SA Beekeeping Challenges

David Black

In South Africa, honeybees and their pollination services contribute an estimated R16 billion to the national GDP, of which approximately R10 billion is generated in the Western Cape (Engineering News 2015). With the changing profile of deciduous fruits, increases in vegetable production; and large increases in vegetable seed production and expansion of macadamia nut plantations, the demand for these pollination services is expected to "double over the next five years" (Allsopp[1], pers. comm. 2016). However, despite their critical value, beekeeping in South Africa faces some critical challenges, largely rooted in the lack of recognition and protection of these pollination services, from both a governmental and grower perspective. These main risk factors are outlined below.

1. **Lack of forage**

This relates to both the quantity and quality of available forage. According to Cooper[2] (pers. comm. 2016), South Africa's natural vegetation, including fynbos, is generally a poor source of bee forage. As a result, eucalyptus plantations, initially introduced as a source of timber and firewood, form the backbone of South Africa's beekeeping industry. But as diverse natural vegetation has been cleared for the large-scale planting of monoculture crops, and eucalyptus plantations are removed in national alien clearing programmes (Working for Water), the lack of suitable forage has become the major limiting factor to the expansion of beekeeping in South Africa (Allsopp; Cooper pers. comm. 2016).

2. **Theft and vandalism**

Much of beekeeping in South Africa takes place on land not belonging to and/or far from the beekeeper. If on farms owned by others, beekeeping activities are often pushed onto marginal land, and as such hives are difficult to monitor and protect. Theft and vandalism of commercial hives has become a major risk factor, and efforts to mitigate this risk can push beekeeping operating costs up by 30-40% relative to elsewhere (Allsopp; Cooper pers. comm. 2016).

3. **The 'Capensis Problem'**

Cape bees (*Apis mellifera capensis*) have the unique characteristic in that they are able to produce both male and female offspring. While this allows them to re-queen a colony that has become 'queenless', they also have the ability to parasitize African bee (*Apis mellifera scutellata*) colonies. Naturally, this is a problem in the hybrid zone between the two subspecies, reducing the viability of beekeeping. But Cape bee colonies were also moved further north to expose colonies to better forage, resulting in an

[1] Mike Allsopp is a senior researcher within the Honeybee Research Section of the Agricultural Research Council (ARC).

[2] Brendan Ashley Cooper is a beekeeper at Cape Pollination Services.

extension of the Capensis Problem to most of South Africa (roughly 70%). This has had a huge impact on regions formally occupied by only the African bee (Allsopp, pers. comm. 2016).

4. **Lack of responsibility and action from government**

While there are various acts and regulations that relate directly, and indirectly, to the protection and management of bees and beekeeping in South Africa[3], this legislation is not enforced, and there is no capacity for honeybee disease management. Additionally, there is no capacity for honeybee research and development, nor are there government-driven programmes to grow the industry to meet the rising demand for pollination services (Allsopp, pers. comm. 2016).

5. **Risks to revenue generation**

Beekeeping is sustained through two revenue streams, compensation for pollination services and honey production. Over the past two decades, South Africa's honey imports have grown from close to zero to roughly 70% of total available honey, undermining a major revenue stream, and increasing the risk of introducing pests and diseases to South African hives. Further, despite pollination services being a critical factor of production for certain fruit, vegetable and nut crops, pollination services have been largely undervalued and undercompensated, threatening the financial viability of beekeeping operations (Allsopp; Cooper pers. comm. 2016).

6. **Pesticides**

The irresponsible spraying of some pesticides can result in severe localised impacts to honeybee colonies (and other fauna and flora in the ecosystem). Irresponsible spraying includes the spraying of unregistered pesticides, illegal spraying methods (for example, the aerial spraying of methamidophos), and illegal/irresponsible spraying schedules (relating to the time of day). In South Africa, there seems to be little recourse for honeybee colony losses due to irresponsible spraying (both from governmental and industry perspectives). However, the negative impacts of some pesticides to honeybees can largely be mitigated if pesticides are sprayed responsibly (Allsopp pers. comm. 2016).

7. **Pests and pathogens**

Unlike elsewhere in the world, beekeeping (and the selective breeding of bees) in Africa is a relatively young industry. As a result, bees in Africa have a much larger genetic diversity, and have developed tolerances for many of the pests and diseases that plague honeybees elsewhere (for example, the tolerance developed for the varroa mite).

American Foulbrood (AFB) disease, caused by the spore-forming bacterium *Paenibacillus larvae* (Engineering News 2015), has been the cause of wide-scale colony losses in 2009, and again in 2015. However, Allsopp and Cooper believe that they are *not* observing the expected collapse patterns that

[3] Agricultural Pests Act, 1983 (No. 36 of 1983) and associated regulations (Control Measure GN R858); Agricultural Product Standards Act, 1990 (No. 119 of 1990) and associated regulations; Foodstuffs, Cosmetics and Disinfectants Act, 1972 (No. 54 of 1972); Health Act, 1977 (No. 63 of 1977); Conservation of Agricultural Resources Act, 1983 (No. 43 of 1983); and National Environmental Management of Biodiversity Act, 2004 (No. 10 of 2004).

should be associated with the spread of AFB. Although it contrasts to AFB experiences elsewhere, it is believed that the South African bees have also developed a tolerance to AFB, and that the widespread impacts of 2009 and 2015, have since dissipated. AFB is unlikely to be the sole cause of large scale economic problems, but extensive colony collapse could result if in combination with other major risk factors.

Conclusion

In the face of rapidly growing demand for pollination services, there are a number of very important risk factors that pose challenges to commercial beekeeping operations in South Africa, including: lack of forage; theft and vandalism; the 'Capensis Problem'; lack of responsibility and action from government; risks to revenue generation; and the irresponsible spraying of pesticides. In the years to come, the ability to manage and mitigate these risk factors will decide the viability of commercial beekeeping in South Africa.

The beekeeping industry has been lobbying government for a number of years to better prioritize honeybees, and the critical pollination services that they provide. There needs to be a strong drive for the establishment of more forage; greater protection; and just recourse for beekeepers faced with the destruction of colonies (through vandalism or the irresponsible application of pesticides). However, these efforts should not come from beekeepers alone; farmers have a large and critical role to play in changing the perception and management of honeybees in South Africa.

References

Engineering News, 2015. W Cape bee population threatened by bacteria strain, govt warns. Available at: http://www.engineeringnews.co.za/article/w-cape-bee-population-threatened-by-bacteria-strain-govt-warns-2015-11-03/rep_id:4136 [Accessed June 30, 2016].