STUDY OF MELIFEROUS PLANTS IN THE POGONICI RIVER VALLEY AND IN THE NEIGHBOURING AREA OF BERINI (TIMIŞ COUNTY)

D. C. POPOVICI*, E. CRĂINICEANU*, D. S. BISTREAN, OLIMPIA COLIBAR***

*USAMVBT, Facultatea de Medicină Veterinară, Calea Aradului 119 Timişoara, Jud. Timiş
** USAMVBT, Facultatea de Biologie, Calea Aradului 119 Timişoara, Şcoala Generală Margina, jud. Timiş

Sumary

This paper presents meliferous and poliniferous plants in the period 2000-2006 in the area around Berini (Timis County) on an area of 5 km, including also the forest in the valley of the Pogonici River in the Berini area. The locality is situated in a field area with specific plants, including also water meadow plants, present species being herbaceous bushes and trees. This study presents, besides the list and plants' description, the dynamics of honey productions obtained during the 7 experimental years in different weather conditions and natural changes of floristic (herbal species) composition in the studied territory.

Meliferous and poliniferous plant species, their potential and density play an essential importance in natural bee nutrition, quantity and quality of honey production.

Materials and methods

The study includes data concerning the 2000-2006 period, from a hive garden from Berini and 5 km around the locality. North and North-East lies the Pogăniş water meadow with a discontinuous forest interpolated with hayfields and cultivated fields. In the mentioned period the number of bee family varied between 150 and 250.

To carry on this study we used data and observations concerning the productions obtained in the studied area and the behaviour of honey bees to the plants in the area, studies of phyto-coenological levels performed in 1998 and bibliographical documentation.

Results and discussions

Studying the reference area and the specialised literature, we can say that there are species and families of plants important for the production of honey and pollen:

Cultivated annual plants:

Sunflower *(Helianthus anuus)* is an annual plant from the *Compositae* family, cultivated on large areas. It blooms from the beginning of July until August due to the timed seeding of plots by the landowners. It is resistant to drought. It supplies a honey production of 34-130 kg/ha. It yields 10-20 kg of honey/bee family and a good pollen crop. It is important to honey production, ensuring honey productions in summer and stimulating the families to lay eggs that ensure part of the winter population. It ensures honey productions every year, the cultivated areas varying annually.

Squash *(Cucurbita spp.)* belongs to the *Cucurbitaceae* family. It blooms in summer and autumn. It supplies a honey production of 20-100 kg/ha. It provides support gathering, being important in the period between two gatherings in summer and autumn. It grows in gardens.

Spontaneous herbal plants and perennial plants:

Lamiaceae;

Purple deadnettle *(Lamium purpureum)* and **ground ivy** (*Glecoma hederacea*) bloom in April, like dandelion and fruit trees. It supplies a honey production of 60-70 kg/ha. It supplies the nectar for support together with dandelion in the period between 2 gatherings of the fruit trees and May hawthorn. It is visited also when it rains slowly. It grows in gardens, orchards, one year old wastelands, and in crops of perennial alfalfas and clovers.

Dead nettle *(Lamium maculatum),* **common mother wort** *(Leonurus cardiaca)* bloom from April till September; it grows in gardens. It has a small apicultural share. They are visited mainly in the period between 2 gatherings.

Flumewort *(Corydalis spp.)* (Fam. *Papaveraceae*, perennial herbs). It blooms in March-April for 10 days, overlapping with the blooming period and after goat willow. It supplies a honey production of 10-20 kg/ha. It offers important supporting to gatherings. It grows as patches in leaf-bearing forests on the Pogăniş River banks and dovecote bands.

Dandelion *(Taraxacum officinale)* of the *Compositae* family is a perennial plant. It blooms in April at the same period as *Lamiaceae* species and fruit trees, but in lasts till the end of April. It supplies pollen in the period between 2 gatherings from the fruit trees and May hawthorn. It results in production growths when the temperatures are over 20^{o}C during the day. It supplies a honey production of up to 200 kg/ha. Its inflorescence closes in the second part of the day. It grows on pastures and in crops of perennial alfalfas and clovers.

Legumes produce less pollen, and some produce nectar. The honey has a pale colour and a fine flavour, typical to all the species.

White clover *(Trifolium repens)* is a perennial plant. It blooms about May 10-20, it lasts until the first frost dew falls. In favourable years it supplies production gatherings together with other species of 5-15 kg per 1 bee family. Secretion is conditioned by high humidity (over 75%) and at temperatures over 20^{o}C. It supplies a honey production of 100-250 kg/ha. It usually supplies constant gatherings during

a few weeks. It appears in the studied period in 2004 and 2005. It supplied production gathering, in the drought of 2006, when there was no honey. It grows in pastures and crops of clover and alfalfa in association with gramineae and crop plants. *Trifolium arvense* is present in meadows around the forest, at low density. It had a very good growth in 2004, producing 8-10 kg honey per 1 bee family. It blooms from May 10 to June 20.

Vetch mainly appears as *Vicia cracca* in Mai-July. It grows in patches among gramineae (*Agropyron repens* and others) in meadows and wastelands being an annual plant. *Vicia sordida* has a small share; it supplies extra-floral nectar in May-June, in the same associations. It supplies a honey production of 20-100 kg/ha. It supplies a support gathering, in 2004 and less in 2005; it supplied production gatherings.

Yellow sweet clover *(Melilotus officinalis)* is an annual or biennial Leguminosae plant. It blooms in May till the end of July. It supplies a honey production of 150-300 kg/ha. It is very resistant to drought and supplies support gatherings and even small productions on a long period of time (6-8 weeks). Honey has a vanilla flavour. It grows in association with gramineae and like vetch in 2-3 year-old wastelands, some on hayfields, banks of roads and ditches. It supplied nectar during the entire period, except for 2005 when its density was very low.

Mint *(Mentha spp)*, **woundwort** *(Stachis spp.)* (*Lamiaceae*), **creeping thistle** *(Cirsium arvense),* **thistle** *(Carduus nutans)* (*Compositae*), even though they have good nectar-making potential in the second part of the summer until late autumn (they supply a production of about 60-70 kg/ha), they are present in low densities due to man's influence. Sometimes it supplies support gathering in autumn together with butter and eggs, white clover and Cucurbitaceae.

Butter and eggs *(Linaria vulgaris)* (Fam. Scrophulariaceae, perennial herbaceous) supplies support gathering in September. It grows in hayfields and wastelands in association with gramineae

Meliferous fruit trees and bushes:

Mirobolan *(Prunus cerasifera),* **dovecote** *(P. spinosa)*, **apricot tree** *(P. armeniaca)*, **plum tree** *(P.domestica)*, **sour cherry** *(P. cerasus)* are bushes from the *Rosaceae* family. Its blooming period is between the beginning of April, rarely in March and it lasts 10-15 days, rarely more in cold years. This species supplies a honey production of 25-30 kg/ha. It supplies pollen and support gathering, in warm years it supplies production gatherings of 4-7 kg/bee family. The honey has a pleasant, sometimes almond flavour and brown colour. The year 2004 and partially 2005 supplied bad gatherings because of rains and low temperatures. Dovecote has the highest share in production and surface, creating phyto-coenoses like bands at the forest limit and along some canals.

Apple tree *(Malus silvestris and M. Spp.)*, **pear tree** *(Pirus sativa, P. pyraster)*, **quince tree** *(Gydonia vulgaris)* (Fam. *Rosaceae*) are present in gardens, and blossom in the second half of April. They have low apicultural share.

May hawthorn *(Crategus monogyna, C. Oxyacanta)* (Fam. *Rosaceae*) is a bush that blossoms at the end of April - beginning of May, for 10-15 days, sometimes the last flowers overlap with the first acacia flowers. It supplies a honey production of 40-100 kg/ha. It supplies important honey and pollen gatherings, with growths of 3-5 kg of honey/bee family. The honey has a typical flavour, and a brown-red colour. In 2006 it has not produced honey because of very low temperatures for this time of year. It grows in association with dovecote or isolated in hayfields and wastelands, at the boundary of forests and even under tree canopy.

Meliferous trees

Acacia *(Robinia pseudacacia)* (Fam. *Leguminosae*) blossoms between 5 and 15 May, rarely before, or later with maximum 5 days; the gathering lasts 7-20 days, according to the temperatures in the blossom period. It is sensible to late frost, in 2001-2002 being damaged by frost. It has a big yielding capacity and a positive impact on bee families. It supplies a honey production of 300-1500 kg/ha. It yields 4-8 kg/bee family when we place hives 2 km away from the acacia forest. The honey is almost colourless and has a distinct delicacy, and an appealing flavour; it heavily crystallizes. It occupies an area of 10-12 ha as compact plantations, straps and isolated trees.

Salicaceae

Goat willow *(Salix caprea)* blooms in March before *Pruniferous* plants with 2 weeks and lasts for 7-10 days. It supplies important pollen and nectar gathering (female bushes). It is the first meliferous plant of the year in the studied area and has a big value for the development of families. It grows in flooding areas (especially on canal banks). It supplies a honey production of 150-200 kg/ha

Other willow species *(S. alba, S. triandra, S. fragilis, S. purpurea)* blossom in April and supply abundant pollen gathering, rarely nectar. It supplies a honey production of 100-150 kg/ha. They grow in water meadow areas and other flooding areas.

Other plant species we can mention are: mulbery *(Morus spp.)*, poppy *(Papaver spp.),* black berry *(Rubrus caesius),* sorrel *(Rossa canina,),* corn *(Zea mays)*, other Gramineaes, mallow (Malva spp.), poplar (Populus spp.), elm (Ulmus spp.), ash (Fraxinus spp.) visited by bees for their pollen, especially when they do not have plants that produce also nectar. Poplars are the main propolis producing plants in the area.

Blossoming order: goat willow *(Salix caprea)*, flume wort *(Corydalis spp.),* dandelion *(Taraxacum officinale),* purple deadnettle *(Lamium purpureum)* and ground ivy (*Glecoma hederaceea*), fructiferous trees, may hawthorn *(Crategus monogyna, C. Oxyacanta),* acacia *(Robinia pseudacacia),* wite clover *(Trifolium repens, Trifolium arvense)*,vetch (*Vicia sordida, Vicia cracca),* yellow sweet clover *(Melilotus officinalis),* alfalfa *(Medicago sativa),* sunflower *(Helianthus anuus),* squash *(Cucurbita spp.),* mint *(Mentha spp)*, woundwort *(Stachis spp.)* creeping

thistle *(Cirsium arvense),* thistle *(Carduus nutans),* butter and eggs *(Linaria vulgaris)*

During the 2000-2003 period there was a good development in March-May by the honey obtained from the above mentioned plants, honey profit being of 4-7 kg. 2004 and 2006 were totally unfavourable to gatherings before acacia period because of climatic conditions, 2005 producing an average profit of 2 kg, varying only 0-5 kg to herbaceous plants and May hawthorn because the flowers of fruit trees were affected by rains.

Acacia, except for the 2001-2002 period, when it was damaged and didn't produce nectar, supplies a honey production of 4-8 kg/bee family.

In the period May-June, 2001, after the acacia gathering, the meliferous flora supplied only support gathering during the entire May-June period. In drought years, in June, the honey profit is of 6-12 kg in rainy years (2004 and 2005) the profit was over 20 kg in non-swarming families, especially due to the white clover.

Sunflower yields 10-20 kg of honey, variable from one year to another, which substantially constitutes the honey reserves for wintering.

2005 and 2006, unlike the former period, even in August-September there was a support gathering with 3-5 kg profit.

Annual average honey productions were of 10-14 kg, 2002, 2004, and 2005 being rainy years with yields of 20-25 kg of honey per family.

Conclusions

1. Weather conditions affect honey productions;
2. Meliferous plant species influence honey quality;
3. Meliferous and poleniferous plants present in the area are typical for the field and water meadow areas;
4. In years unfavourable for acacia, in May, there is just a support gathering from other meliferous species;
5. In the last years there were conditions for the appearance of support gathering during autumn periods;
6. The size of honey productions was affected by rainfalls regime, i.e. 10-14 kg in droughty years and 20-25 kg in rainy years.

References

1. **D.S. Bistrean** "Studiul florei şi principalelor asociaţii vegetale din lunca Pogonişului cuprinsă între Otveşti şi Tormac (jud. Timiş)", lucrare de diplomă; 1998
2. **M. Bura, Silvia Pătruică** – „Nutriția şi alimentația albinelor", 2003, Editura Agroprint, Timişoara, 2003;
3. **I. V. Cîrnu** – „Flora meliferă", Editura Ceres, Bucureşti, 1980.