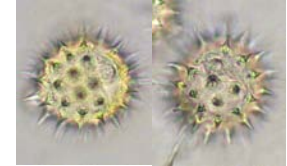


Floral origin and chemical characteristics of the honey bee pollen loads in western central France

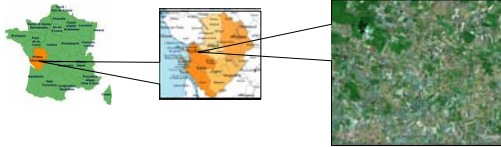
MATEESCU, C₁; ODOUX, J-F₂; FEUILLET, D₃, AUPINEL, P₂; LAMY, H₂; MOREAU, N₃; SPULBER₁, R; ROUCHER, L₂; SOUCHE, T₃

1. Institutul de Cercetare-Dezvoltare pentru Apicultură (ICDA) – BUCURESTI (Romania).
2. Unité expérimentale Entomologie - INRA du Magneraud - 17700 SURGÈRES (France).
3. Unité expérimentale EASM - INRA du Magneraud - 17700 SURGÈRES (France).



sunflower pollen

Contact: jean-francois.odoux@magneraud.inra.fr



The aim

Floral species present component variations in their pollen. This study deals with the evolution of the honeybees collected pollen during a whole year period in the same location. We were mostly interested in the composition of multifloral pollen samples.

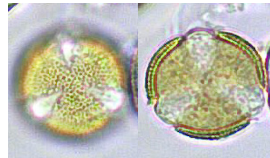
Palynological results

January to December : 76 samples

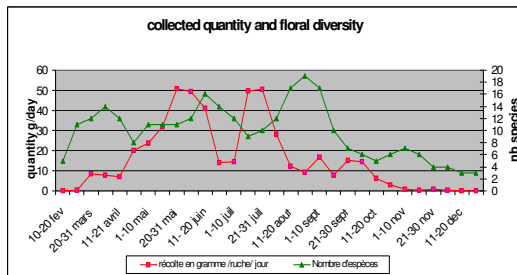
→ 97 different present

→ high amounts of *Helianthus*, *Zea*, *Sinapis*, *Veronica*, rapeseed pollen *Rubus*, *Papaver*, *Hedera*, and *Acer*.

Higher incidence for *Sinapis*, *Chicorium*, Rosaceae, and *Reseda*.

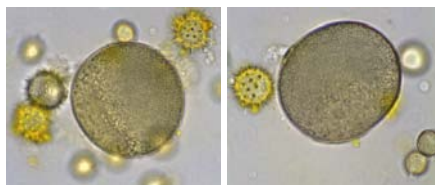


The respective cropped areas in a 3 km radius were measured for melliferous crops.



Identification of pollen using the laboratory's internet botanical and palynological database

<http://www.poitou-charentes.inra.fr/entomologie>



maize pollen

References

- Feuillet, D., Odoux, J.F., Mateescu, C., Aupinel, P., Lamy, H., Moreau, N., Roucher, L., Souché, T., 2008. Evolution floristique et physico-chimique des pollens récoltés au cours de l'année 2006 sur le site de l'INRA du Magneraud. Bulletin Technique Apicole 35 (1), 20-26.
- Poissonnet, T., Boyer, P., Odoux, J.-F., Fougeroux, A., Lecomte, P., 2007. Jachère "entomofaune pollinisatrice" en Montagne de Reims. Bulletin Technique Apicole 34, 17-32. Decourtye, A.; Tisseur, M.; 2008. La gestion des jachères florales en faveur de l'abeille domestique. 38ème Congrès du Groupement Français des Pesticides, Brest, 21-23 mai.
- Louveau, J.; Maurizio, A.; Vorwohl, G. 1978. Methods of melissopalynology. Bee World, 59:139-157.
- Odoux, JF; Lamy, H; Aupinel, P. 2004. L'abeille récolte t-elle du pollen de maïs et de tournesol ? La Santé de l'Abeille 201 :187-193.

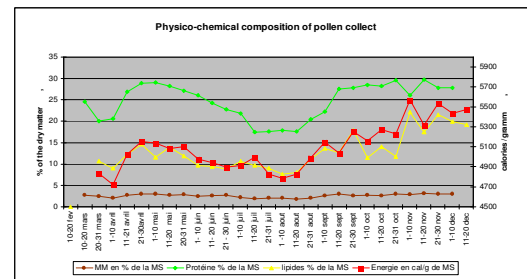
Experimental design

Pollen samples were collected all along the year 2006 twice a week on ten experimental bee hives located in Western-Central France.

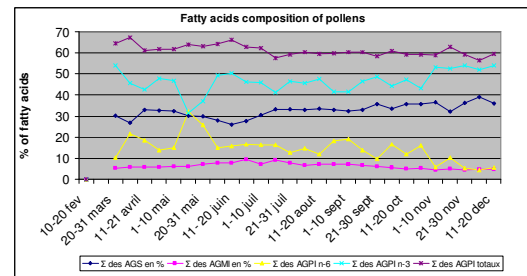
The mixed harvest was weight and stored at 18 °C, until analysis.

Palynological analysis: Louveaux method (1978) with floral species volume assessment.

Physico-chemical analysis: Dry matter, energy, glucids, proteins, lipids, fatty acids, minerals.



In this experiment the lowest protein content is seen during the *Zea* bloom period, to increase again in autumn. Lipids are the constituents showing the highest range of variation between the lowest and the highest contents, and are very well correlated to the energetic value. The main saturated fatty acid is the palmitic acid. The poly-unsaturated fatty-acids are high and dominated by the linoleic acid, depending of the cruciferous harvest.



Conclusion

The **maize** crops and the cruciferous seem to have the greater impact on the pollen quality. **Mustards** and rapeseed influence on fatty acids, whereas **Papaver** and **Cornus** afford good quality and large amounts. Here floral diversity does not guarantee a better pollen quality. The consequences of a 40-days period of a poor supply in the middle of the summer should be investigated.

This work was supported by grants from SPE INRA Department and the PAI Ministère des Affaires Etrangères