
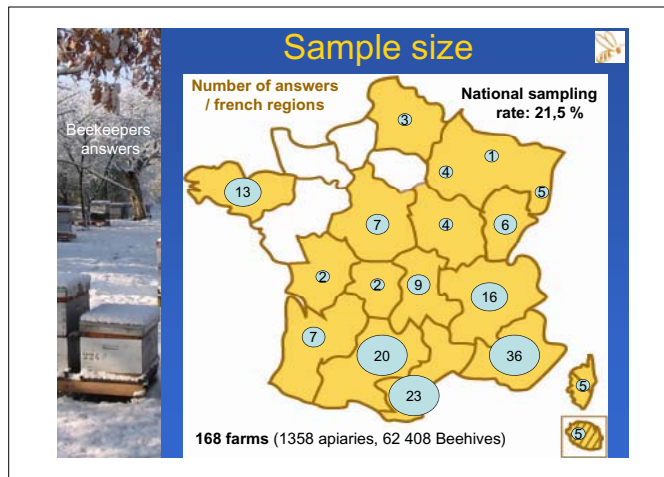


ITSAP survey program

Centre National du Développement Apicole
Assessment of colony losses during winter 2007/2008 and 2008/2009

Allier F., Holzmann C., Britten V., Jourdan, Jourdan P., Vallon J.

FranceAgriMer  Fabrice Allier – APIMONDIA in Montpellier – 18/09/2009

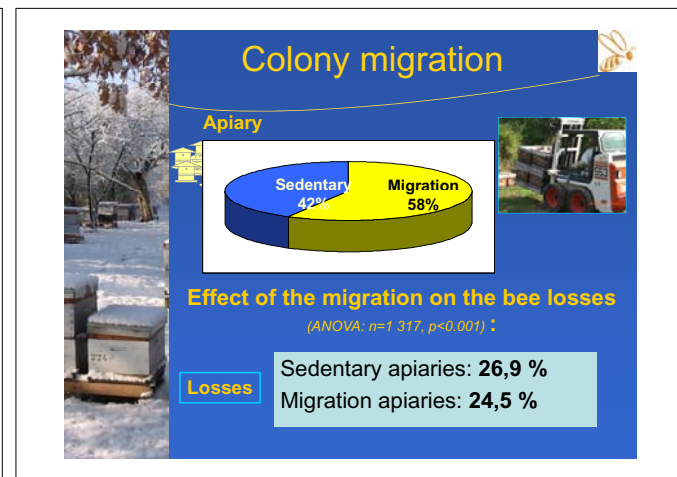
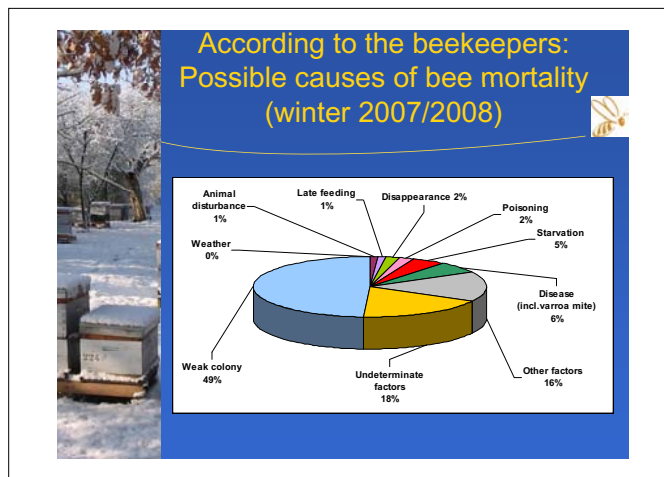
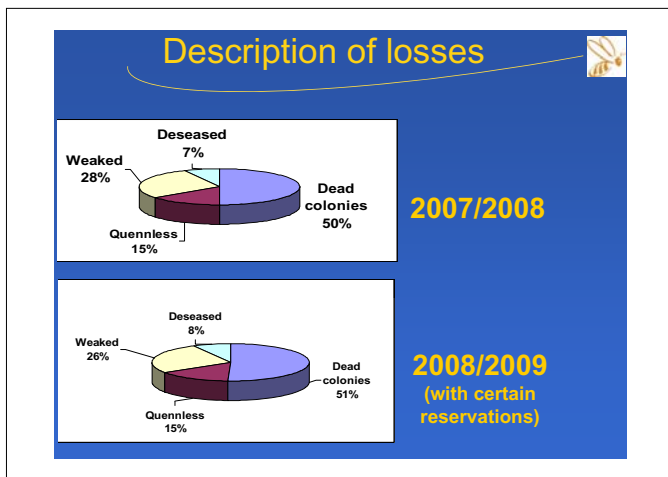


Rate of colony losses during winter

$$\text{Rate of losses} = \frac{\text{Dead col.} + \text{Diseased col.} + \text{Weak col.} + \text{Queenless col.}}{\text{Nombre total de colonies}}$$

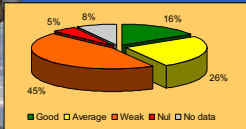
2007/2008: 29,35 % IC_{95%} = [26% - 32%] (n=168 farms)

2008/2009: 23,3 % IC_{95%} = [21% - 25%] (n=166 farms)
(national rate with weighting of the farm number per region)



Assessment of the last harvest

Last target harvest



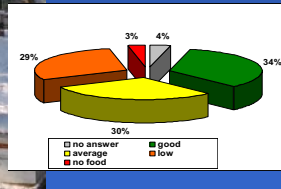
Half of the apiaries got a quantity of the last harvest empty to low

Effect of the quantity of the last harvest on **bee colony losses**
(ANOVA: $n=1213$; $p<0.0001$)

Good quantity : 19.7 %
Average quantity : 24.2 %
Low quantity : 27.4 %
No quantity : 29.8 %

State of food supplies before winter feeding

State of food supplies



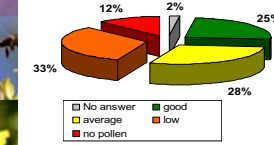
Storage before wintering was declared too low for 32% of the apiaries

Effect of the food supplies state on **bee colony losses**
(ANOVA: $n=1312$; $p<0.0001$)

Good supply : 22 %
Average supply : 23 %
Low supply : 30.6%
No supply : 41.4 %

Ressources availability effect on bee colony losses (Pollen)

Pollen availability



Bee colony losses

Good : 21 %
Average : 22.8 %
Low : 28.9 %
No : 28.6 %

(ANOVA $n= 1333$; $p<0,0001$)

For 45% of the apiaries, the pollen availability was described low or no pollen

Colony strength estimation before wintering 07/08

Colony strength effect on bee colony losses

(ANOVA $n= 1350$ $p<0.0001$)

Bee colony losses

Good strength : 19.6 % +/- 1.1%
Average strength : 26.2 % +/- 1.4%
Low strength : 34.7 % +/- 1.9%

Varroa mite infestation

Varroa mite infestation effect on the bee colony losses

(ANOVA $n= 1333$ $p<0.0001$)

Bee colony losses

High infestation : 27.6 % +/- 1.5%
Average infestation : 24.1 % +/- 1.4%
Low infestation : 23.2 % +/- 1.6%