

# Beekeeping in the Kingdom of Saudi Arabia

## Opportunities and Challenges

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In the second, and concluding, part of their article on beekeeping in The Kingdom of Saudi Arabia the authors look in detail at the current apicultural scene in this vast land and assess the strengths, weaknesses, opportunities and possible threats that lie ahead.

### Introduction

Despite the arid conditions that prevail in Saudi Arabia beekeeping is widely practiced in many parts of the country by large number of beekeepers. It is a significant source of income. The beekeeping industry is steadily growing in the country with different opportunities and, of course, many challenges.

### Opportunities

There are many opportunities favouring the development of the beekeeping subsector. Obviously one of the most important is an attractive honey market, but there is also strong institutional support from institutions offering

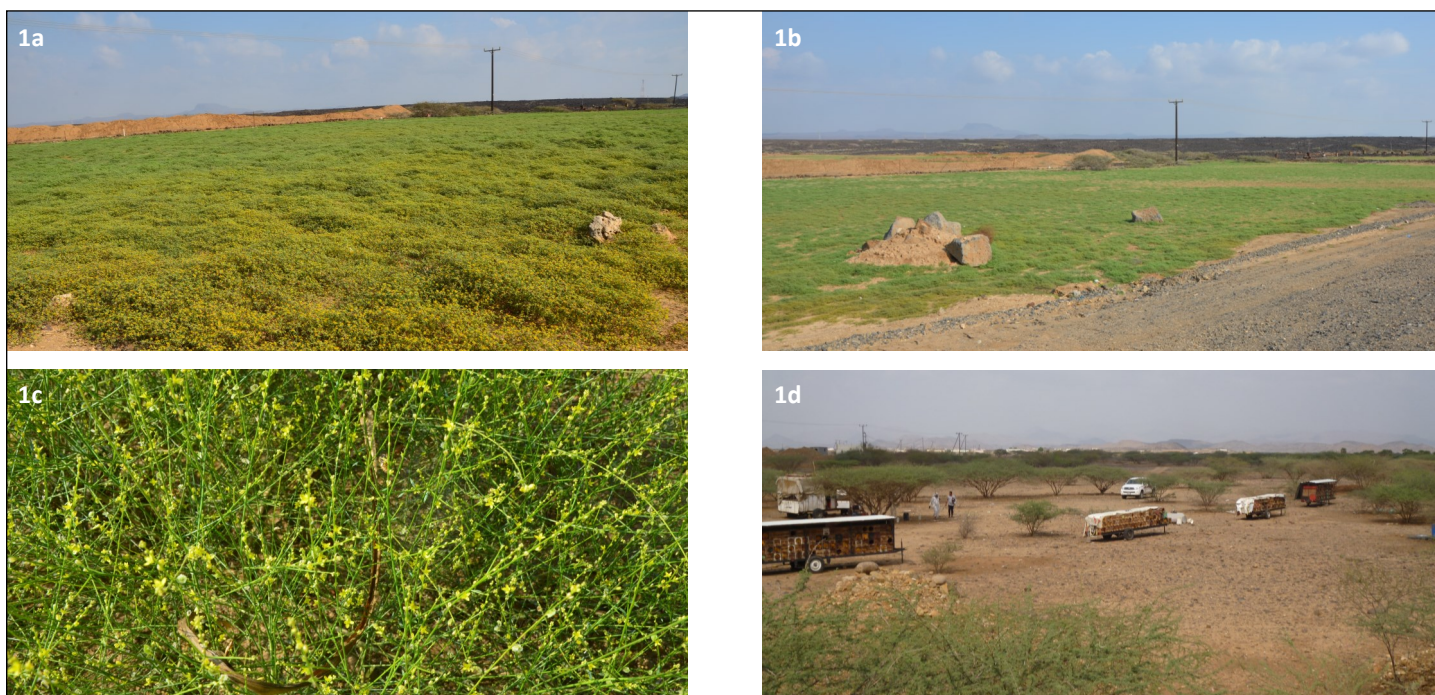
research and development, diverse bee forage and an interest in adapting to other species of bees.

### Attractive honey market

Honey is deeply rooted in the Saudi Arabian culture, religion and economy. The Holy Qur'an refers to the medicinal and healing properties of honey: therefore, honey is a highly symbolic and valued product by the people of the Kingdom. It is widely used for its medicinal and restorative properties and also as a sweetening agent. The average Saudi consumes 1 kg of honey per month. Daily honey consumption is even greater on traditional religious and festive

occasions, particularly during the month of Ramadan, when it is widely used in the preparation of evening desserts to quickly replenish lost energy. Honey is widely used in various homemade recipes. However, society believes more in the medicinal than the nutritional value of honey.

Generally, consumers pay a much higher price for locally produced honeys of known origin than imported honeys. The prices of locally produced honeys vary from USD 40 to USD 180 per kg. Sider (*Ziziphus*) honey is in especially high demand in the country. The high price of local honey has encouraged



**Fig. 1.** Lowland plain covered with fast growing bee forage plants. 1a and 1b *Zygophyllum simplex* (*Zygophyllaceae*). 1c *Dipterygium glaucum* (*Capparaceae*). 1d Migratory beekeeping on trailers making the most of any forage available. Plants pass long dry periods as seeds. They grow quickly after rain has triggered germination and in 15 to 20 days start flowering.

beekeepers to persist in their beekeeping practices and motivated many young people to engage in beekeeping as a part-time or full-time business. Above all, honey production and marketing assists in redistributing money from urban areas, with high standards of living, to rural areas that have a relatively low standard of living.

Currently the country imports annually more than 15,000 metric tonnes of table honey to fill the gap in demand (CDSI 2010). The major source countries are Australia, Turkey, Mexico, Argentina, Pakistan, USA, Germany, and Yemen, listed in order of imported honey volume. Generally the prices paid for imported honeys are much lower than the locally produced honeys. However, neighbouring Yemen supplies Saudi Arabia with the most desired (*Ziziphus*) imported honey, and local consumers are willing to pay up to USD 190 per kilogram (Shenouda, 2004). During the harvesting seasons, besides supermarket buyers, there are honey auction markets where producers bring their honey and sell directly to consumers and dealers.

#### Strong institutional support

##### Research and Development efforts

Different government organizations are giving strong support to the subsector. Currently, the Ministry of Agriculture has been trying to promote the beekeeping industry of the country by



Fig. 2. Showing important bee forage plants, *Ziziphus spin-Christi* mixed with *Acacia* species.

providing technical support and extension services. Moreover, the Ministry of Social Affairs is helping individual and organised beekeepers to develop beekeeping businesses as a source of income generation. Above all, the Food Science and Agriculture Faculty of the King Saudi University has established a strong Bee Research Unit and Bee Chair to assist the beekeeping development efforts of the country.

In the Bee Research Unit various apicultural research activities in honey bee biology, bee products, bee botany, honey bee diseases and bee husbandry techniques are being conducted by senior researchers and postgraduate students with diverse

professional and educational backgrounds. Moreover, currently the Bee Chair has developed and is conducting various apicultural research projects pertinent to local bees and environmental conditions in the areas of bee biology and genetics, honeybee forage and nutrition, honey bee diseases, bee product quality and medicinal properties, bee product marketing and the socio-economic aspects of beekeeping.

The Bee Chair is trying to support beekeepers by organising workshops, training, exhibitions and the production and dissemination of a beekeeping newsletter. There is also an annual international honey exhibition to promote the marketing of bee products and to create a link between producers and buyers.

#### Diverse honey bee plants

Despite long dry periods and short rainfall conditions, Saudi Arabia is rich in floral diversity: nearly 2,250 species of flowering plant have been recorded (Collenette, 1999, Chaudhary, 1999-2001). Many of these plants serve as excellent sources of pollen and nectar for honey bees. Al-Ghamdi (2010) reported more than 300 bee species of trees, shrubs, vines as well as perennial and annual herbs that are important for honey production and are present in different vegetation types. Some of these plants are well-adapted to their habitats by growing and flowering quickly. After a brief rainy period, the vast lowlands, plains, valleys and escarpments become vibrantly green and covered with flowers within a short period of time (Fig. 1).



Fig. 3. A modern apiary in Saudi Arabia



Fig. 4. a Package bees arrive from air cargo in containers of 18 colonies. b the travelling mesh is removed. c, d, e and f, the packages are transferred and established in standard Langstroth hives, April, 2012

The dominant bee plant species of Saudi Arabia include several acacia species (*Acacia albida*, *Acacia asak*, *Acacia ehrenbergiana*, *Acacia etbaica*, *Acacia johnwoodii*, *Acacia oerfota*, *Acacia tortilis*), *Ziziphus mummularia*, *Ziziphus spina christi*, *Phoenix dactylifera*, *Heliotropium arabainense*, *Zilla spinosa*, *Lavandula dentata*, and many others. *Ziziphus* and acacia are the most important and special honey source trees in the country (Fig. 2).

#### Challenges of Beekeeping in Saudi Arabia

Despite the great potential and multiple opportunities for beekeeping in Saudi Arabia, there are also many challenges confronting the industry. Some of these challenges are summarised below.

#### Honey Bee Diseases and Parasites

The occurrence and distribution of honey bee diseases in the country were extensively assessed by Al-Ghamdi (2010). According to this study, *Nosema*, Amoeba, chalkbrood, American Foul Brood, European Foul Brood, *Bacillus alvei*, black queen-cell, acute paralysis, chronic paralysis, *Varroa destructor* and *Braula coeca* were reported to exist in different parts of the country at different rates of infestation (1-30%) in sampled colonies. Among these, *V. destructor* has important negative economic consequences in Saudi Arabia in terms of both its distribution and the levels of infestation. The occurrence and broad

distribution of many honey bee diseases in the country are associated with the annual large-scale importation of package bees from other countries (Fig. 4) and the extensive migratory beekeeping practices.

#### Honey bee pests and predators

According Al-Ghamdi (2010), a wide range of honey bee pests and predators are found in the Kingdom of Saudi Arabia. Many species of wasps, hornets, wax moths, ants, beetles, reptiles and different bee-eater birds are major pests and predators of honey bees. According to this report, bee-eater birds, wasps and wax moths were the most serious threats to the beekeeping industry of the country, both in degree of damage and area of coverage.

#### Importation of different honey bee races

Indigenous honey bee colonies are too scarce and productivity per hive is too low to satisfy the increasing demand for honey in Saudi Arabia. Moreover, the price of a local *A. m. yemenitica* colony (Figs. 5 and 6) is relatively high at USD 100-120 per colony. Because of these factors, the country annually imports around 100,000 *A. m. carnica* and *A. m. lingustica* bee colonies from Egypt and Australia. These races yield more honey per colony and are also relatively easy to handle. The average price of imported package bees is USD 30-40 per colony. However, every year, more than 70% of

the imported colonies perish soon after honey harvest, which may be due to their inability to withstand the long, dry, hot seasonal conditions in the area. As a result beekeepers must start from new package bees every year.

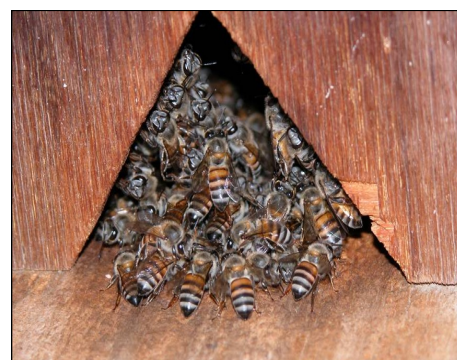


Fig. 5. *Apis mellifera yemenitica* - the local bee.

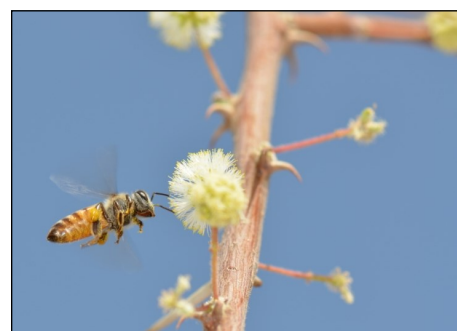


Fig. 6. Local bee on acacia

#### Genetic dilution

The imported honey bees are endangering the genetic resources of the local honey bee populations through the uncontrolled mating of imported drones with local



Fig. 7. *Apis florea* now quite common in Saudi Arabia

queens. Genetic dilution may increase the susceptibility of local bees to various honey bee diseases. Moreover, the importation of bees also introduces

multiple kinds of honey bee diseases and parasites. Therefore, a strong national policy is required to protect the genetic resource of the local bees.

#### Extended dearth periods and shortage of forage

Low erratic rainfall conditions and recurrent droughts strongly affect the bee forage conditions of the country. These long dry periods and the associated shortage of forage contribute significantly to the annual loss of bee colonies in Saudi Arabia.

#### High temperatures and low humidity

In central Saudi Arabia, the temperature can exceed 40°C in the months of June, July and August. During these months, relative humidity falls below 20%. Both high temperatures and low humidity are very detrimental to brood rearing and the survival of honey bee colonies. During these months, many colonies, particularly the imported races, die due to their inability to withstand the extreme weather conditions.

#### Adulteration

There is competition between locally produced and imported honeys. Some producers or sellers illegally sell the

imported honeys as local honeys or mix the imported honeys with local honeys to sell at the higher prices.

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## Apimondia 2013



Statue of Petro Prokopovych, "Father of Ukrainian Beekeeping" in Kyiv.



The Congress opens for registration on Saturday 28<sup>th</sup> September and on the morning of Sunday 29<sup>th</sup> with the Opening Ceremony at 14.00 in the afternoon.

The themes covered in the next four days cover the following areas:

- Apitherapy
- Bee Biology
- Beekeeping Economy
- Bee Health
- Popllination and Bee Flora
- Beekeeping and Rural Development
- Beekeeping Technology and Quality

In addition there are numerous meetings of various transnational working groups.

There are social events every evening, the Closing Ceremony is at 19.00 on Thursday 3<sup>rd</sup> October and the Friday is dedicated to Technical Tours.

**The Api Expo, where IBRA will have Stand C 43, runs in parallel with the lectures - call and see us.**

Details of the exact times can be found on the Apimondia 2013 web site.