Spring Management is Mandatory With Tracheal Mites

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It seems to me that some experts are still giving advice based on the pre-mite era. The whole ball game is different now. Since we are going to have mites for some time, it seems we should be making adjustments in our operations to account for mite effects. The following discussion deals with effects of the tracheal mite since that mite has the largest impact on spring build-up.[1]

Figure 1 is a seat-of-the pants chart based on observation only. No data of scientific sources have been used in preparation of the chart. It is presented here for illustration only and to give a point of reference for the discussion. We are going to treat the ways to make spring die-outs (March) and survivors into producers.

The spring buildup, or lack thereof, is plotted against boxes of hive bodies of bees. The more tracheal mite infestation, the steeper the decline in early winter. Badly infested colonies do not survive into the first January brood rearing. Less severely infested colonies may die out later or squeak by. The hives that we have designated as survivors are just that. They survive but do not get strong enough to produce surplus honey. We all understand what a producer colony is, but, of course, they also come in degrees of effectiveness.

As noted under the chart there are variations within the boundaries of the winter die-out and the producer. If a colony makes it to the first brood emergence, and the rate of decline is steeper than the increase in bees resulting from that first emergence, they can still crash into the second and third brood cycles. If detected early enough, these late crashers can be salvaged. If the losses can be stabilized early, that colony then becomes a survivor. The same efforts required to make a survivor into a producers are appropriate for the stabilized late crasher.

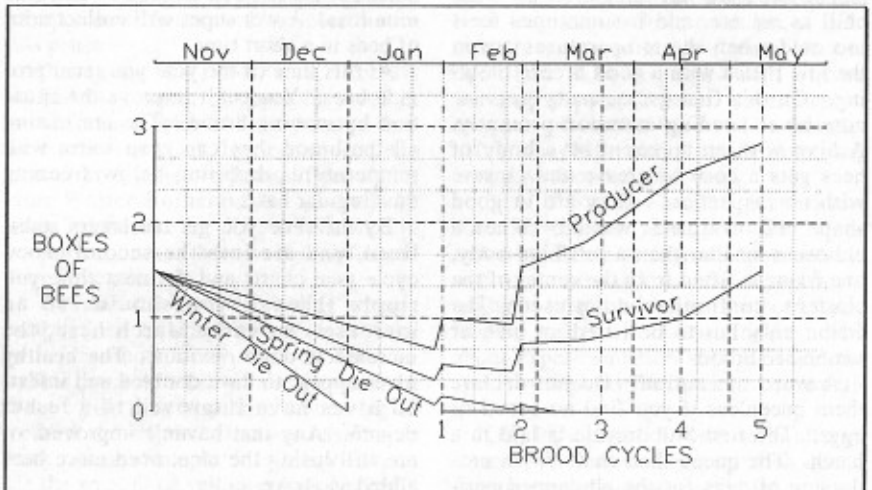

Figure 1: Tracheal Mite Effects on Spring Build-Up

Generalizations:

a. There are all variations between the two extremes.

b. Selection of February 1 as the first hatch-out is arbitrary.

[1]Editor's Note: Mr. Wright does not discuss Varroa control or foulbrood control, but assumes the beekeeper will be controlling these two serious problems as well. He does not mention that tracheal mite control may also be achieved through requeening with tracheal mite resistance queen stock such as ARS-YC1 Carniolans or Buckfast Stock.

The chart is based on conditions for the state line of Alabama/Tennessee between Huntsville and Nashville. Here, fruit bloom is late March for most varieties and apples bloom the first week of April. Many native honey sources are available the second half of April. That means that we only have three brood cycles to get to that point. Using these reference points, perhaps you can apply the information to your location.

The critical factor to hive survival is the size of the emergence of the first brood cycle. If the colony does not get to that point with sufficient bees to raise brood in the first cycle, they are winter die-outs and nothing can be done to help them. If all colonies have T. mites, the attrition rate is greater—even for the strongest. In the premite era, loss of winter bees was also variable from fall conditions and percentage of young bees that started into the winter. To those variations now we have to add variation in loss rates attributable to degree of T. mite infestation. It is probably safe to say that no matter what your mite treatment program may be, the winter bee loss rates will be greater.

The accelerated winter loss makes is mandatory that we obtain the status of the hives as soon as possible. The first flying day in February we open hives and apply grease patties to protect the young bees emerging. They will have consumed all of the grease mix within the cluster perimeter that was applied in the fall. Our criteria for suitable weather conditions for grease application is just that the bees be flying.

The bees are not hampered by wind chill as we are, and it sometimes feels too cold when the temperatures are in the low fifties with a good breeze blowing. On this first grease patty pass we note hives needing attention promptly. A hive with an apparent hive body of bees gets a dose of grease and closure with no inspection. They are in good shape and no time is wasted. When a cluster is smaller than a full hive body, one frame is lifted from the center of the cluster to confirm brood is present. The frame only has to be lifted an inch or two to see brood.

A word of caution! Do not declare them queenless if you find no brood or eggs. The first brood cycle is laid in a batch. The queen then shuts down production of eggs for the all-capped period. After emergence of the first cycle, she has to crank up again to lay for the second cycle. When you see a queen at this time of the year she is often quite small if she is in this inactive period. Queen breeders take note: Getting into the laying mode in the shortest period after an all-capped period is in the best interest of the T. mite resistance.

Back to the first grease inspection. Should you find an apparently queenless colony, make a note to check again in about a week. Anything less than a full hive body of bees is in danger of being a late crasher. We draw an outline of the cluster on the back of the hive body so that we can tell on subsequent visits whether they are losing or gaining in the race with the mite. Anything smaller than a basketball-size cluster is probably in trouble and corrective action should be taken at the earliest opportunity.

We have resurrected clusters smaller than a football. What is needed are additional bees that are not likely to be heavily infested themselves. You could turn the mite loss around with a purchased package, if packages were available at that time of year. But we make do with what we have from other colonies. The first line of defense are genuinely queenless colonies. We lose many more colonies from queenlessness than mite kill. Add the queenless colonies to the smallest clusters at the earliest opportunity. This will normally stabilize the mite loss and give you more time to bring them up to normal strength. If on your first inspection you noted some exceptionally strong colonies, you have bees available that presumably are lightly infested. Because we winter with two hive bodies and a shallow feed box, we can remove the feed box with patrolling bees and place it over small clusters to supplement healthy bees. The super can be returned on a cold morning. You can probably find more efficient ways to move bees from the haves to the have nots, but his is good enough to stabilize mite loss. A wet super will collect a lot of bees in a short time.

At this time of the year you must provide bees. You can't improve the situation by moving brood. The are raising all the brood they can keep warm with temperatures dropping below freezing on a regular basis.

By the time you get the losers stabilized, you are into the second brood cycle (see chart) and the next time you ripple through you should see an increase. In early March here, the increase is quite obvious. The healthy hives appear to have doubled and infested hives have improved to a lesser degree. Any that haven't improved, or are still losing the race, need more bees added as above.

Since the weather is moderating, you can consider moving some brood with bees to beef up the survivors. You might want to do it incrementally. Start with just two or three panels of capped brood and enough bees to keep it covered for the first few days. Take bees and brood from the strongest hives by placing the box to be used to transport bees on the bottom board of the hive contributing brood. Collect incoming bees until enough are in transport box to keep brood warm. We use a sheet metal slide (migratory cover metal with one end cut off) to contain the bees between locations.

Toward the end of March (after the third brood cycle), you can move a whole hive body of brood with adhering bees to the slower survivors. We put a frame of honey on the outside, a frame of pollen in 2 and 8 slots, and five frames of capped brood in the interior slots. Suitable frames of honey and/or pollen will be available from die-outs or queenless colonies. The five frames of brood can be acquired from two or more hives that appear strong enough to start thinking swarm.

Under certain conditions of mite loss and brood rearing, the population stabilizes at a point where there is no gain. This results in a cluster that is honeybound. They cannot increase because there are no additional cells to use for brood. We have tried several ways to provide additional empty cells above the cluster, without separating them from their honey overhead. All seem to help some to break the honeybound gridlock, but at this writing we are not prepared to offer a sure-fire cure for the condition.

The survivors that were augmented in these ways in 1994 produced a couple of supers of honey. While these techniques may not be cost effective for the larger producers, they are helpful to the hobbyist or sideliner.

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