Global Pollination Project and Honeybee Forage Project South Africa

Implemented by the South African National Biodiversity Institute (SANBI) as part of the GEF/UNEP/FAO Global Pollination Project (GPP), also entitled "Conservation and Management of Pollinators for Sustainable Agriculture through an Ecosystem Approach"

Profile: Johan Bekker – Vegetable seed farmer

Johan with his farm landscape in the background

Introduction

The purpose of the case studies/profiles of the GPP is to showcase practices that have a different approach and are therefore of interest and possible value. In the South African project, individual farmers and beekeepers are reliant on and work with honeybees. Farmers utilise honeybees for pollination of their crops and commercial beekeepers use honeybees to provide pollination services and/or to make honey. The way farmers or beekeepers utilise honeybees has often been developed individually through years of learning and experience. While the different practices discussed in the profiles are not scientifically proven to have benefits (such as increasing agricultural yield or promoting pollinator conservation), they mean something to the individuals in the profile and may inspire people in the sector to explore alternative practices and possibly result in scientific research being undertaken. It is through the exploration of a range of different practices that lessons may be learned and applied at wider scales to benefit both agricultural and environmental conservation considerations.

Many farmers and beekeepers in South Africa undertake innovative practices relating to pollination issues, and it is unfortunate that we cannot profile more. We hope that the profiles/case studies that we have chosen to present here are understood as being just some of the many interesting practices that could inspire discussion and consideration, and not as the championing of any particular practice or person.

The reason we chose to profile Johan Bekker is that he has some unusual practices on his farm that have seemingly allowed him to reduce his reliance on managed honeybees for pollination services. This is in contrast to most other vegetable seed farmers in his area, who are heavily reliant on and pay for managed pollination services.

The Project Management Unit of the GPP in South Africa interviewed Johan Bekker on 15 July 2012 at his farm "Buffelsklip" near the town of De Rust in the Klein Karoo region of the Western Cape Province of South Africa. Members of the project team and the FAO Global Project Coordinator also visited Johan in October 2011. Additionally, South African GPP fieldwork for monitoring and deficit research has taken place on Johan's farm.

This document is structured in such a way as to tell Johan's story in his own words. A short "lessons learned" section at the end discusses some of the possible implications of Johan's practices.

Disclaimer: the practices discussed in this document have not been scientifically proven. This profile is therefore intended as an anecdotal account from which readers may draw their own conclusions.

Johan's Story

For Johan, farming runs in his veins! He grew up on a farm - his father was a sheep farmer in the Oudtshoorn area for many years - and his whole life has been about farming. Johan started vegetable seed farming in 1982 after he and his wife inherited his father-in-law's farm. He has since bought a farm adjacent to where they live to increase his production area.

Description of the farming system

Johan's farm land is positioned close to natural vegetation – this is mostly because of the steep mountainous terrain of the region only allowing the adjacent flatlands to be cultivated.

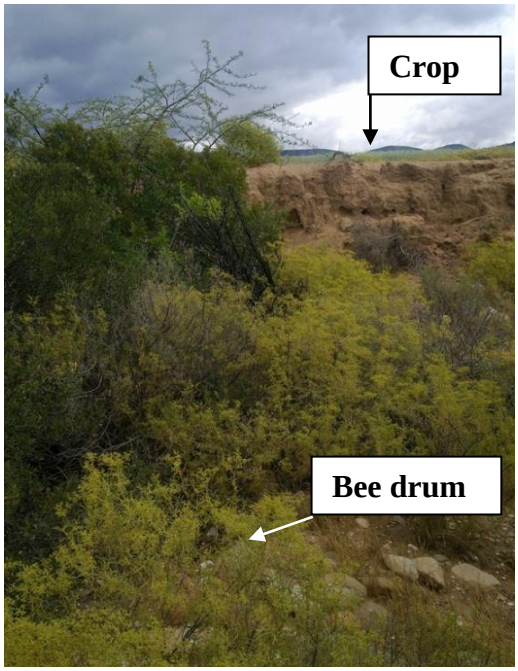
Johan grows different cultivars during different times of the year. He also rotates his seed crops – sometimes having hybrid onion seed and sometimes carrot seeds. He does this in 12ha blocks where four blocks are being rotated in a four year rotation period. He currently has five hectares of cabbage and fifteen hectares of hybrid onion seeds.

The landscape environment of Johan's farm – showing the proximity of crops and natural vegetation

He also observes when the natural vegetation and crops around his fields have their main flowering seasons. According to Johan, acacia trees flower in January to March, fynbos and aloes during winter, apricots and plums flower in August, and cabbage, carrot seeds and hybrid onion seeds in November to December.

Johan used hired / managed honeybees for pollination during his early days as a farmer, but this activity was expensive as he hired approximately 120 honeybee hives per season. He then stopped hiring honeybees for pollination, and began to develop his own methods. He realised that he needs the honeybees for pollination and, in turn, the honeybees need a nesting place. One method Johan used was concreting steel gates with locks onto places on the rock cliffs where there was an active honeybee hive. This was to prevent local community members from harvesting the honey from the natural hives and often damaging the colony in the process. A second method, which Johan currently uses, is where Johan buries large 50L oil drums in the ground as nesting sites for honeybees. The whole drum is covered with soil with the small nozzle opening of the drum facing upwards and exposed. The drums offer protection from honey badgers raiding the hives and from people stealing the honey. The drums are those previously used for diesel, as Johan believes that bees like greasy areas. Johan also attempted to bury other objects for honeybee nesting sites, such as an old fridge, but this was too difficult as the fridge was too large. Johan believes he is the farmer who first started using drums in the ground as honeybee nesting sites. He has been doing this practice for the last 20 years and believes that the honeybees from his drums work on his crops when they are in full bloom.

The buried bee drum



Position of bee drum to crop

Johan keeps 23 drums of honeybees on his farm for pollination. Johan does not know how many honeybees are in the drums, but says it is obvious the honeybees are hard at work and that there are a lot of them as they cause “traffic” at the nozzle openings of the drums. Johan also keeps box hives in an empty building on his premises because he believes that when the weather is bad those honeybees inside the building are actively working the crops, as their hives remain sheltered and warmer inside the buildings.

Challenges and Questions

Johan was quick to point out that he is not the only farmer who does not bring in managed honeybees. Other farmers either rely on honeybees from surrounding natural areas, or keep permanent honeybee box hives on their farms. He has also recently realised that a neighbouring farmer is now using the underground drums as nesting sites for honeybees. He notes that many of the farmers have their own methods to ensure the effectiveness of their pollination service.

A major challenge in the vegetable seed production area is that sometimes the honeybees unexplainably remain in the hives and do not visit the crops at all. An example of this was seen in 1996 when honeybees did not come out of the hive boxes for a week and all the local farmers were mystified about the cause. Johan commented that at the time they had laid out carcasses in an attempt to bribe flies to do the pollination, but this was in vain. In another instance when the honeybees did not work, Johan mentioned that large outbreaks of moths were seen to be doing pollination of the crops at night. In a separate instance about five years ago, Johan noted that the honeybees remained in the box hives for about a week, but suddenly at midday on the Friday they start working. When he asked other farmers, Johan realised this had been the case for the whole area from Oudtshoorn to Laingsburg.

Cost and benefits of practices

Johan noted that 20 years ago they use to pay approximately R80-R100 per hired beehive, and they brought in around 120 hives in for pollination. In terms of whether bringing in managed honeybees or not improves production or yield, Johan notes he cannot answer this question definitively. However, he knows that it costs him less money by not bringing in managed honeybees for pollination. Johan believes that it is a matter of balancing expenditure to aim for the best profit, and other factors like water also play a huge role in improving yield or production. Johan does not think burying even more drums in the soil will increase the crop yield or production.

One of Johan's main onion seed fields

Lessons learned:

While Johan has many years of farming experience, other farmers may not agree with his practices or his opinions. The main reason for this may be that Johan's farm has specific landscape characteristics that perhaps allow for unusual methods – these characteristics include:

- Geographical setting (mountains and outcrops not suitable for agriculture) that allows natural vegetation areas to be situated very close to the crops planted and provides many nesting sites for honeybees.
- Availability of year-round forage through natural vegetation and flowering of different crops at different times of the year.

However, the **lesson that could be learned** from Johan's practices is that there may be methods of encouraging honeybees onto farms that might reduce the need to rely solely on managed honeybees. Methods may not work for every geographic locality, but could include:

- Protecting existing honeybee nesting sites from vandalism and disturbance.
- Providing artificial nesting sites for honeybees.
- Planting of crops that flower at different times of the year to contribute to better year-round forage availability for honeybees.

This profile will be linked to the management document of the "capsensis pollination region". The management documents for the two pollination regions of South Africa will be available towards the end of the project.