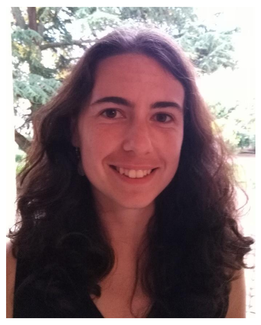

An alternative alfalfa management: additive resources for pollinators (APILUZ Program)

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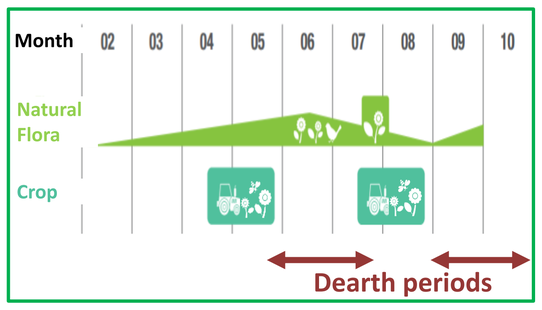
Introduction

In French agricultural areas, we notice dearth periods in which no significant melliferous resources are available for pollinators (see opposite). The lack of food resources is a main cause of decline pollinating insects. That's why practical solutions have to be developed in order to enhance pollinators and to maintain pollination ecosystem services.
The ***APILUZ program*** aims to test an alternative management of alfalfa (produced for dehydrated alfalfa).
BECAUSE, alfalfa produces nectar, it is cultivated on vast areas and it has the abilities to flower several times in the season.
And CURRENTLY, Alfalfa is usually cut before flowering, except once a year, what reduces its potential to feed pollinators.



Food sources for pollinators on agricultural areas

Research question

- **Are non-harvested strips of alfalfa an additional food resource for wild pollinators and honeybees ?**
- **Is this alternative management compatible with agricultural production ?**

Protocol

Monitoring was carried every two weeks from Mid-May 2015 to Mid-September 2015 **on the strips** and on the parcels **out of the strips.**

Vegetation survey on parcels:
- Flowering intensity: alfalfa and weeds
- Weed development

Pollinator visitations
- Diversity and abundance of hymenoptera, diptera, lepidoptera.

Observations along transects during 10 min.

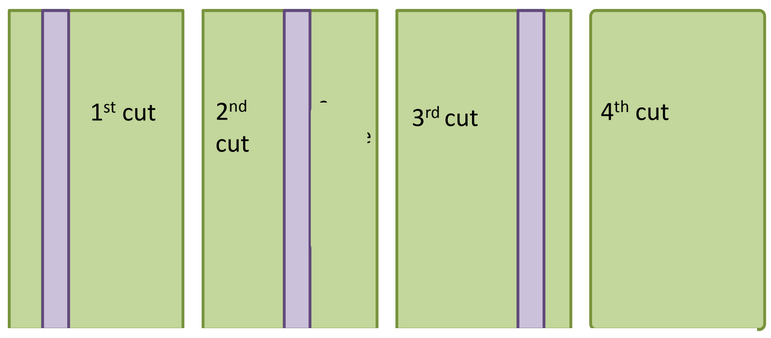
Apiary monitoring:
- Colony development: using beehive scales
- Honey production

Alfalfa production
- Quality of alfalfa harvest

APILUZ, an example of a cooperation on an agricultural area between :
- Alfalfa industries
- Alfalfa producers
- Beekeepers
- Environmental associations

Experimental design

APILUZ program takes place in the county of Marne (France). It consists in keeping on parcels a 6m-wide strip of alfalfa to let the plants flower. At each mowing date, a new strip is non-harvested and the former strip is cut.



An experimental field over the season ; in violet: a non-harvested strip

An example of a non-cut strip on a alfalfa field

➔ A non-cut strip : 30 acres in average

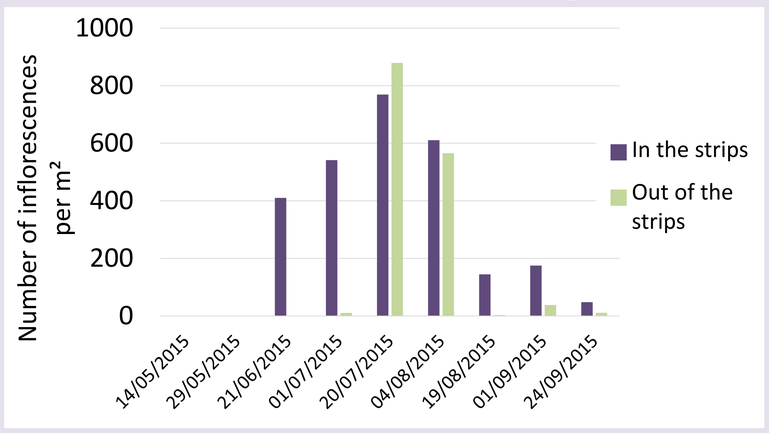
➔ Total surface area of non-cut alfalfa strips : 2.7 ha

An experimental site
- 9 fields with non-cut strips
- 2 apiaries

A control site
- 3 fields without non-cut strips
- 1 apiary

Results

Alfalfa flowering



Usual practice

Mid-July ⟷ Mid-August

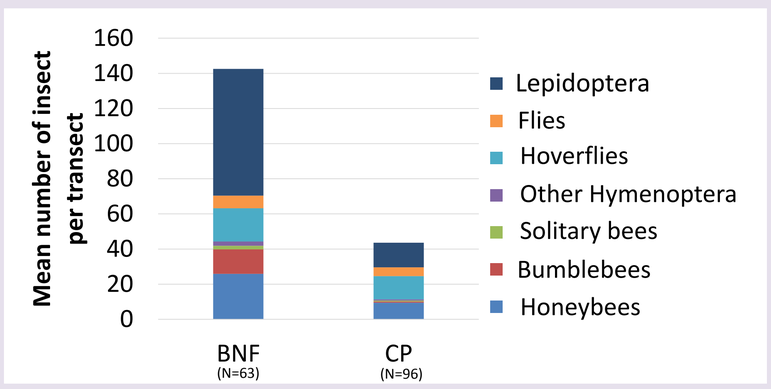
Alternative management « Apiluz »

Mid-June → Mid-September

Alfalfa **flowering intensity in strips is more than twice high compared to out of the strips over the season**

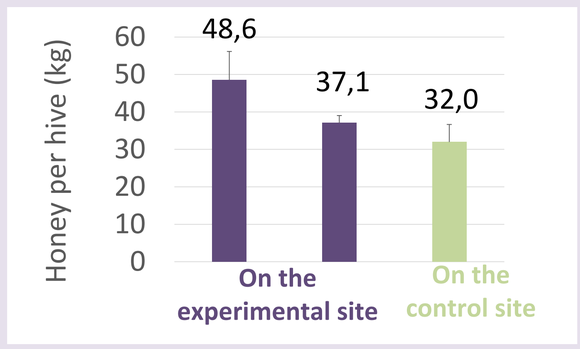
Alfalfa flowering in non-cut strips lead to an **extension of the flowering time from 1 to 3 month.** The dearth periods can be reduced.

Pollinator visitation



Non-cut strips of alfalfa offer food to a **diversity of pollinators**.
Were significantly more abundant on non-cut strips: ***Honeybees (x2.5), bumblebees (x10), solitary bees (x3.5) and butterflies(5.5)***.

Honeybee development



One of the apiaries on the experimental site had ***significantly a higher honey production***.
Alfalfa strips contribute to a good dynamic of honeybee colonies just before alfalfa honeyflow.
The evolution of the colony weight was similar during the honeyflow, but ***the apiary in the control site gained weight later.***

Weed development

The first year of experimentation, alfalfa strips had more weeds, because it was twice in the season at the same place, and on the field edges.
Considering this observation, the location of the strips on fields was modified (see above the experimental design): so, ***weed population is similar in and out of the strips***

Alfalfa quality

Non-cut strips have a lower nutritive quality because alfalfa grow more. They have therefore to be mixed with the harvest of the whole field to have an acceptable quality by the alfalfa industries.

Conclusion

APILUZ is the example of a successful approach at a regional scale: a collaborative work which benefits to agriculture, beekeeping and environment.

Partnerships

Acknowledgements