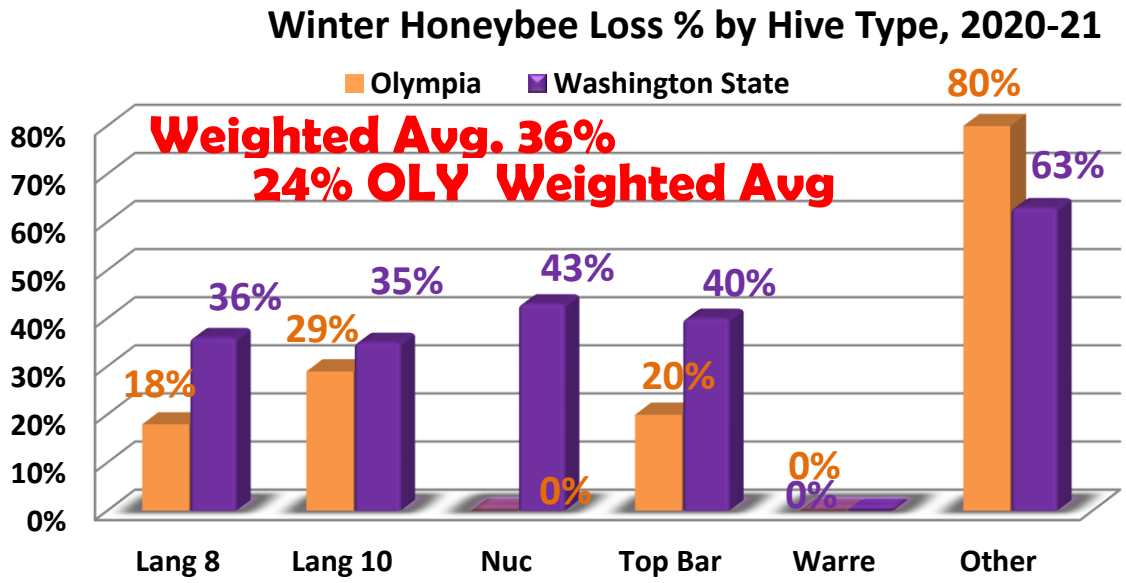


Response by local Oregon (OR) & Washington (WA) association varied as indicated by blue bars in Figure 1. Statewide loss level is highlighted with orange bar. The number of respondent

individuals is listed next to the association name. The bar length is the average club loss percentage for the year. Survey included 692 fall Washington beekeeper colonies.

2022-2023 Overwinter Losses by Hive Type

The PNW survey overwintering loss statistic was developed by subtracting number of spring surviving colonies from fall colony number supplied by respondents by hive type. Results, shown in Figure 2 bar graph, illustrate overwintering losses of 12 Olympia Beekeepers (63 total colonies) alongside 120 total WA beekeeper respondents (677 fall colonies). Langstroth 8 frame beehives (27% of total) had lower average losses compared to the Langstroth 10 frame colonies.



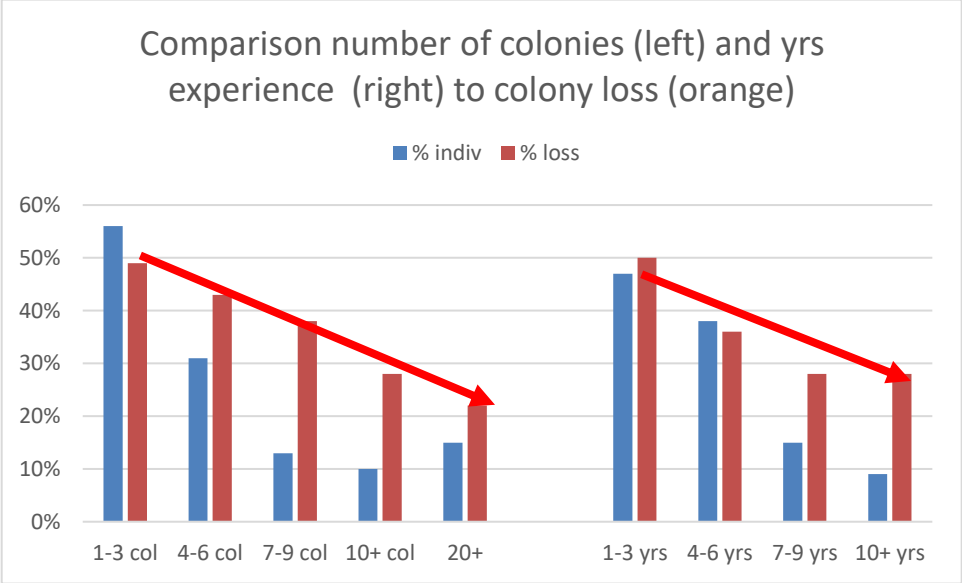
The WA respondents to the electronic survey managed up to 38 fall colonies, largest number for Olympia beekeepers was 11 colonies. Five Olympia individuals had a single colony (and had colony loss of 89%), 2 respondents had 2 colonies with 100% loss and the 1 individual with 3 colonies had a 67% loss. Statewide, fifty-six individuals (52.5% of respondents) had 1, 2 or 3 fall colonies (loss level of 49%) while the 5 Olympia individuals had only 1 colony of 9 survive (89% loss). Statewide thirty-one individuals had 4 to 6 fall colonies and had loss level of 43%; 3 Olympia beekeepers had 4 or 5 colonies and had a 36% loss. Four was median number statewide, three for Olympia respondents.

Statewide thirteen individuals had 7 to 9 colonies, they had loss level of 37.5%; for Olympia respondents one individual had 9 fall colonies, lost only one for an 11% loss level. For the Olympia beekeepers there were three who had 11 colonies of which 4 were lost – a 12% loss level. Statewide ten individuals had 10-19 colonies with loss level of 28%, 6 individuals with 20-38 colonies had loss level of 28% (but there was an outlier respondent who lost 23 colonies for 96% loss level – this group minus the outlier lost 21%. See Figure 3 (graph to left).

Forty-seven respondents statewide (39% of total) had 1, 2 or 3 years of experience; they had a 50% loss level. Thirty-eight individuals (31.7% of total respondents) had 4 – 6 years' experience

(medium number = 4) with a 35.5% loss, 15 individuals had 7-9 years experience (loss level 28%), 10 had 10-18 years keeping bees and 40% loss level (but minus the outlier, a loss level of 15.5%) and 7 had 20+ years experience (40 was maximum) and they had a 23% loss level. Figure 3 illustrates statewide relationship of colony numbers and years experience related to loss. Examining the relationship of colony numbers and years experience related to loss shows that loss of colonies decreases with the greater the number of colonies and/or years of experience.

Figure 3



# Indiv O	5	4	1	2		3	5	1	3	
# loss	8	5	1	2	11col	4	6	1	3	40 yrs
% loss	89%	36%	11%	12%		100%	15%	100%	24%	

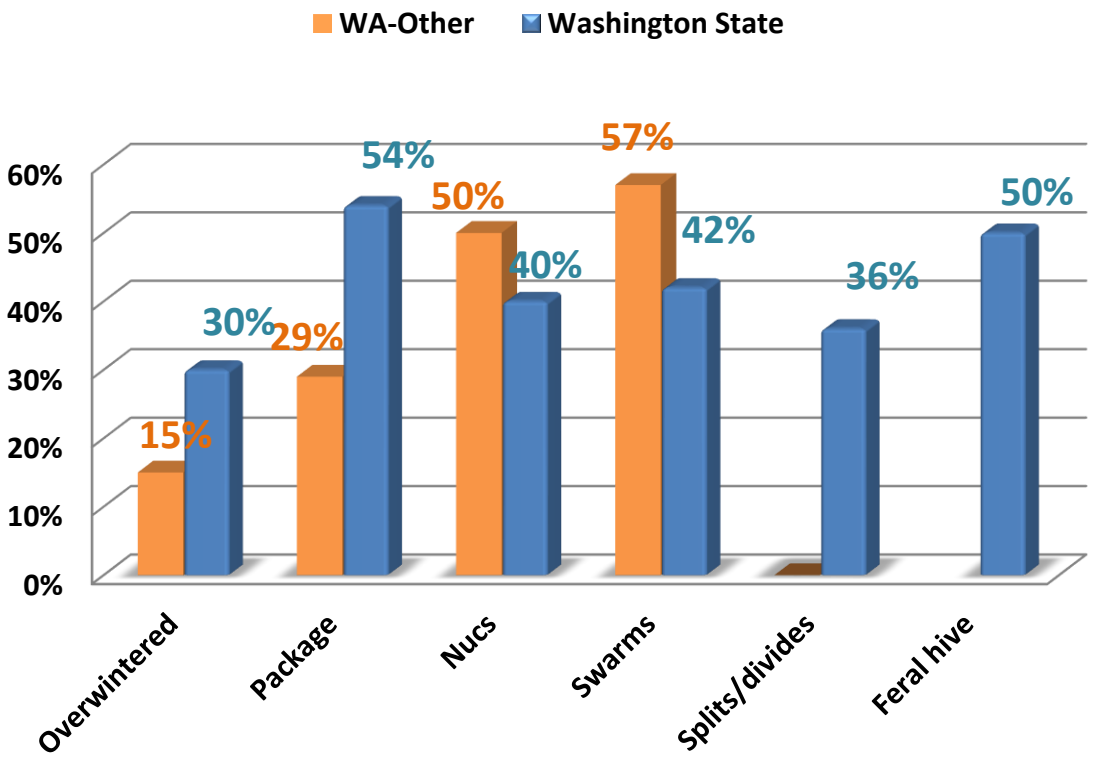
The same relationship holds for Olympia respondents. The top line shows number of individuals and bottom line the loss number. For 5 individuals with 1-3 colonies (8 of 9 colonies were lost =89%). Three Olympia respondents had 1 or 3 years experince, they lost all 4 colonies (100% loss), five individuals had 4 or 5 years experience and had loss of 15%, one individual had 7 years expereince, they lost all 4 colonies for 100% loss and the 3 individualswith 11 colonies lost 4 of 17 colonies for a 23.5% loss level. The greatest number was 40 years experience. Smaller number of Olympia individuals do not illustrate the relationship of lost level percent decrease by years of experience but the relationship for colony number is in agreement.

Eighty-six (72%) WA beekeepers had an experienced beekeeping mentor available as they were learning beekeeping. This percentage was 5 percentage points lower than last year, but similar to 5 year average. For Olympia, only 6 individuals (1/2 of respondents) reported having a mentor available as they were learning. Two Olympia survey respondents had bees at more than a single apiary. Loss levels were the same at both sites for both individuals.

Survival Based on Hive Origination

We also asked about hive loss by origination. Data shown in Figure 4. Best survival was previously overwintered colonies for both statewide and Olympia beekeepers. Splits/divides for both were also successful wintered. (For Olympia 8 of 10 survived – 20% loss – 0% is not correct in Figure 4). Package bee losses were over 50% statewide but half that number for Olympic respondents.

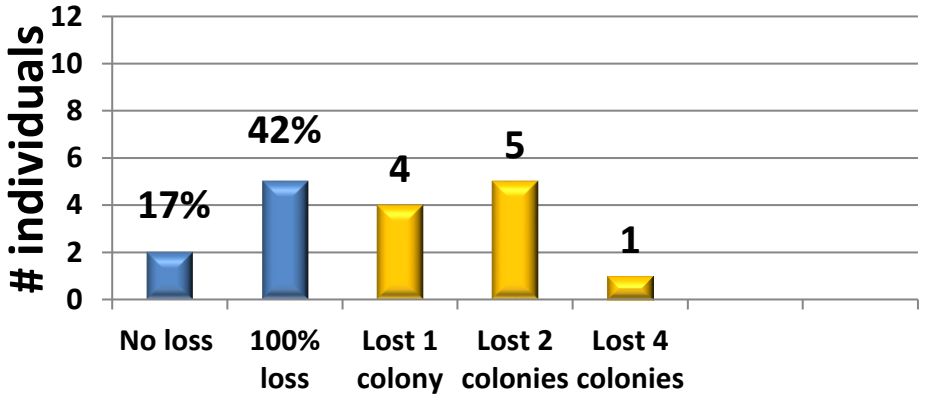
Figure 4



Among 120 WA beekeepers, 37 individuals (31%) had no loss and 30 individuals (25%) had total loss. Twenty-six individuals lost one colony, twenty-nine individuals lost 2 colonies (includes 4 individuals with 10+ colonies) and 10 individuals lost 3 colonies (one with 10+ fall colonies). 69% of beekeepers losing colonies lost one to three colonies.

Numbers for the 12 Olympia beekeepers are shown in Figure 5 below. Two individuals (17%) had no loss and 5 (42%) had total loss. Four individuals lost one colony with 5 losing 2 colonies. Heaviest loss was 4 colonies – a total of 18 colonies were lost by the 10 Olympia individuals having overwinter losses.

Figure 5



Statewide the loss for 109 individuals with 1 to 9 colonies was 43% while for Olympia the loss of the 9 individuals with 1-9 colonies was 57%. Statewide 16 individuals with 10+ colonies had a 23% loss and the 3 individuals of Olympia with 11 colonies had a 12% loss.

Six year loss record for Olympia beekeepers is shown below. The numbers below the graph indicate the number of Olympia respondents. I am unable to find the loss of 2019 year – I believe there were 12 respondents that year. The 2017 numbers include numbers generated by the club, with 10 individuals from the PNW survey added to total. Average Olympia loss for 6 years is 42.1% compared to a 47.5% statewide loss the past 9 years.

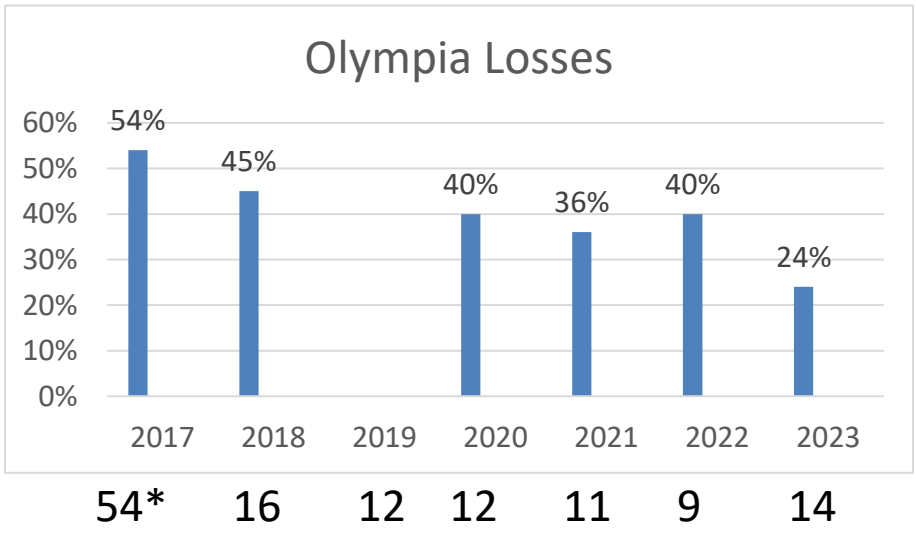


Figure 6

Colony death perceived reason and acceptable loss level

We asked survey takers who had winter losses for the "reason" for their losses. More than one selection could be chosen. In all there were 156 WA selections (1.85/individual) provided. Weak in the fall (26 individual choices) and Varroa mites (44) were the most common choices. Cold and mice (2 selections each), absconding and mite treatment were the other reasons given. Figure 7 shows the number and percent of factor selections statewide. For Olympia 4 said yellow jackets, 2 each weak, poor wintering and varroa, and 1 moisture and another didn't know of 10 with loss.

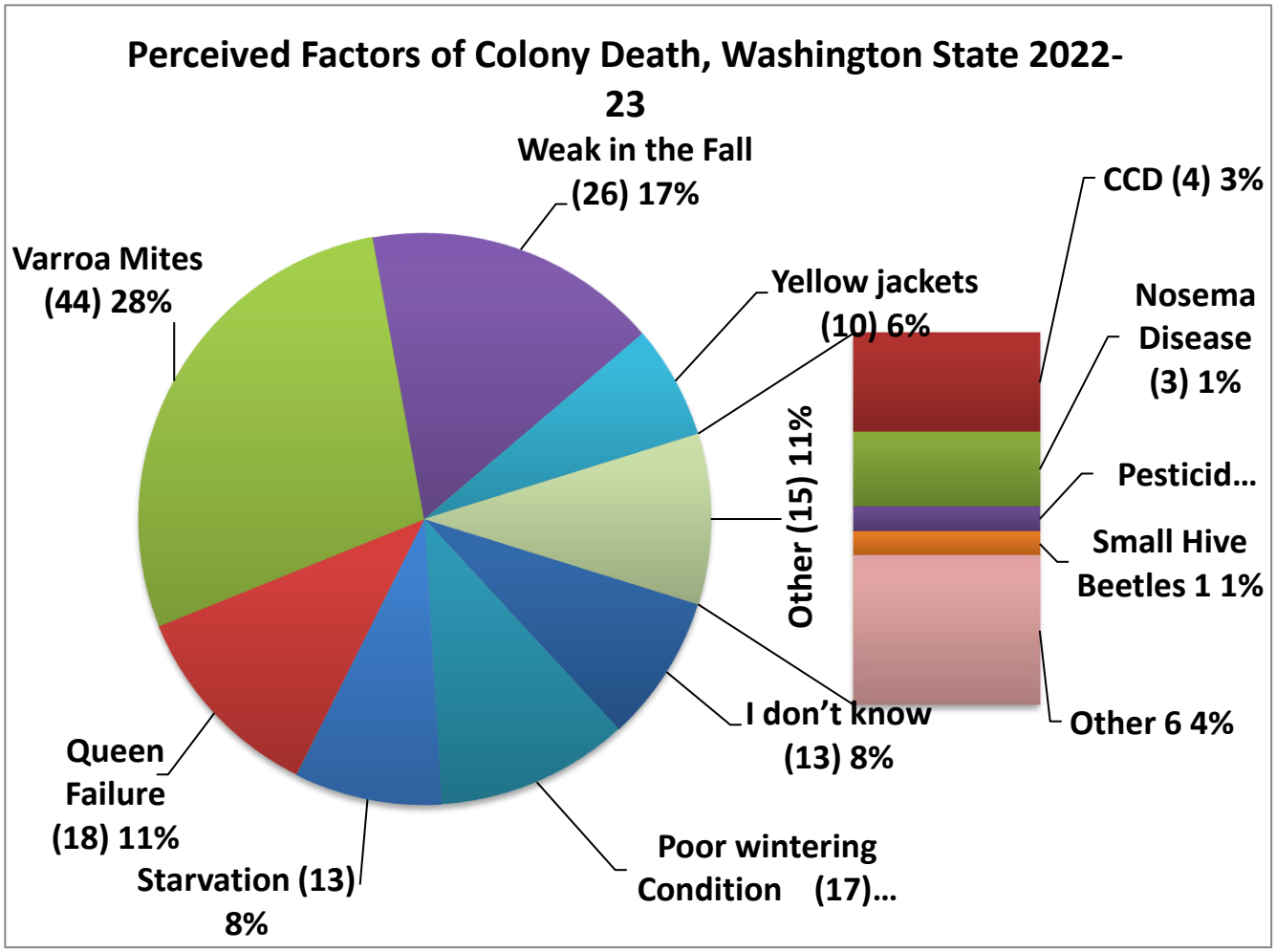


Figure 7

Acceptable loss: Survey respondents were asked reason for loss. Nine (12%) indicated zero (no loss). Fifty-seven percent of individuals indicated 10% or less. 10% was medium choice. Nineteen percent said 50% was an acceptable loss level. See table below for statewide numbers. Among Olympia beekeepers, 5 of 12 individuals said 20% was acceptable (the largest selection and also the medium). Two individuals said 33% or more was acceptable..

Acceptable Overwinter Loss per 77 Beekeepers in Washington State during 2021-22											
Loss level	**5%**	**10%**	**15%**	**20%**	**25%**	**33%**	**50%**	**75%**	**100%**	**None**	**IDK**
#	5	12	10	3	15	8	15	0	0	9	0
%	6%	16%	13%	4%	19%	10%	19%	0%	0%	12%	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. 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. More attention to colony strength and checking stores to help avoid winter starvation will help reduce some of the losses. **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.**

Managements

We asked in the survey for information about some managements practiced by respondents. The survey inquired about feeding practices, wintering preparations, sanitation measures utilized, screen bottom board usage, mite monitoring, both non-chemical and chemical mite control techniques and queens. Respondents could select multiple options and there was always a none and other selection possible. This analysis seeks to compare responses of this past season to previous survey years.

Most Washington beekeepers do not perform just one management to their colony (ies) toward improving colony health and overwintering success. This analysis however compares a single factor equated with loss level. Such analysis is correlative and doing a similar management as fellow beekeepers does not necessarily mean you too will improve success. Since there were only 12 Olympia beekeepers responding the managements are presented for the 120 State respondents with comment on selections only for Olympic individuals.

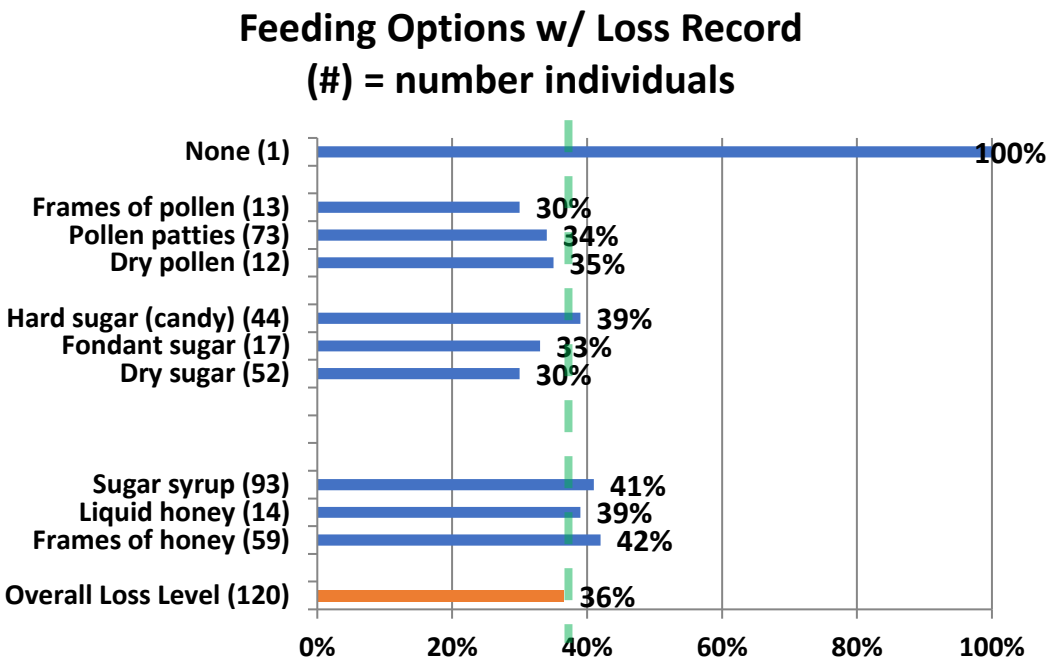
FEEDING: Washington survey respondents checked 381 feeding options = 3.2/individual. One individual made no selections – they had one colony and lost it (100% loss). Thirteen selected a single choice and had 45% loss level. The best survival results were 3 or 4 selections. Table illustrates the relationship of number of selections to percent making selection (median was 3) and percent loss of those individuals.

The choices, with number of individuals making that selection, is in ( ), bar length indicates loss level of individuals doing this management. Results shown in Figure 9. Those bar lengths to left of 37% (**green dashed line**) had better survival while those to right had greater loss level.

# selections	# indiv (%)	% loss
1	13 (11%)	45%
2	18 (15%)	26%
3	49 (41%)	45%
4	21 (18%)	24%
5	14 (11%)	42%
6-8	5 (4%)	42%

The choices, with number of individuals making that selection is in ( ), bar length indicates loss level of individuals doing this management is shown in Figure 9. Those bar lengths to left of 36% (**green dashed line**) had better survival while those to right had greater loss level.

Figure 9



Olympic beekeepers did the following: 5 fed frames of honey, 2 liquid honey and 6 fed sugar syrup. Greatest management selection was 8 (of 12 total) that fed a pollen patty. Four fed frames of pollen. Two individuals fed dry sugar, 1 fondant sugar and 7 provided sugar candy.

Feeding sugar syrup and pollen patties were the most common feeding option of respondents statewide (93 and 73 individuals respectively) and for Olympic beekeepers. The loss rate of pollen patty feeders was 2 percentage points below state average. Best survival was feeding dry sugar (30%) and frames of pollen (also 30%).

For the last 6 years of statewide survey losses individuals doing no feeding had poorer survival in 5 of the 6 years, this year one individual lost their lone colony. Individuals that fed sugar syrup had marginal lower loss level in 4 of six years (but not this year) as did those using frames of honey to

feed bees. Individuals feeding non–liquid sugar in the form of hard candy likewise had lower losses in 4 of 6 years; this year 3 percentage point poorer survival. For individuals feeding protein, protein patty users showed slightly better survival in 4 of 6 years (including this year); dry pollen feeders had significantly better survival in four of the five years; this year only slightly better (a single percentage point difference but number of individual respondents doing this management is not very large, this year 12 individual, 10%.

WINTERING PRACTICES: We received 330 responses (2.7/individual, compared to 2.9/individual last year) reporting WA beekeeper wintering management practices (more than one option could be chosen). Six individuals (5%, same as last year) indicated none of the several listed wintering practices was done; these individuals had a single colony (of 14 total) survive winter, a 94% loss level. Last winter those doing no winter practices had an exceptionally favorable s level 17% loss while the year before it was a 74% winter loss.

For those indicating some managements, 9 did one single thing and had 37% loss level. The best survival was those with 2 and 5 selections. Information presented in table to right.

# selections	# indiv (%)	% loss
1	9 (7%)	37%
2	42 (34%)	24%
3	30 (24%)	46%
4	7 (6%)	21%
5	4 (3%)	57%

The managements selected that improved survival were wrapping/using colony insulation (30 individuals – 30% loss level), use of Vivaldi/moisture trap (87 individuals, 32% loss level) and equalizing hive strength (25 individuals, 32% loss level). Figure 10 shows the number of individual choices and percent of each selection. Bar length below 36% (**blue dashed line**) had better than average winter survival.

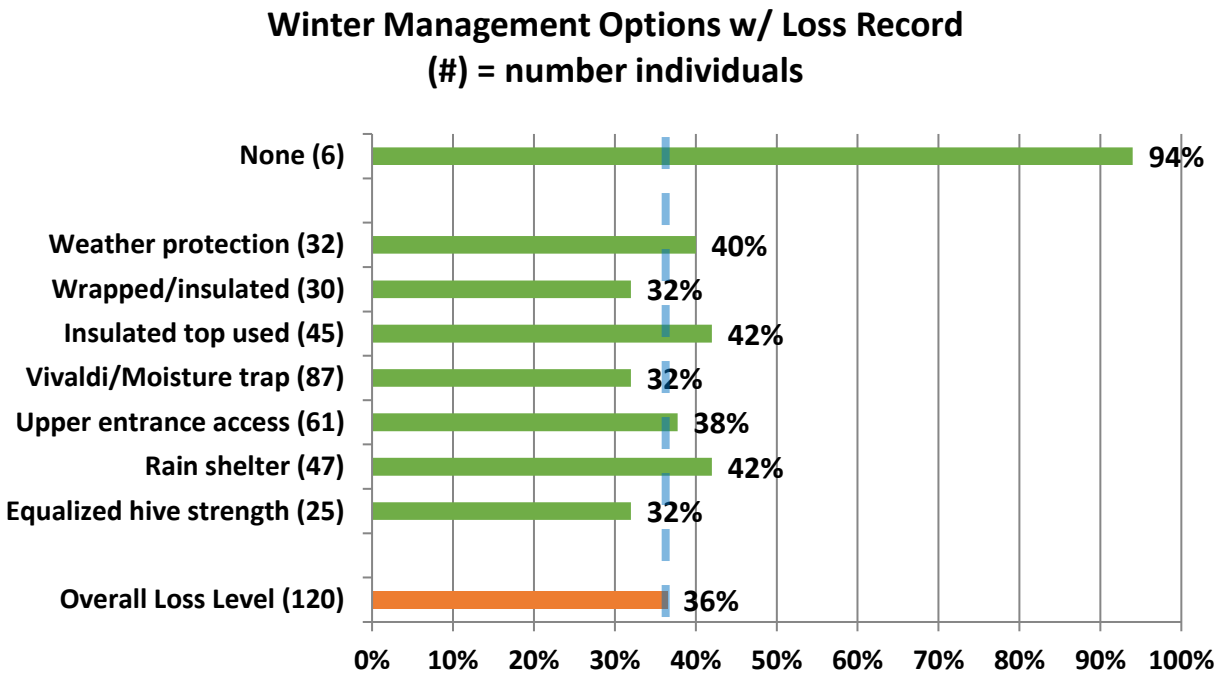


Figure 10

The following Olympic selections were noted: One individual equalized, three used rain shelters and 3 each wrapped and provided wind sheltering. The largest selection was 6 (one-half of respondents) used a ventilated Vivaldi/quilt box and 5 top employed insulation. Three used upper ventilation. The one individual who did nothing lost both of their colonies, 100% loss.

Over the past 6 years a couple of winterizing managements have shown improved survival. Those doing no winterizing had higher losses all 5 of 6 years (last winter was the exception). Equalizing hive strength in the fall demonstrated lower loss levels in all six recent winter periods (this year less than previous years) and top insulation has demonstrated lower loss in four of six winters but not this past winter; in the most recent winter 45 individuals had a 6 percentage point lower survival. Ventilation above the colony (Vivaldi Board/quilt box) demonstrated improved survival four of the six winters, this year a 2 percentage point better survival. The 3 individuals listing an other choice (closed upper entrance, added insulation or insulation tape at sides) lost only a single colony of six total.

SANITATION PRACTICES: It is critical that we practice some basic bee sanitation (some prefer use of term bee biosecurity) in our bee care to help insure healthy bees. We received 244 responses for this survey question 2.7/individual (last year it was 2.3/individual). Twenty-eight individuals (23%) said they did not practice any of the 6 offered alternatives; they had a loss rate of 35%, 1 percentage point lower than the statewide average.

Twenty-two individuals had 1 selection and had 26% loss average, the best of the total. 34 made 2 choices with 35% loss, while the rest had considerably higher loss levels. It is clear than none of the measures is robust enough to make a difference by itself in reducing winter loss. Figure 11 shows the number of individual choices and percent of each selection. Bar length below 36% (**green dashed line**) had better than average winter survival.

# selections	# indiv (%)	% loss
1	22 (24%)	26%
2	34 (3%7)	35%
3	14 (15%)	47%
4	18 (20%)	48%
5	2 (2%)	50%

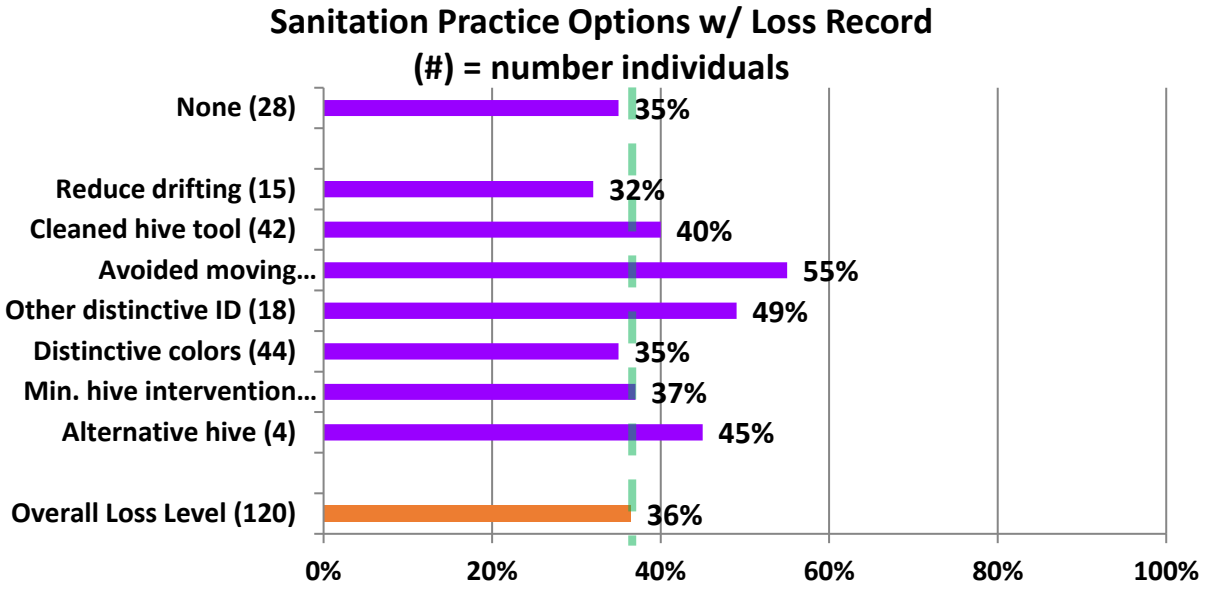


Figure 11

For Olympic beekeepers the two individuals doing nothing lost colonies (50% loss). Statewide in past 6 years doing none of these managements resulted in better than average survival; this was the case this past winter when the 28 individuals doing nothing had average statewide losses. The 15 individuals reducing colony drift had a 32% loss level, 4 percentage points better than statewide. Other Olympic beekeeper selections were: Alternative hive 1,requeening with hygienic queen, also 1, minimal hive manipulations 4 and providing distinctive colors also 4. The greatest selection, by ½ of Olympic beekeepers, was generally avoiding moving frames and cleaning hive tools. Statewide providing hives with distinctive color/distinctive hive ID measures were the most helpful managements with losses just under 5 percentage points either side of average in all six years; this year a single percentage point lower loss.

SCREEN BOTTOM BOARDS (SBB)

Although many beekeepers use SBB to control varroa mites, BIP and PNW surveys clearly point out they are not or at best not a very effective varroa mite control tool. In this recent survey 16 Washington individuals (20%) said they did not use screen bottom boards; they lost 43% of their colonies. Those 13 beekeepers using SBB on some of their colonies lost 36% and the 51 individuals (64%) using SBB on all of their colonies had 33% loss.

In 6 survey years 21% of Washington beekeepers said they did not use SBB and 79% did use SBB on some or all of their colonies, see Figure 13.

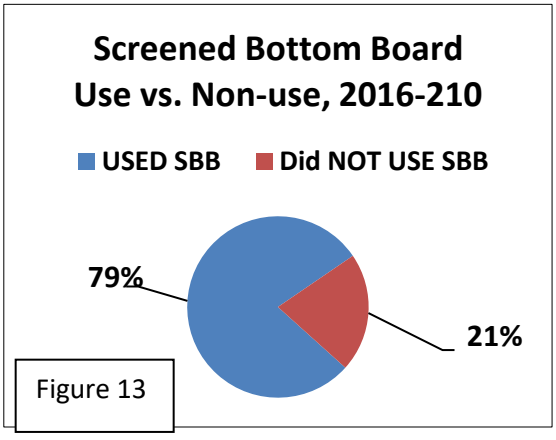


Figure 13

Examining the six year average of SBB use, those using SBB on all or some of their colonies had a 41.7% loss level whereas for those not using SBB the loss rate was 43.3% (a 2.5% positive survival gain for those using SBB versus those not using them). SBB are a very minor aid in improving overwinter survival for Washington Beekeepers.

We asked if the SBB was left open (always response) or blocked during winter season. Forty individuals (50%) said they always blocked SBB during winter. They had a 30% loss rate. Nineteen individuals (24%) said they never blocked SBB and had loss rate of 53%. Nine individuals (18%) blocked them on some of their colonies. Their loss rate was 18%.

There is no good science on whether open or closed bottoms make a difference overwinter, but some beekeepers "feel" bees do better with it closed overwinter. Comparing the always and sometimes left open with the closed in winter response reveals a 25 percentage point difference in favor of closing the SBB over the winter period. This relationship has been consistent over the past five years averaging nearly a 10 percentage point advantage when the SBB is closed during the winter (although it was only a larger percentage point difference this last season. An open bottom, at least during the active brood rearing season, can assist the bees in keeping their hive cleaner and promote good hive ventilation.

Things that seem to improve winter success: It should be emphasized that these comparisons are correlations not causation. They are single comparisons of one item with loss numbers. Individual beekeepers do not do only one management option, nor do they necessarily do the same thing to all the colonies in their care. We do know moisture kills bees so we recommend hives be located in the sun out of the wind. If exposed, providing some extra wind/weather protection might improve survival. Early spring pollen is important so locations where bees have access to anything that may be flowering on sunny winter days is also good management.

Feeding, a common management, appears to be of some help in reducing losses. Feeding dry sugar or a hard sugar candy during the winter meant lower loss levels. Providing frames of honey or sugar syrup, the most common selection, also meant slightly lower loses for some individuals but these basic managements are useful in other ways such as for spring development and/or development of new/weaker colonies besides insuring better winter survival.

Feeding protein in form of pollen patties did slightly improve survival. The supplemental feeding of protein (pollen patties) might be of assistance earlier in the spring season has been demonstrated to help bees build strong colonies, but this may lead to greater swarming.

Winterizing measures that apparently helped lower losses for some beekeepers was equalizing strength, providing an upper entrance and top insulation or a moisture trap (Vivaldi board or quilt box) and some attention to adding protection against the elements. Spreading colonies out in the apiary and painting distinctive colors or doing other measures to reduce drifting also appeared to be of some value in reducing winter losses. Avoiding movement of frames from one colony to another might also improve survival but the gain over what this interchange might accomplish might be greater than a minor advantage in survival.

It is clear that doing nothing for feeding or winterizing resulted in the heaviest overwinter losses.

Replacing standard bottom boards for screened bottoms only marginally improved winter survival. It is apparently advantageous to close the bottom screens during winter.

Mite monitoring/sampling and control management

We asked percentage of Washington hives monitored for mites during the 2021 year and/or overwinter 2021-22, whether sampling was pre- or post-treatment or both and, of the 5 possible mite sampling methods, what method was used and when it was employed. Fifty-five individual respondents (69% - a decrease of 4 percentage points from last year) said they monitored all their hives. Losses of those individuals monitoring was 27%. Fourteen (18%), reported no monitoring; they had a higher loss rate of 48%. Eleven individuals monitored some with loss rate of 48%.

In order of popularity of use, looking on adults was indicated by 35 individuals (46%) who did some or all colony monitoring. Thirty individuals used sticky boards, 45% total of 66 individuals who did some or all monitoring of colonies, followed by 28 individuals (42% of individuals doing monitoring) that used alcohol wash. Twenty-one individuals used drone brood monitoring and 13 used powder sugar to monitor In terms of losses, the alcohol washers had the lowest loss level of 35% loss. Loss for the rest was over 40% - Drone brood 45%, adults 46%, sticky boards 48% and powdered sugar 49%.

Most sampling to monitor mites was done in July – September, as might be expected since mite numbers change most quickly during these months and results of sampling can most readily be used for control decisions. See Figure 14 below for number of months each of the 5 sampling methods were used.

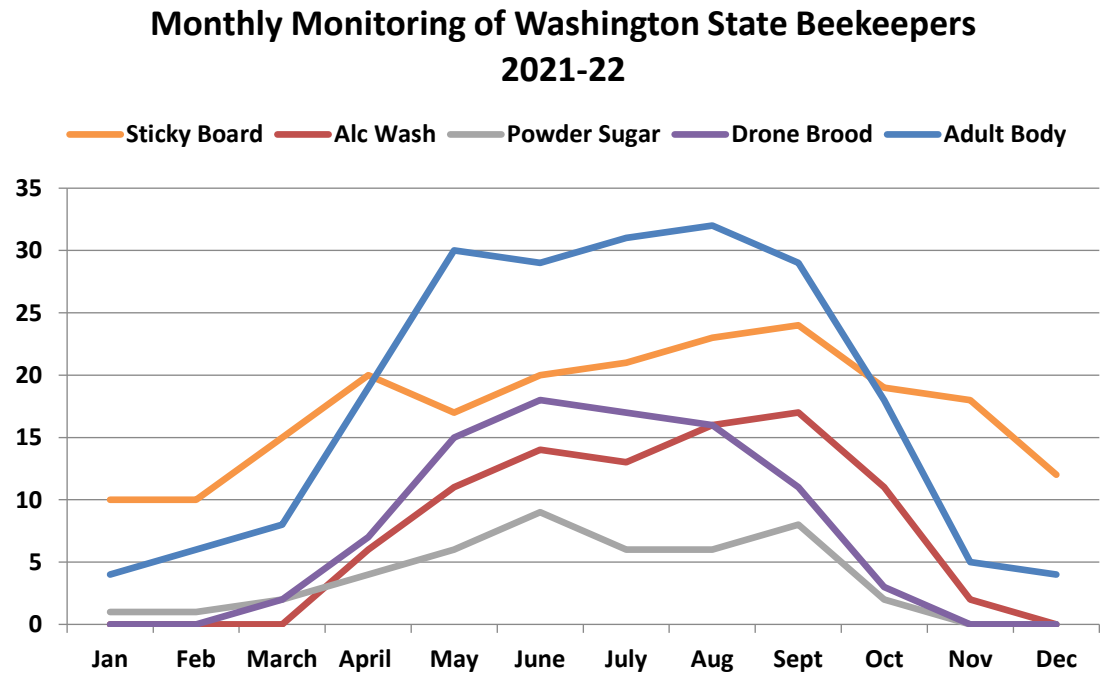


Figure 14

For Olympia beekeepers 9 monitored all colonies, two monitored some and 1 said they didn't monitor; this individual lost both colonies – 100% loss. Eight individuals covered the screen during winter while 4 indicated they did not – those not covering lost 7 or 18 colonies overwinter – 39% loss. For monitoring, 7 individuals used sticky board, 4 used alcohol wash, 2 powdered sugar, 5 loosed at drone brood and 4 looked for mites on adults (from the 11 respondents).

It is important to KNOW mite numbers. Less effective mite monitoring methods include sticky (detritus) boards below the colony (often so much detritus drops onto a sticky board that picking out the mites can be hard, especially for new beekeepers) but sticky boards used for a day can help confirm the useful of a treatment when inserted post treatment. Visual sampling is not accurate: most mites are not on the adult bees, but in the brood. Unfortunately looking for mites on drone brood is also not effective as a predictive number but can be used as an early warning that mites are present; if done, look at what percentage of drone cells had mites.

See ***Tools for Varroa Monitoring Guide*** www.honeybeehealthcoalition.org/varroa on the Honey Bee Health Coalition website for a description of and to view videos demonstrating how best to do sugar shake or alcohol wash sampling. The Tools guide also includes suggested mite level to use to base control decisions based on the adult bee sampling. A colony is holding its own against mites if the mite sample is below 2%. It is critical to not allow mite levels to exceed 2% during the fall months when bees are rearing the fat fall bees that will overwinter. It is also the most difficult time to select a control method (if one is deemed needed) as potential treatment harm may negatively impact the colony. We are seeing more colonies suddenly disappear (abscond?) during the fall, which may be related to the treatment itself.

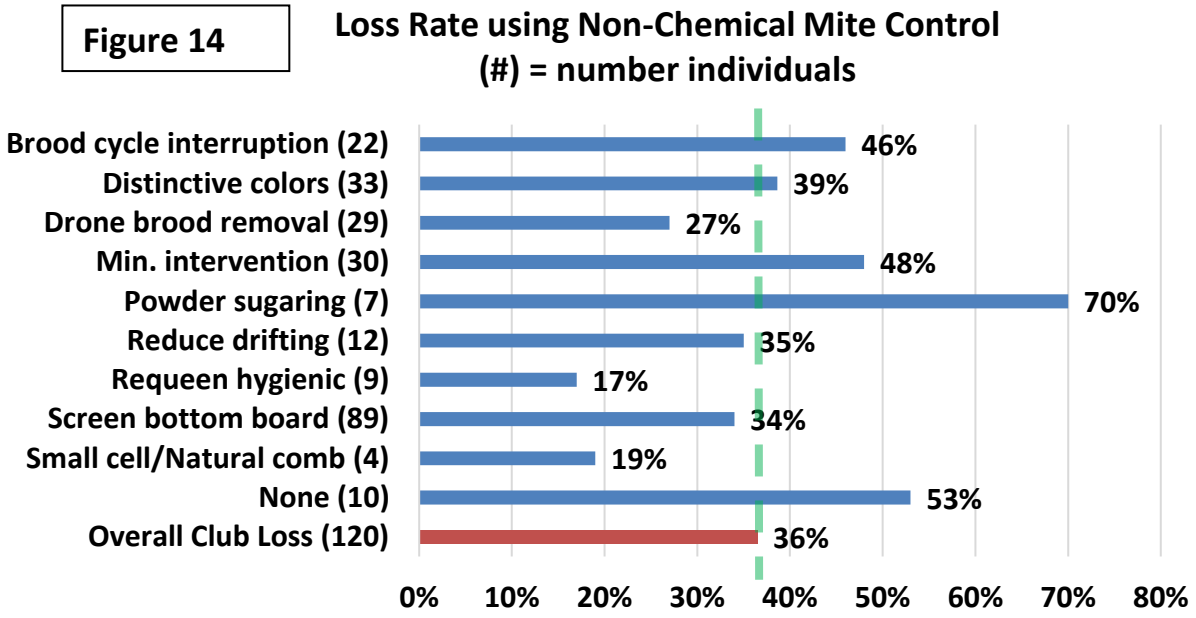
Mite Control Treatments

The survey asked about non-chemical mite treatments and also about use of chemicals for mite control. Statewide thirteen individuals (16%) said they did not employ a non-chemical mite control and 6 individuals (7.5%) did not use a chemical control. See Figure 14. Those 13 individuals who did not use a non-chemical treatment reported a 31% winter loss, while those who did not use a chemical control lost 67% of their colonies. The individual options chosen for non-chemical and chemical control are discussed below.

Of nine non-chemical alternatives offered on the survey (+ other category,) 235 selections were indicated 2.1/person (last year 2.2/individual). Thirty-eight individuals used one method and had a 47% loss, thirty-eight used two (36.5% loss level), twenty used three (26% loss), ten used four (33% loss) and three used 5 and 1 indicated 6 choices, they had 14% loss.

Use of screened bottom board was listed by 89 individuals (81% of individuals selecting other than none). They had a 33.1% loss level. The best survival choices were requeening with hygienic stock (17%), small cell/natural comb (18.5% loss level and Drone brood removal (27% loss. The use of

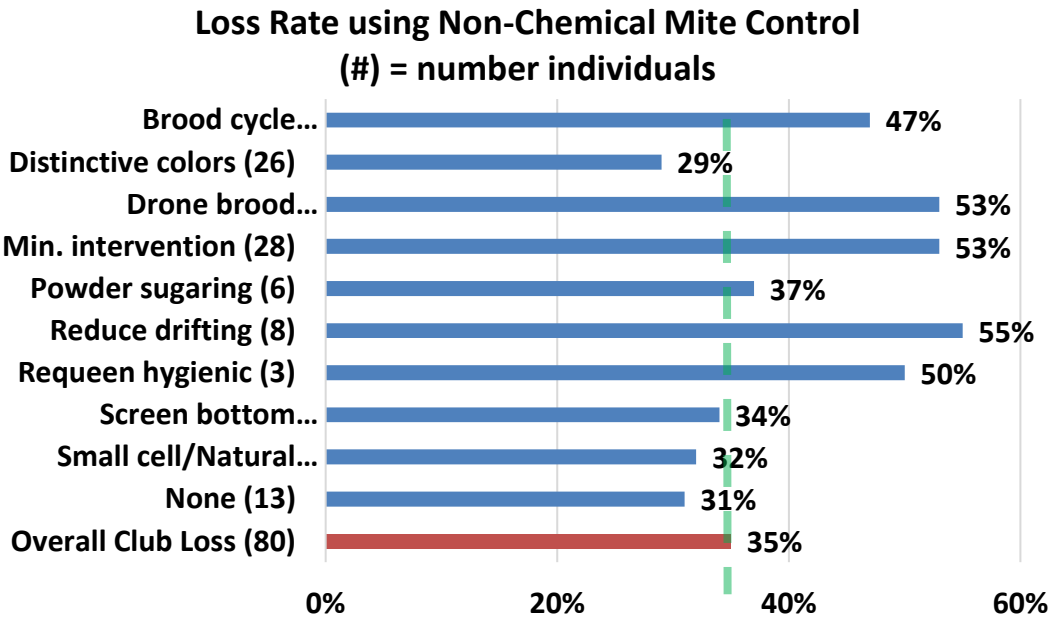
Figure 14



remaining 7 selections are shown in Figure 14; number of individuals in ( ), bar length represents average loss level of those individuals using each method. Those to left of **the green dashed line** had better than average survival.

For Olympia beekeepers, Screen bottom board was listed by 10 of the 11 respondents, 4 listed minimal hive inspection, 3 drone brood removal, + 4 listed reduced drifting and 4 requeened with hygienic queen. One said brood break + another said powdered sugar.

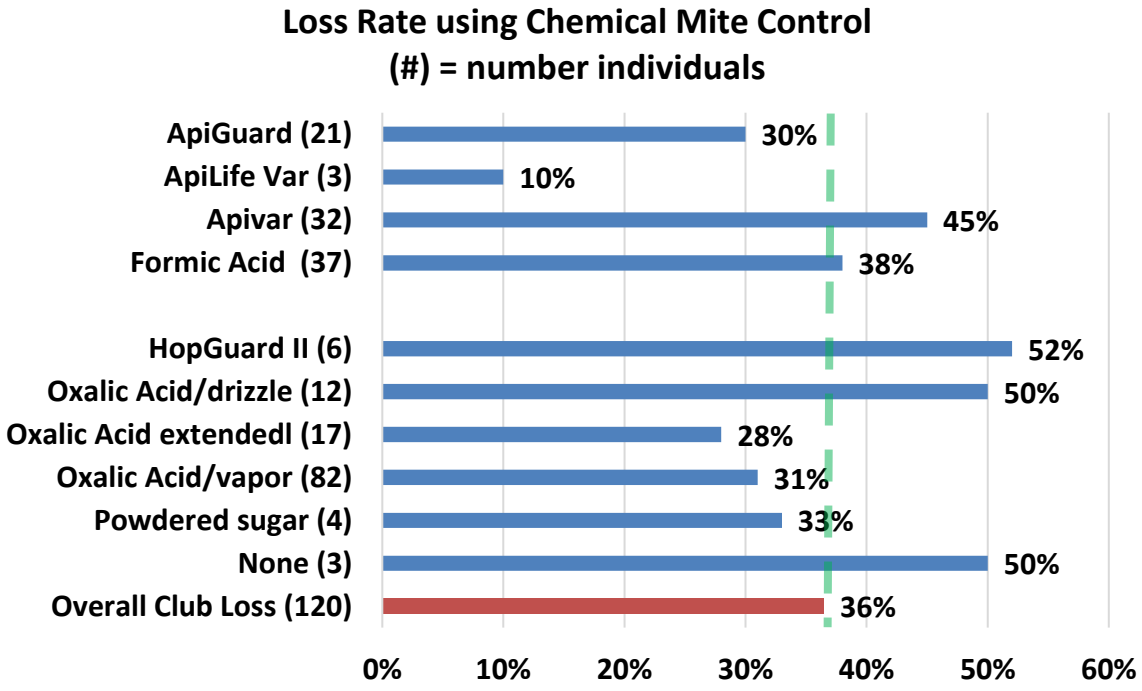
Figure 15



Statewide, two of the non-chemical alternatives – drone brood removal (29 individuals) and brood cycle interruptions (22 individuals)- have also been useful in previous year surveys in reducing winter losses (in some of past 6 years but not all) but brood removal this year did not improve survival. Painting hives with distinctive colors has resulted in better survival in each of the past four survey years but not this year. Small cell/natural comb has not been demonstrating better survival but did last year (but only by 3 percentage points) and this year for the 4 individuals (19% loss level).

Chemical Control: For mite chemical control, statewide 6 individuals (2.5% of total respondents) used NO chemical treatment; these individuals had a 50% loss level (those doing no treatments lost 67% last year). Those using chemicals used at rate of 1.9/individual. Forty-nine individuals (45%) used one chemical and had 35% loss, 39 used two and had 37% loss, 18 used 3 (38% loss), 6 used two and had 20% loss while the 2 using 5 had a 13% loss level. The one individual in Olympia doing no chemical intervention lost both their colonies – 100% loss.

Figure 16



Within useage numbers there are some other patterns. For those using one chemical the use of oxalic by 26 individuals had a 26% loss, the 4 using formic had a 19% loss while 5 using Apivar had a 70.5% loss. Within the group using 2 choices (the medium) 10 used both Apivar and Oxalic vaporization and had a 42% loss, the 9 using Formic and OAV had a 26% loss and the 5 who used both ApiLifeVar and OAV had a 36% loss, the statewide average. For the 8 using 4 or 5 choices, all but one included oxalic acid – one who didn't use oxalic had a 67% loss, those who did include it a 14% loss. It appears OAV or OAE (30 individuals, 25% of total chemical intervention users) used by itself or as a combination with formic gave the best overall results.

Consistently, statewide the last 6 years five different chemicals have helped beekeepers realize better survival. The essential oils Apiguard and ApiLifeVar have consistently demonstrated the lowest loss level; this year 30% and 10% loss levels (last year no responding Washington beekeeper reported use of ApiLifeVar). Over the last six years Apiguard users had a 33.5% better survival rate. Apivar, the synthetic (amitraz), has demonstrated a 36% better survival over past 6 years (2017-22) but this year was 9 percentage points less survival compared to statewide.

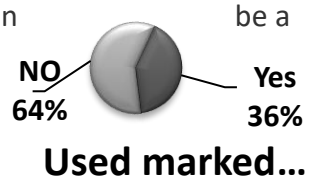
Oxalic acid vaporization over past 5 years has a 17.5% better survival (the survey did not differentiate Oxalic vaporization from drizzle prior before 2018); this year just a 5 percentage point difference. Formic acid also normally provides better survival but this year did not, a 2 percentage point poorer survival.

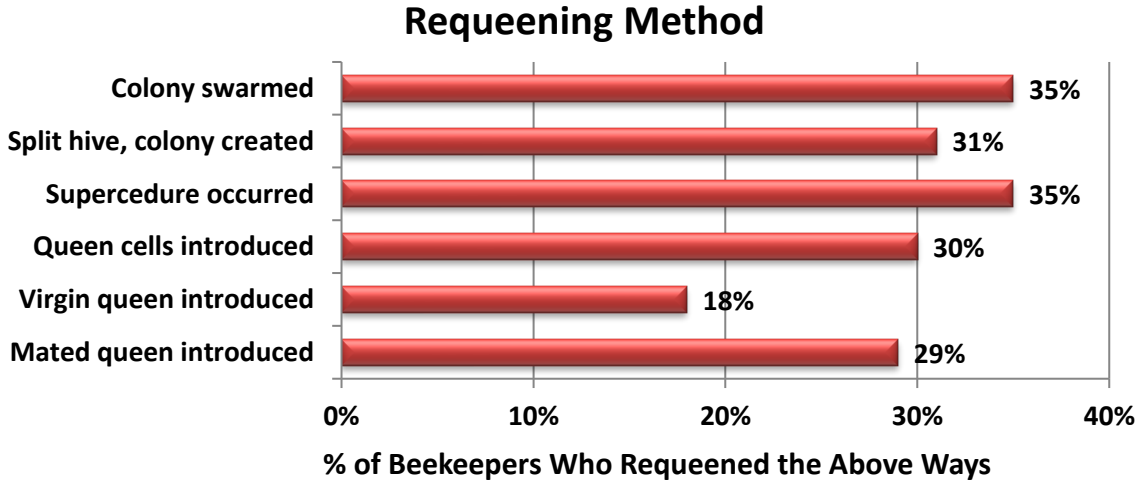
Antibiotic use

Four individuals satewide (none in Olympia) used Terramycin and had a 23.5% loss level. One person indicated the use of both terramycin and tylosin and their 2 colonies both survived. Eight individuals indicated the use of Fumagillin (Fumidil-B) for Nosema control; their loss rate was 25.5%. No Olympia beekeepers reported use of Fumidil-B.

Queens

We hear lots of issues related to queen "problems." Queen events can be a significant factor contributing to a colony not performing as expected. We asked if you had marked queens in your hives. Forty-three individuals (36%) statewide said yes; 3 in Olympia. The related question then was 'were your hives requeened in any form?' to which 69% (83 individuals) said yes, 16 said no (12.5%) and the remainder 'not that that I am aware of.' Loss level of yes was 33% of the nos 29% and not aware of was 43.5%. For Olympia 11 of 12 (92%) said yes their colonies requeened.





One technique to reduce mite buildup in a colony is to requeen/break the brood cycle. The question "How did bees/you requeen" received 161 responses statewide (more than one option could be checked). Thirty-nine individuals indicated they requeened with a mated queen and they had a 29% loss level, two used a virgin queen (18% loss) and 17 used a queen cell (29.5% loss). Twenty-eight said they split their hive(s) 31% loss, 43 indicated their colonies swarmed (35% loss) and 32 said supersedure occurred – they had a 35% loss. Loss levels of colonies that did it themselves were not as favorable as those whose queen replacement was managed by the beekeeper. For Olympia beekeepers, four individuals introduced a mated queen and one a queen cell. Three had colonies rear their own queen, 2 said their colonies superseded and 7 (58%), a level nearly double statewide, said their colonies swamed.

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 reporting losses of the larger scale WA beekeepers not the backyarders (Figure 5). Reports for individual bee groups with 18 or more respondents 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 June 2023