Patterson's Page: Beekeeping by Numbers

by **Roger Patterson,** Wisborough Green BKA

Much of beekeeping revolves around numbers, with some of them being very important, others less so. The understanding of what I call the 'basics', such as the life cycles of queens, drones and workers and the swarming procedure all require the knowledge of relevant simple numbers. Well, I say 'require the knowledge', but how many beekeepers actually know them or their significance?

I know that books and beekeeping teachers, including me, give the normal life cycles, but how many beekeepers actually check on a regular basis to see how much variation there can be? When you rear queens using one of the 'artificial' methods, you have a good idea of when queens should emerge, but in recent years I have found that some queens commonly emerge up to four days late that is 25% later than it should be. I know that temperature is said be an issue, especially towards the edge of the frame, but I have had problems in the centre of the frame and bees often build queen cells on the side or bottom bars of frames. I have also observed that a significant number of workers take more than the normal 21 days to emerge. Take a queen away from a colony and check it 23 days later and you will see what I mean. These are examples of factual numbers that should, in my opinion, be learnt in the very early stages of beekeeping, certainly in the first year, but with the knowledge that there may be variations. There are, however, a lot of numbers quoted that I think are either unnecessary or misleading. I give some examples below.

The amount of food we are told a colony of bees requires to overwinter is often quoted in autumn. In three articles on autumn feeding giving advice on the amount of food required, the amounts quoted were all different: 18Kg, 22Kg and 24kg. One is 33% higher than another, so how helpful is this? Interestingly, not one article mentioned the type of bees or the colony size the advice related to. We know that some bees, Italians in particular, consume far more food than some other types; in my own experience it can be up to double. I think it is much more important to see what stores the colony has and work out for yourself how much they need, rather than give them a fixed amount whether they need it or not.

I have lost count of the times I have read that when leaving queen cells you should always leave two. The reason usually given is that if one fails there will be a second as insurance. To an inexperienced beekeeper that may seem a good idea, but it is false logic because if the colony is reasonably strong and the weather favourable it is likely to swarm with the first virgin queen to emerge. I accept that with the current problems with queens it is much more likely there may be a dud queen cell, but often the bees do not know that and they will swarm leaving no viable queen to emerge. You will have a terminal colony, unless you do something about it, and someone else a chimney full of bees they do not want!

The age-related tasks of honey bees are quoted by many as if these are set in stone. There are, however, several things that affect this: the time of year, the size of the colony, the weather, a brood break, a nectar flow or dearth, whether the colony is about to swarm or has just swarmed; all these factors can change the timing. Standard management techniques such as removing/ adding brood, removing a nucleus or moving a colony a short distance to take flying bees away from it will alter the balance of a colony. Bees are very adaptable and the colony responds by workers adjusting their tasks to suit the colony needs, not because they have done one task for three days and the book says it is time to move on.

The number of bees needed for an adult disease sample is always quoted as thirty, but where did that figure come from? The usual answer, 'a complicated mathematical formula', is not the reason it was first used. In personal communication, Norman Carreck who was at Rothamsted, states "... the thirty bees sample was standardised at Rothamsted many years ago because the centrifuge tubes that they were using for various purposes and had lying about the lab just happened to contain thirty bees. Much later Dr Bailey consulted statisticians and they concluded that to improve the chances of detecting infections the sample size would have to be increased ten or one hundred fold, and this was not practicable. A matchbox also happens to helpfully contain thirty bees." What would happen if that answer was given in an exam?

I have never used acetic acid for fumigating combs, but many do. I recently reviewed the BBKA leaflets and found differing quantities advised per box in different articles, so I tried to check the correct amount to use in what I thought were authoritative sources. I came across: 50ml, ⅓ cup (approx 80ml), 100, 120 and 150ml. The NBU booklet gave 120ml, so I thought BBKA should follow that advice. I was concerned about the wide variation, so I contacted the person who had written it and was told that no research appears to have been done on this! It becomes even more amusing because the smallest standard box is a WBC super, the largest a Modified Dadant brood box that is 3.6 times larger in volume, although, in fairness, some sources do state the brood box. When I checked Hooper's book his figure was ¼ pint (142ml) and he states to put it at the bottom of the stack, where everyone else says the top! Most sources quote 80% strength.

Six weeks is the time often stated as how long a worker bee lives in the summer, but do all bees live the same length of time? I am sure there are a lot of factors that govern this including the forage available, the amount of brood reared, the weather or the race of bee. My observations suggest that bees may not live as long as they once did. In my earlier years of beekeeping there were many more bees in a colony with tattered wings from flying many miles than there are now, suggesting the lifespan may be a week or so less; perhaps disease-related.

A quick web search revealed that a queen bee lays between 1,000 and 3,000 eggs per day! A three-fold difference, and again there was no indication of the type of bee, location or conditions.

If you look on some websites or at information given at shows you quite often come across 'Amazing Bee Facts', where we are told about all sorts of wonderful things bees do with information that is clearly copied from elsewhere. Has anybody ever followed a bee to see how many times it has flown around the world to collect a jar of honey? Of course they have not and what is the purpose of it anyway? I recently noticed that it is estimated that 1,100 honey bee stings are required to be fatal. I hope nobody attempts research on that!

I have no problem with the important numbers being quoted, but I think 'beekeeping by numbers' for the sake of it can be misleading and may encourage beekeepers to do things by the 'book', rather than by using observation and a little common sense.