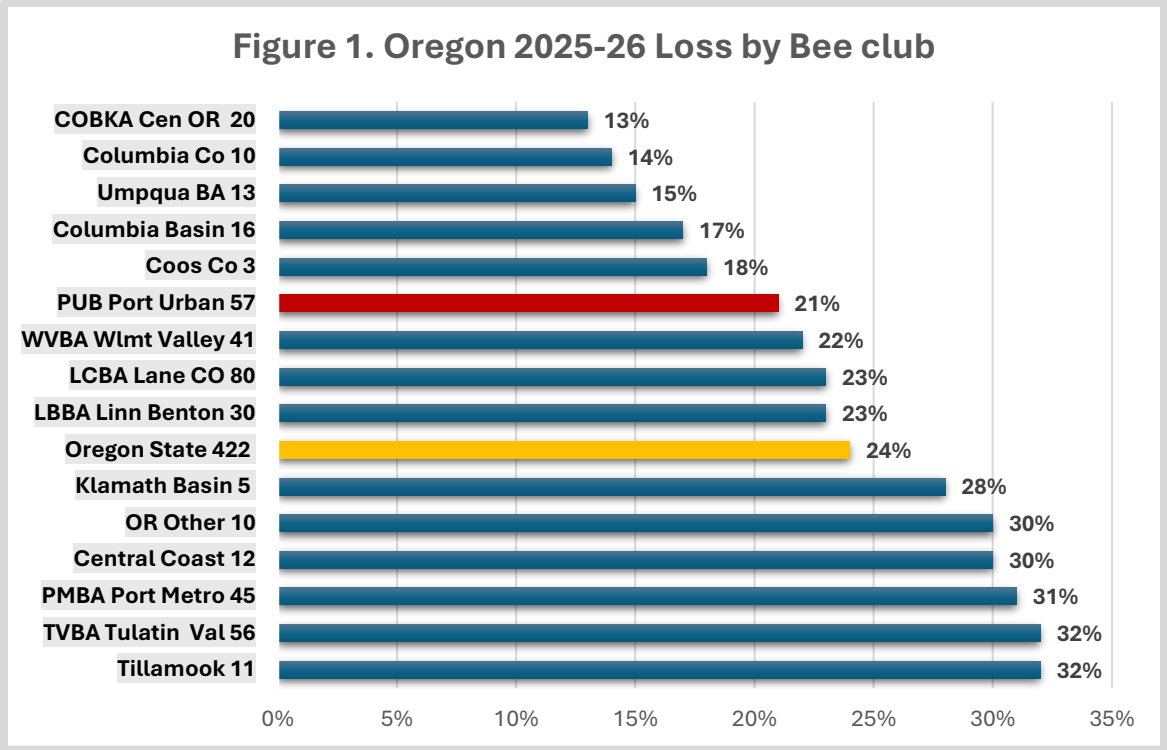
Winter Bee Losses of PUB Backyard Beekeepers for 2025-2026

For the past 17 years, PNW winter colony losses and several managements related to bee health were solicited with an electronic honey bee survey instrument developed within the PUB bee group www.pnwhoneybeesurvey.com . A total of 442 survey responses were received from Oregon beekeepers, 57 members of PUB, 17 more respondents compared to the previous year. PUB loss rate was 21%, three percentage points above the overall state losses. Losses of Oregon clubs are shown in Figure 1.



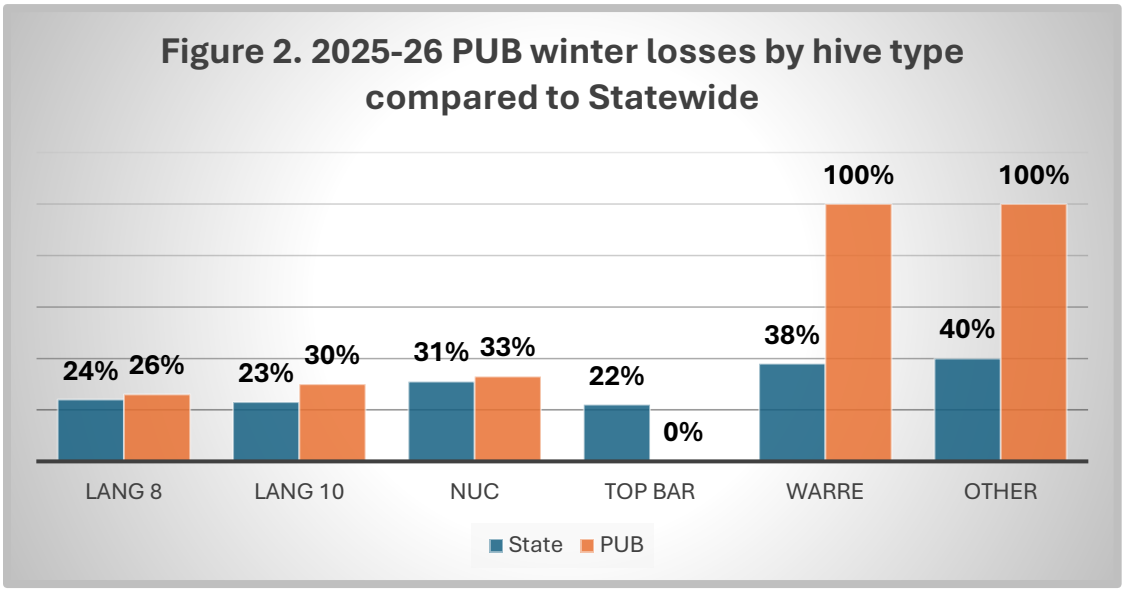
Overwintering losses of small-scale Oregon backyard beekeepers were 24.4%, Average 15-year loss statewide is 36.7%. The average overwintering losses of PUB respondents was 21 %. This is the fifth year in a row PUB loss has been below 30% overwinter.

PUB losses, reporting on 282 fall hives, showed five percent lower losses of 8-frame (17%) compared to 10-frame (22%) Langstroth hives; numbers were 60 fall 8-frame colonies and 196 Langstroth 10-frame colonies. For the past eight years, PUB member losses of Langstroth 8-frame hives have been the same, or nearly so, as losses of

Langstroth 10-frame hives; statewide there has been slightly better survival (4.4 percent difference) of 8-frame colonies compared to 10-frame colonies.

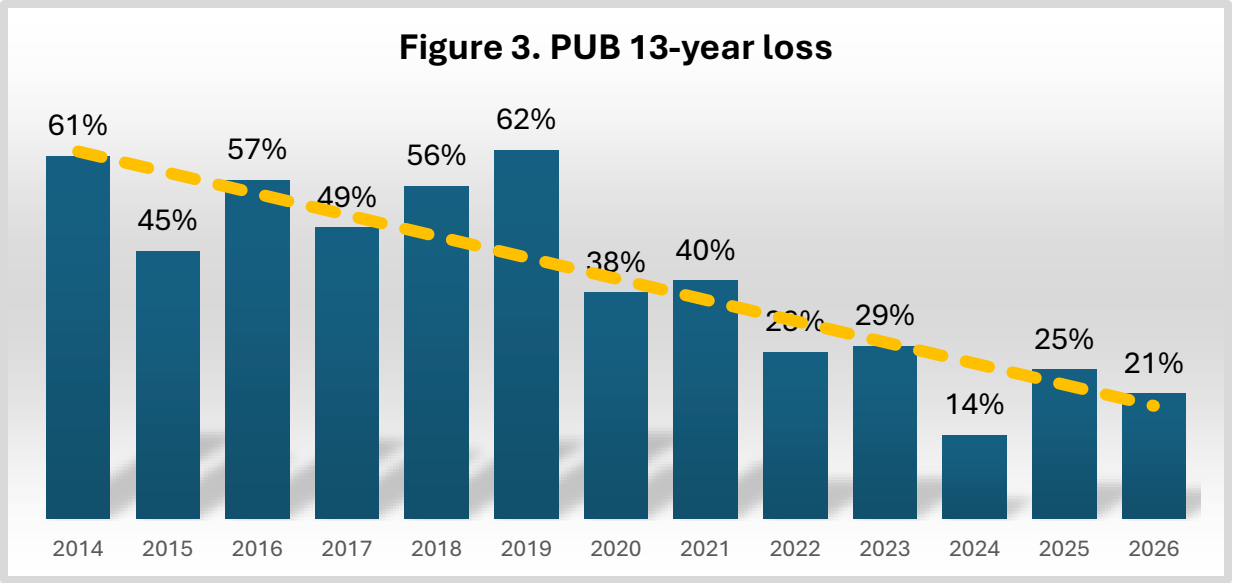
Five of eight overwintered nucs survived – 38% loss level. Nuc losses are typically higher (10-year statewide average = 47.1%). One of thirteen Top Bar hives did not survive. All three Warré hives survived. PUB member managed Top bar and Warré hives in 2020-21 were one half of the total statewide; they were 24% of total this year, up from only 11% this past year. Statewide the past 10-year loss averages have been 46% for Top Bar and 38.6% for Warré hives. There were 2 other hive types, both long hives and one of the two survived.

Loss of PUB member hives in comparison to statewide loss is shown in Figure 2; number of fall hives by hive type is shown at bottom of graph.

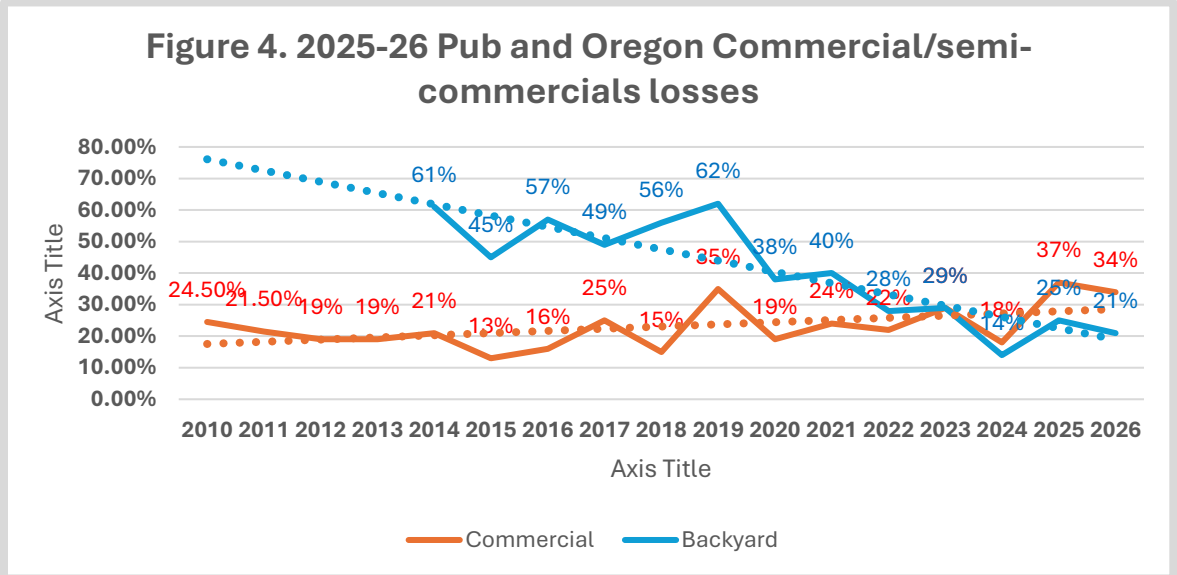


Fall PUB	60	196	8	3	3	2

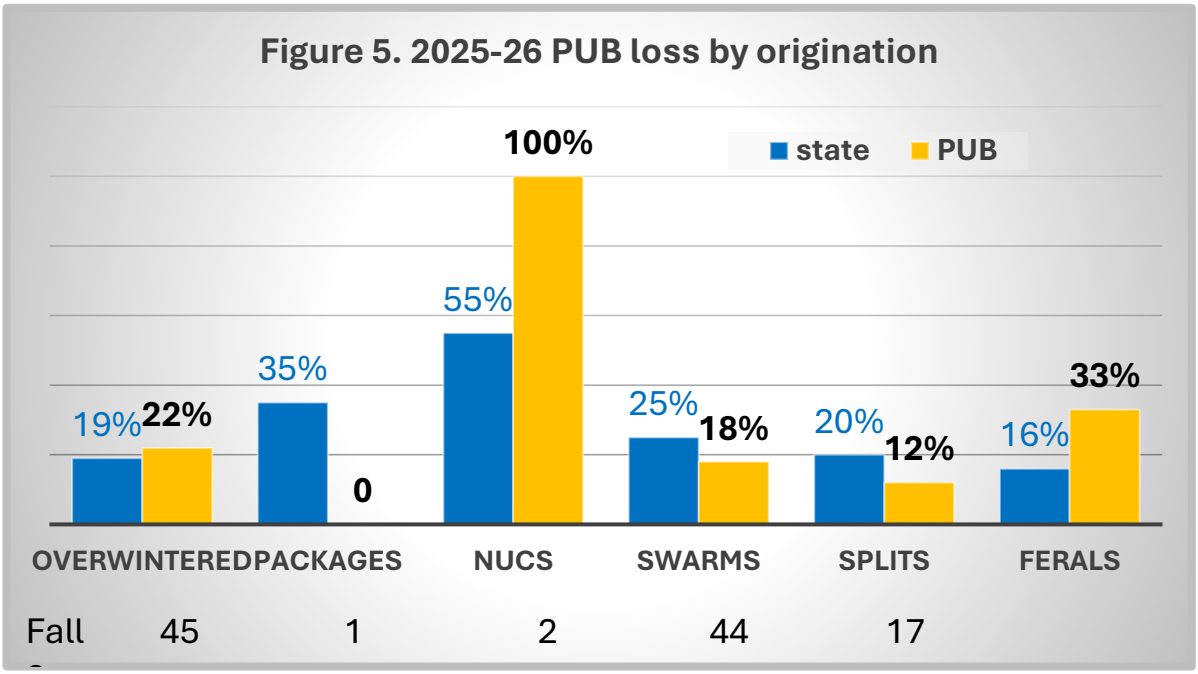
Figure 3 below illustrates the loss levels of PUB respondents for the last 13 years. The yellow dashed line is the trend line. Gratefully, losses are trending in the right direction.



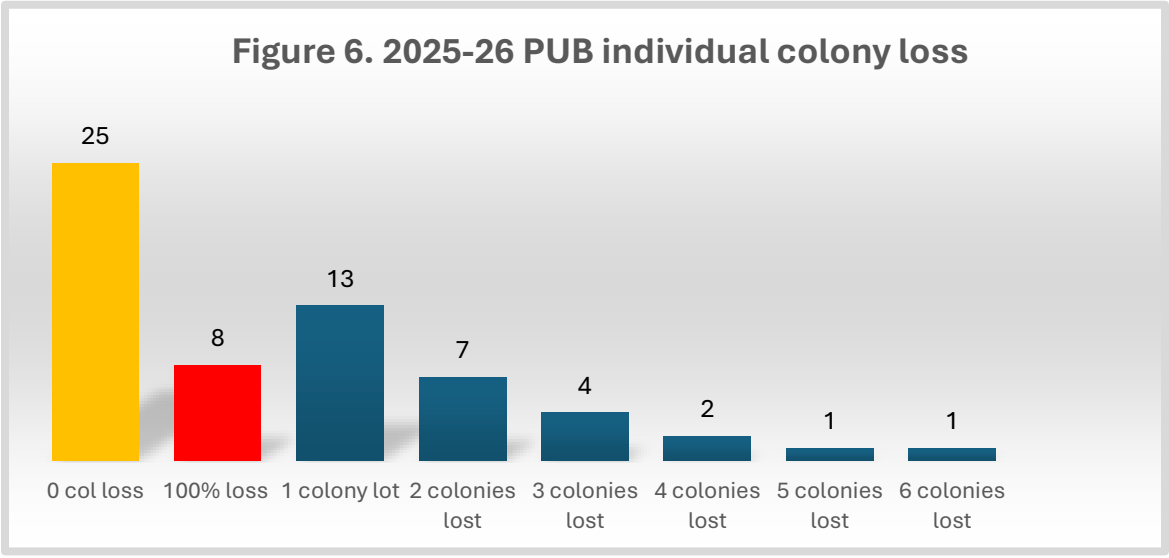
Comparison of the annual losses of PUB members with Oregon commercials is shown in Figure 4. A relatively small number of commercial beekeepers (individuals with 50 or more colonies) complete the electronic survey. Therefore, the number of commercial respondents (4 commercial and 5 sideliners) is preliminary as of May 1; reported losses include only 9082 colonies, 12% of NASS estimated 76,000 colonies in Oregon. This preliminary loss rate is 33.5%. Average PUB backyard losses (13 years) =40% and the National BeeInformed Partnership (BIP) and Auburn/OSU average for Oregon (17 years) =23%. Trend lines in dotted lines.



The survey also asked for loss by hive origination. Individuals could FAST PASS this question (65.5% did so). Of the 19 (of 55 total) who responded, overwintered colony survival in PUB (19% loss) was similar to statewide losses of overwintered colonies (19%). There was only a single package included (it survived), 2 nucs (both perished) and 3 feral transfers (one did not survive). Swarms and splits for PUB members had better survival than statewide. See Figure 5



Not all individuals had a loss. Twenty-five individuals (45.5%) had total survival, i.e., no colonies lost - total 74 colonies, range 1-6. Eight beekeepers lost 100% of fall hive



colony number (16 colonies total, range 1-4 colonies). Thirteen individuals lost one colony, seven lost 2, four individuals lost 3 colonies, two individuals lost four and one individual lost five and another six colonies. Six colonies was the heaviest loss. See Figure 6.

Colony number/years' experience

Typical of the statewide data, the PUB respondents are largely beekeepers with few colonies. Fifty-eight percent (58%) of PUB respondents had 1, 2 or 3 fall colonies (3 was median number and 5 was average number); they had a 26% loss. Sixteen individuals had 4 to 6 colonies (20% loss), three had 7 or 8 colonies (36% loss) and six individuals had 10 to 32 colonies (32 was largest number) with a 15% loss. Except for the 3 individuals with 7 or 8 colonies, the greater the colony number, the lower the loss. This relationship of individuals with increasing colony numbers having, on average, lower losses has been constant every survey year.

PUB survey respondents reported one to forty-seven years' beekeeping experience. Thirteen individuals had 1-3 years' experience; they had loss of 18%. The 21 individuals with 4-6 years' experience also lost 18% of their colonies. The eight individuals with 7-9 years' experience had 22% loss while the 15 individuals with 10-to-47-year experience had 26% loss. As shown with the larger number of individuals statewide, losses don't significantly decrease as years of experience increases.

Comparison of PUB with Statewide

	1-3 colonies	10+ colonies
PUB	26% loss (33 indiv)	25% Loss (6 indiv)
Statewide	34% loss (199 Indiv)	20% loss (70 indiv)

	1-3 years' experience	10+ years' experience
PUB	18% loss (13 indiv)	26% loss (15 indiv)
Statewide	23% loss (95 indiv)	22% loss (107 indiv)

Some other numbers

Forty-five of 57 PUB respondents (79%) said they had a mentor available as they were learning beekeeping; 76.5% statewide said they had a mentor.

Eight individuals had 2 apiary sites. Survival levels were the same at one, better at 3 and worse at 4 of the 2nd apiary sites. Three individuals had a 3rd apiary site; colonies did the same at two and worse at the 3rd. Four individuals moved hives during the fall season; one moved 2 hives 100 feet, one moved a single hive a half mile for swarm collection and 3 hives were moved 10 miles for honey collection.

Reasons for Colony Loss/Acceptable loss

We asked the individuals that had colony loss to estimate what the reason might have been for their loss (multiple responses were permitted – recall that 25 (of 57) individuals had no loss). Five individuals said they didn't know. There were 41 selections, a 1.5 average/individual of selections provided. Ten said queen issues and 9 indicated weak in the fall, 7 listed starvation and 6 varroa as reasons for loss. CCD was listed by 3, yellow jackets and moisture by 2 each with 1 each saying small hive beetle and poor wintering.

When asked about an acceptable loss, fourteen said none, 4 said 10%, 3 said 15%, 4 said 20% (the median, same as statewide), 10 said 25%, 4 said 33%, 12 said 50%, 2 indicated 75% and 1 said 100% was an acceptable level of loss.

Why do colonies die?

There is no easy way to verify reason(s) for colony loss. Colonies in the same apiary may die for different reasons. Examination of dead colonies is often confusing, some options may be ruled out, but 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. PUB choices ranged from none to 100% 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 thought to be mites and their enhancement of viruses, especially DWV (deformed wing virus), plus declining nutritional adequacy/forage availability and diseases. Pesticides in the agricultural environment weaken colonies. Yellow jacket predation is a constant challenge 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, contrails,

electromagnetic forces, including human disruption of it, human alteration to the bee's natural environment 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 currently facing honey bees. Varroa mites and the viruses they transmit are considered a major factor explaining why colonies are not as healthy as they should be. Thankfully the loss trend for PUB members is favorable.

Managements

We asked in the survey for information about some managements practiced by respondents. New this year, respondents could elect FAST TRACK and bypass providing this information. 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. This analysis takes longer. Results will be posted when available.

Basic managements of feeding, winterizing and sanitation may generally aid colony survival. Sixteen of 28 PUB individuals did not respond to managements of feeding, winterizing, sanitation or screen bottom board usage. Those 16 individuals had loss of 63% of fall colonies. Additionally, four individuals said they did not do any of the feeding managements, they lost 1 of 9 colonies =11%. Statewide, the feeding managements found most useful in reducing losses were dry sugar (except for drivert = highly refined dry fondant sugar) and pollen feeding. For the 37 PUB individuals who indicated they were doing feeding management, 94 selections were made 2.5/individual.

Two PUB individuals fed both frames of pollen and pollen patty – they only lost 2 of 33 colonies (=6% loss). Fourteen individuals fed pollen patties (107 colonies). They lost 12 for 11% loss. There were no dry pollen feeders; the 3 feeding frames of pollen had loss of only two colonies =5.5% loss. For PUB members, feeding in any form helped reduce average loss below club level. (but recall those not responding to this management questions had heavy (63%) losses).

Four candy feeders lost 3 of 13 fall colonies. Two of these individuals also fed dry sugar and had no losses of 7 colonies. Seventeen fondant feeders lost 21 colonies of 131 fed =16% loss. The single drivert sugar feeder had no loss of two colonies; they also fed dry sugar. The ten dry sugar feeders (52 colonies) had a 13.5% loss.

Feeding either honey or sugar syrup did not improve survivorship according to the statewide survey result. The 21 PUB feeders of frames of honey did show improvement –

they had loss level of 12.5%. Twenty-one also fed sugar syrup – they had a loss rate of 15%. So, for those supplying information on their feeding managements, everything helps lead to lower losses but recall those not responding to this management question (28% of total PUB survey respondents) had heavy (63%) losses. The 37 PUB s providing answers (65% of total) had a 17% loss.

The several winterizing managements improve success. Equalizing colonies, using rain shelters and insulted tops were all useful to reduce loss levels the last few survey seasons. The 16 who FAST TRACKED had 38 colonies in the fall and lost 44.7% loss; three individuals said they did none (15 colonies) had a 40% loss. The 37 who did a wintering management had 96 selections, 2.6/individual, same as statewide.

Winterizing management of equalizing colonies, 11 individuals, had loss of 13%, compared to 15% statewide. The four providing rain shelters also equalized. They had loss level of 12%; statewide it was 22%. The two statewide managements that had 20% loss (compared to 24% average statewide) were top insulation and wrapping of colonies. Twenty-four PUB members insulated the colony top had a 14% loss. The 14 PUB members wrapping colonies had a 22% loss level, one percental point above PUB average loss. Nineteen PUB members used the top ventilation/quit box/Vivaldi box at top of their95 colonies, they had loss level of 16%, 2-percentage points slightly higher for PUB compared to top insulation users and 6-percentage points better than statewide.

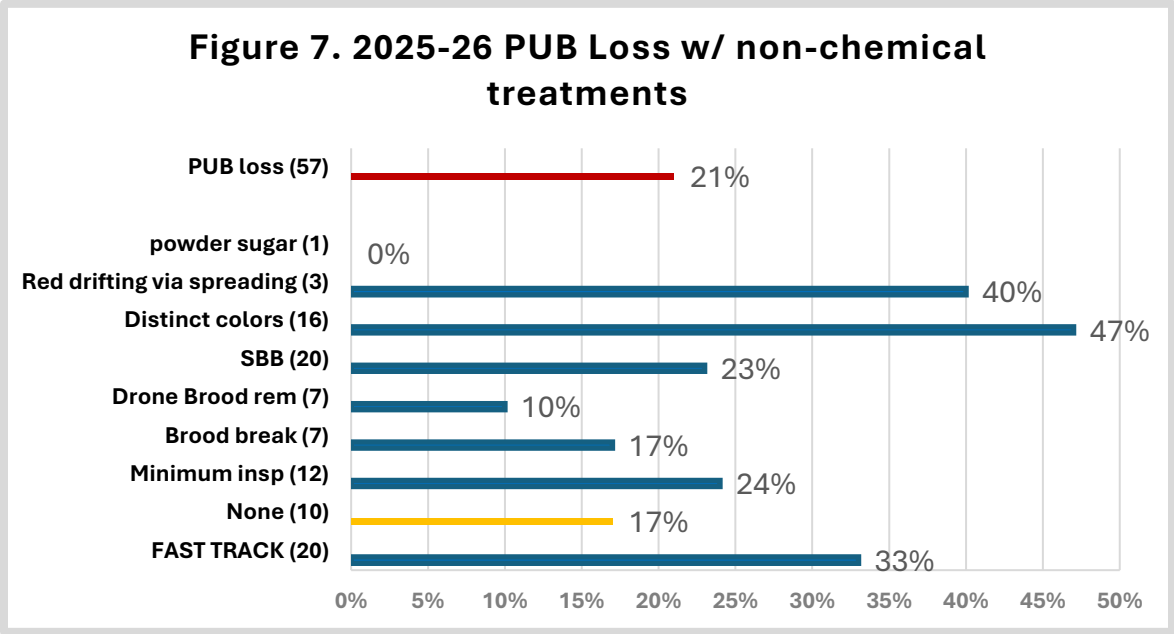
Sanitation is important but it doesn't necessarily translate into better winter success. Four respondents said they did no monitoring. They had 60 colonies and lost five =8% loss. The 16 who used FAST TRACK lost 27%. The 37 who had selections other than none, had 78 for 2.1/individual; statewide it was 2.3/individual.

Fourteen individuals provided distinctive colors for their hives – they had a 11% loss and the two individuals who spread their colonies to reduce drifting lost 2 colonies of 14%. Sanitation and screen bottom boards provide little help for wintering success; individuals that close the bottom during winter do a bit better. See Statewide reports for details.

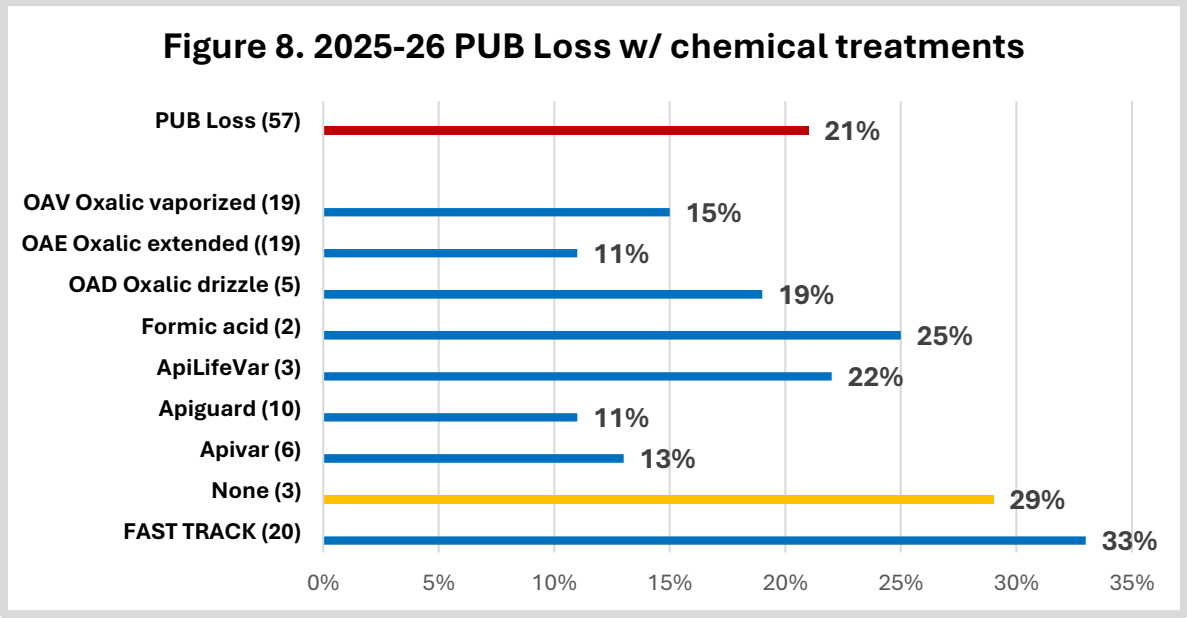
Seventeen individuals FAST TRACKED the section on monitoring. They had 100 colonies and lost 27%. 6 -percentage points above club loss level. Twelve said they did no monitoring and lost 15%. Sixteen individuals said they monitored all their colonies for mites and four monitored some of their colonies; they lost 23% of fall colonies. Thirteen used sticky boards, 11 used alcohol wash, only 2 used powdered sugar, 7 looked for mites in drone brood and 6 looked at adult bees as a monitoring tool (but some of them could have been referring to the washing of adult bees with alcohol).

Varroa treatments

Twenty individuals used FAST TRACK and did not provide answers for varroa mite non-chemical or chemical controls. They had loss rate of 33%. Seven individuals responded to non-chemical treatment selections that they did none of the alternatives, they had a 16.5% loss. The selections of 30 PUB members are shown below in Figure 7. As with statewide, the managements of drone brood removal and brood break, management by 7 PUB members each, were the alternatives that best improved survival.



In addition to the 20 Who FAST TRACKED (33% loss), 3 indicated they did none of the chemical control managements. They had 28.5% loss. Oxalic acid statewide was



effective in reducing losses as was the synthetic Apivar (amitraz). Apiguard also was effective, but ApiLifeVar was not as effective as for individuals statewide. Apivar was used once by 5 individuals and twice by the 6th individual user. Pigruard was used 4 tiems by one individual and twice by 2 individuals. The oxalic users used form ^= to a single time. Overall the 25 oxalic acid users had a 15% loss level.

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. Statewide, one hundred ninety-nine elected to FAST Track and did not respond to this final set of questions. They had loss level of 27%. The 243 who responded had same as average loss level of 24%. One hundred respondents said they had marked queens; they lost 21%; no responders had a 26% loss level. The related question then was 'were your hives requeened in any form?", to which 164 individuals) said yes (22%loss). When asked how colonies were requeened (multiple answers were possible) 76 said their colonies swarmed and 48 said their colonies superseded. Twenty-seven said they split colonies, and they raised an emergency queen. A total of 77 said they introduced a mated queen (19% loss), 10 introduced a virgin queen and 33 said they introduced a queen cell; they had an 18% loss.

Closing comments

I intend to continue to refine this instrument each season and hope you will join in response next march/April. If you would like a reminder when survey is open, please email us at info@pnwhoneybeesurvey.com with "REMINDER" in the subject line. I have a blog on the pnwhoneybeesurvey.com and will respond to any questions or concerns you might have. Email me directly for quicker response: dmcaron@udel.edu

I whole heartedly thank Jenai Fitzpatrick, who has been an invaluable assistant through the years with the data and to Bill Cauterall who has been our webmaster for PUB and who has graciously continued with the loss survey. For different reasons, neither individual now keeps honey bees, so for both this is a labor of love. Both say it is payback to those years they had bees and the wonderful friendships developed among the beekeepers.

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 May 2026