

# **SURVEY ON BEEKEEPING MANAGEMENT PRACTICES IN SOUTHWESTERN QUEBEC**

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Interviewer name: \_\_\_\_\_ Date of the interview: \_\_\_\_\_

Beekeeper name: \_\_\_\_\_

Complete address: \_\_\_\_\_

Email: \_\_\_\_\_

**Collected data is treated confidentially.**

## A - DATA ON BEEKEEPING MANAGEMENT

**1. Regarding your business**

- a. How do you describe your occupation as a beekeeper? (choose 1 answer)

Professional That is to say that you live only from beekeeping;	<input type="checkbox"/>
Semi-professional That is to say that you live from beekeeping and a second occupation;	<input type="checkbox"/>
Hobbyist That is to say that beekeeping is a hobby.	<input type="checkbox"/>

- b. In which region were the majority of your apiaries located in 2017? (choose 1 answer)

Abitibi-Témiscamingue	<input type="checkbox"/>	Estrie	<input type="checkbox"/>	Mauricie	<input type="checkbox"/>
Bas-Saint-Laurent	<input type="checkbox"/>	Gaspésie	<input type="checkbox"/>	Montérégie	<input type="checkbox"/>
Québec-Charlevoix	<input type="checkbox"/>	Lanaudière	<input type="checkbox"/>	Outaouais	<input type="checkbox"/>
Chaudière-Appalaches	<input type="checkbox"/>	Laurentides	<input type="checkbox"/>	Saguenay-Lac-Saint-Jean	<input type="checkbox"/>
Centre-du-Québec	<input type="checkbox"/>	Laval-Montréal	<input type="checkbox"/>	Other region:	<input type="checkbox"/>

- c. Did you market the following activities in 2017? If yes:

- How many kilograms were produced last year in total?
- How many colonies have been used for this activity?

Activity	Yes	No	Nb of Kg	Nb of colonies
Blueberry pollination	<input type="checkbox"/>	<input type="checkbox"/>		
Cranberry pollination	<input type="checkbox"/>	<input type="checkbox"/>		
Other pollination	<input type="checkbox"/>	<input type="checkbox"/>		
Honey production	<input type="checkbox"/>	<input type="checkbox"/>		

Activity	Yes	No	Nb of Kg	Nb of colonies
Pollen production	<input type="checkbox"/>	<input type="checkbox"/>		
Wax production	<input type="checkbox"/>	<input type="checkbox"/>		
Royal jelly production	<input type="checkbox"/>	<input type="checkbox"/>		
Propolis production	<input type="checkbox"/>	<input type="checkbox"/>		
Sale of queens	<input type="checkbox"/>	<input type="checkbox"/>		
Sale of bees (i.e.: nuclei)	<input type="checkbox"/>	<input type="checkbox"/>		

d. During the summer season, how often do you inspect your hives?

**Note:** Enter the time between two inspections (q), followed by the unit (i.e.: q1day, q3sem, q1month, q3month, etc.)

q \_\_\_\_\_

i. How many hives were open on average during these inspections?

\_\_\_\_\_ mature colonies

e. In 2017, did you keep a register listing the purchase and sale of bees? (choose 1 answer)

<input type="checkbox"/> Yes	<input type="checkbox"/> No	<input type="checkbox"/> No purchase or sale
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f. In 2017, did you keep a register listing the movements of your hives? (choose 1 answer)

<input type="checkbox"/> Yes	<input type="checkbox"/> No	<input type="checkbox"/> No movement
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g. Have you offered the following services (paid or free) to other beekeepers?

Service	Yes	No
Loan of beekeeping equipment	<input type="checkbox"/>	<input type="checkbox"/>
Transport of hives	<input type="checkbox"/>	<input type="checkbox"/>
Honey extraction in your facilities	<input type="checkbox"/>	<input type="checkbox"/>
Wax melting in your facilities	<input type="checkbox"/>	<input type="checkbox"/>
Mentoring/Training	<input type="checkbox"/>	<input type="checkbox"/>
Other:		

h. Do you have insurance for winter mortality of your hives?

<input type="checkbox"/> Yes	<input type="checkbox"/> No
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**2. Regarding production**

- a. What is the total number of mature wintering colonies owned by your company as of today (do not include nuclei)?

\_\_\_\_\_ mature colonies

- b. What is the total number of apiaries where you have settled colonies in 2017?

\_\_\_\_\_ apiaries

- c. For the 2017 season, did you make divide your colonies, that is to say did you practice any form of artificial reproduction from the colonies belonging to you?

<input type="checkbox"/> Yes	<input type="checkbox"/> No
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- d. Except for queens, did you buy bees for the 2017 season (pack of bees, brood frames, nuclei or hives)?

<input type="checkbox"/> Yes	<input type="checkbox"/> No
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- i. If so, where did these bees come from? (several answers possible)

Québec	<input type="checkbox"/>
Ontario	<input type="checkbox"/>
Nouveau-Brunswick	<input type="checkbox"/>
Other Canadian province	<input type="checkbox"/>
Other: _____	<input type="checkbox"/>

**3. Regarding preparation for wintering**

- a. What kind of feeding did you use in preparation for wintering? (several answers possible)

Individual	<input type="checkbox"/>
In barrel / group	<input type="checkbox"/>
Honey	<input type="checkbox"/>
None	<input type="checkbox"/>

- b. At the time of winter preparation and wintering in the fall of 2017, how many colonies were eliminated or reunited to others because they were considered unsustainable for overwintering?

\_\_\_\_\_ eliminated or united colonies

B - DATA ON HEALTH MANAGEMENT

**We would like to remind you that this survey is confidential and that the information collected will only be used in an aggregated format, in a research context, and will not result in any intervention on your apiaries. Please answer the questions honestly.**

**1. Control of varroosis**

- a. To the best of your knowledge, is there currently or has there been varroosis in your apiaries this year?

<input type="checkbox"/> Yes	<input type="checkbox"/> No
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- b. Varroosis screening strategy:

*See the document "Question 1b" for additional questions when the answer is "yes".*

- i. In 2017, did you use the natural mite fall on a sticky cardboard to detect varroosis in your colonies?

<input type="checkbox"/> Yes	<input type="checkbox"/> No
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- ii. In 2017, did you use the total mite fall on a sticky cardboard after miticide application to detect varroosis in your colonies?

<input type="checkbox"/> Yes	<input type="checkbox"/> No
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- iii. In 2017, did you use alcohol wash to detect varroosis in your colonies?

<input type="checkbox"/> Yes	<input type="checkbox"/> No
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- iv. In 2017, did you use the drone cells uncapping to detect varroosis in your colonies?

<input type="checkbox"/> Yes	<input type="checkbox"/> No
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- v. In 2017, did you use the visual examination of adult bees to detect varroosis in your colonies?

<input type="checkbox"/> Yes	<input type="checkbox"/> No
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- vi. In 2017, did you use any other method (i.e., powdered sugar or ether roll) to detect varroosis in your colonies?

<input type="checkbox"/> Yes	<input type="checkbox"/> No
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- If yes, specify which method(s): \_\_\_\_\_

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c. Biotechnological *Varroa* Control Strategies:

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**See the document "Question 1c" for additional questions when the answer is "yes".**

- i. In 2017, did you put a mesh floor in your hives to limit the spread of *Varroa* in your colonies?

<input type="checkbox"/> Yes	<input type="checkbox"/> No
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- ii. In 2017, did you practice the manual destruction of drone cells naturally built in the hive to limit the spread of *Varroa* in your colonies?

<input type="checkbox"/> Yes	<input type="checkbox"/> No
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- iii. In 2017, did you practice trapping in a frame of drone (green frame put in the freezer) to limit the spread of *Varroa* in your colonies?

<input type="checkbox"/> Yes	<input type="checkbox"/> No
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- iv. In 2017, did you use any other method (excluding medicinal products) to limit the spread of *Varroa* in your colonies (i.e. genetic selection, interruption of brood production, division of colonies in order to reduce the burden of infestation)?

<input type="checkbox"/> Yes	<input type="checkbox"/> No
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- If yes, specify which method(s): \_\_\_\_\_
- 

d. Medicinal strategies for control of *Varroa*:

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**See the document "Question 1d" for additional questions when the answer is "yes".**

- i. In 2017, did you use Apistan<sup>®</sup> (Fluvalinate) to control varroosis?

<input type="checkbox"/> Yes	<input type="checkbox"/> No
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- ii. In 2017, did you use Apivar<sup>®</sup> (Amitraz) to control varroosis?

<input type="checkbox"/> Yes	<input type="checkbox"/> No
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- iii. In 2017, did you use CheckMite+<sup>®</sup> (Coumaphos) to control varroosis?

<input type="checkbox"/> Yes	<input type="checkbox"/> No
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iv. In 2017, did you use Thymovar<sup>®</sup> (Thymol) to control varroosis?

<input type="checkbox"/> Yes	<input type="checkbox"/> No
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v. In 2017, did you use « flash » treatments (65% formic acid) to control varroosis?

<input type="checkbox"/> Yes	<input type="checkbox"/> No
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- If yes, what dose was applied?

\_\_\_\_\_

vi. In 2017, did you use the product Mite wipe<sup>®</sup> (65% formic acid pads) to control varroosis?

<input type="checkbox"/> Yes	<input type="checkbox"/> No
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vii. In 2017, did you use the product Mite away<sup>®</sup> (quick strips or MAQS), a 47% formic acid compound, to control varroosis?

<input type="checkbox"/> Yes	<input type="checkbox"/> No
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viii. In 2017, did you use oxalic acid to control varroosis?

<input type="checkbox"/> Yes	<input type="checkbox"/> No
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- If yes, which method of application was used?

<input type="checkbox"/> Dripping	<input type="checkbox"/> Sublimation	<input type="checkbox"/> Vaporization
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ix. In 2017, did you use any other chemical or medicinal product to control varroosis?

<input type="checkbox"/> Yes	<input type="checkbox"/> No
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- If yes, specify which method(s): \_\_\_\_\_  
\_\_\_\_\_

## 2. Control of foulbrood

a. To the best of your knowledge, is there currently or has there been European foulbrood in your apiaries in 2017?

Did you have laboratory tests done?

If yes, what was the result?

Presence of European foulbrood (suspected or confirmed)	Laboratory tests	Result of laboratory analyzes	
<input type="checkbox"/> Yes	<input type="checkbox"/> Yes	<input type="checkbox"/> Positive	<input type="checkbox"/> Negative
<input type="checkbox"/> No	<input type="checkbox"/> No		

b. To the best of your knowledge, is there currently or has there been American foulbrood in your apiaries in 2017?

Did you have laboratory tests done?

If yes, what was the result?

Presence of European foulbrood (suspected or confirmed)	Laboratory tests	Result of laboratory analyzes	
<input type="checkbox"/> Yes	<input type="checkbox"/> Yes	<input type="checkbox"/> Positive	<input type="checkbox"/> Negative
<input type="checkbox"/> No	<input type="checkbox"/> No		

c. Diagnostic strategy and screening of foulbrood:

i. In 2017, did you inspect the brood systematically (that is, on a predetermined schedule) to detect signs of foulbrood (European or American)?

<input type="checkbox"/> Yes	<input type="checkbox"/> No
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**If yes:**

• During which month(s) of the year did you inspect the brood?

<b>JAN</b>	<b>FEB</b>	<b>MAR</b>	<b>APR</b>	<b>MAY</b>	<b>JUN</b>	<b>JUL</b>	<b>AUG</b>	<b>SEP</b>	<b>OCT</b>	<b>NOV</b>	<b>DEC</b>
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

• How often did you inspect the brood?

**Note:** Enter the time between two inspections (q), followed by the unit (i.e.: q1day, q3sem, q1month, q3month, etc.)

q \_\_\_\_\_

• How many brood frames did you observe when inspecting a colony?

\_\_\_\_\_ frames

• Did you use this method on all your colonies in all your apiaries?

<input type="checkbox"/> Oui	<input type="checkbox"/> Non
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**If no, answer the following questions:**



- What criteria did you use to conduct the inspection among the following? (many possible responses)

Criteria	Yes	No	If yes
Colony weakness	<input type="checkbox"/>	<input type="checkbox"/>	
The degree of risk (i.e. location, activities, history)	<input type="checkbox"/>	<input type="checkbox"/>	
At the time of division / creation of nuclei	<input type="checkbox"/>	<input type="checkbox"/>	
Fixed number per apiary	<input type="checkbox"/>	<input type="checkbox"/>	
Other	<input type="checkbox"/>	<input type="checkbox"/>	Specify:

- When a colony met the criteria(on) chosen, did you inspect only the targeted colony, several colonies in the same apiary or the entire apiary? (choose 1 answer)

<input type="checkbox"/> Targeted colony	<input type="checkbox"/> Several colonies	<input type="checkbox"/> Apiary
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d. Medicinal strategies of foulbrood control:

**See the document "Question 2d" for additional questions when the answer is "yes".**

- i. In 2017, did you use oxytetracycline in your hives?

<input type="checkbox"/> Yes	<input type="checkbox"/> No
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- ii. In 2017, did you use tylosin in your hives?

<input type="checkbox"/> Yes	<input type="checkbox"/> No
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b. Mechanical strategies of foulbrood control:

- i. In 2017, did you use the following mechanical strategies in case (suspected or confirmed) of European foulbrood in your apiaries? (many possible responses)

Strategy	Yes	No
Elimination of positive brood frames	<input type="checkbox"/>	<input type="checkbox"/>
Elimination of positive colonies	<input type="checkbox"/>	<input type="checkbox"/>
Elimination of apiaries containing positive colonies	<input type="checkbox"/>	<input type="checkbox"/>
Transfer (double or single) of positive colonies to a new hive	<input type="checkbox"/>	<input type="checkbox"/>

Strategy	Yes	No
Disinfection of contaminated equipment (frames, frame lifters, etc.)	<input type="checkbox"/>	<input type="checkbox"/>
Destruction of contaminated equipment (frames, frame lifters, etc.)	<input type="checkbox"/>	<input type="checkbox"/>

- ii. In 2017, did you use the following mechanical strategies in case (suspected or confirmed) of American foulbrood in your apiaries? (many possible responses)

Strategy	Yes	No
Elimination of positive brood frames	<input type="checkbox"/>	<input type="checkbox"/>
Elimination of positive colonies	<input type="checkbox"/>	<input type="checkbox"/>
Elimination of apiaries containing positive colonies	<input type="checkbox"/>	<input type="checkbox"/>
Transfer (double or single) of positive colonies to a new hive	<input type="checkbox"/>	<input type="checkbox"/>
Disinfection of contaminated equipment (frames, frame lifters, etc.)	<input type="checkbox"/>	<input type="checkbox"/>
Destruction of contaminated equipment (frames, frame lifters, etc.)	<input type="checkbox"/>	<input type="checkbox"/>

- iii. Have you used other strategies (i.e. queen change) to control foulbrood in 2017?

<input type="checkbox"/> Yes	<input type="checkbox"/> No
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- If yes, specify which method(s): \_\_\_\_\_

### 3. Control of nosema

- a. To the best of your knowledge, is there currently or has there been nosemosis in your apiaries in 2017? Have you analyzed or had samples analyzed? If yes, what were the results?

Presence of nosemosis (suspected or confirmed)	Laboratory tests	Result of laboratory analyzes	
<input type="checkbox"/> Yes	<input type="checkbox"/> Yes: in laboratory	<input type="checkbox"/> Positive	<input type="checkbox"/> Negative
<input type="checkbox"/> No	<input type="checkbox"/> Yes: home test (microscope)	<input type="checkbox"/> Positive	<input type="checkbox"/> Negative
	<input type="checkbox"/> No		

- b. Diagnosis strategy and detection of nosemosis:

***If laboratory tests have been used:***

- During which month(s) of the year did you use the laboratory tests?

JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

- Did you analyze all your colonies in all your apiaries?

<input type="checkbox"/> Yes	<input type="checkbox"/> No
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**If no, answer the following questions:**

- What criteria did you use to perform an analysis among the following? (several answers possible)

Criteria	Yes	No	If yes
Colony weakness	<input type="checkbox"/>	<input type="checkbox"/>	
The degree of risk (i.e. location, activities, history)	<input type="checkbox"/>	<input type="checkbox"/>	
Other	<input type="checkbox"/>	<input type="checkbox"/>	Specify:

- When a colony met the criteria(on) chosen, did you perform analyzes only on the targeted colony, on several colonies in the same apiary or on the whole apiary? (choose 1 answer)

<input type="checkbox"/> Targeted colony	<input type="checkbox"/> Several colonies	<input type="checkbox"/> Apiary
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c. Medicinal strategies for controlling noserosis:

- i. Did you use fumagillin to control nosema in 2017?

<input type="checkbox"/> Yes	<input type="checkbox"/> No
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**If yes:**

- Please list all the dates you applied fumagillin?  
**Note:** If you do not know the exact date, give the most accurate time possible.
  - How many colonies were treated at each date?
  - Was the drug administered in a syrup, by dripping or spraying?

Date	Nb of colonies	Syrup	Dripping	Spraying
		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

- Did you use this treatment on all your colonies in all your apiaries?

<input type="checkbox"/> Yes	<input type="checkbox"/> No
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*If no, answer the following questions:*

- What criteria did you use to apply this treatment among the following? (several answers possible)

Criteria	Yes	No	If yes
High spore count	<input type="checkbox"/>	<input type="checkbox"/>	Nb de spores/abeille requis pour appliquer la méthode :
Colony weakness	<input type="checkbox"/>	<input type="checkbox"/>	
The degree of risk (i.e. location, activities, history)	<input type="checkbox"/>	<input type="checkbox"/>	
Other	<input type="checkbox"/>	<input type="checkbox"/>	Spécifiez :

- When a colony met the criteria(on) chosen, did you apply the treatment only to the targeted colony, to several colonies in the same apiary or to the whole apiary? (choose 1 answer)

<input type="checkbox"/> Targeted colony	<input type="checkbox"/> Several colonies	<input type="checkbox"/> Apiary
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- What percentage of your colonies were treated in 2017?

d. Biological strategies for controlling nosemosis:

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- iv. Have you used other strategies (i.e. change of diet, change of queen) to control nosemosis in 2017?

<input type="checkbox"/> Yes	<input type="checkbox"/> No
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- If yes, specify which strategy(ies): \_\_\_\_\_

\_\_\_\_\_

1. b) Varroosis screening strategy

Question:

- i.
- ii.
- iii.
- iv.
- v.
- vi.

- During which month(s) of the year did you apply this method?

JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

- How often did you apply this screening method in your colonies?

**Note:** Enter the time between two screenings (q), followed by the unit (i.e.: q1day, q3sem, q1month, q3month, etc.)

q \_\_\_\_\_

- What percentage of colonies were screened using this method?

\_\_\_\_\_ %

1. c) Biotechnological *Varroa* Control Strategies

Question:

- i.     ii.     iii.     iv.

- During which month(s) of the year did you apply this method?  
**For the mesh floor**, the question rather is: what month(s) was the tray removed?

JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

- Did you use this method on all your colonies in all your apiaries?

<input type="checkbox"/> Yes	<input type="checkbox"/> No
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**If no, answer the following questions (except for the mesh floor):**

- What criteria did you use to apply this method among the following? (several answers possible)

Criteria	Yes	No	If yes
Quantity of varroa mites naturally fallen on sticky cardboard	<input type="checkbox"/>	<input type="checkbox"/>	
Quantity of varroa mites fallen on sticky cardboard after miticide application	<input type="checkbox"/>	<input type="checkbox"/>	
Quantity of varroa mites in alcohol wash	<input type="checkbox"/>	<input type="checkbox"/>	Nb of mites for treatment (i.e. 5 varroas/100 bees):
Quantity of varroa mites in drone cells	<input type="checkbox"/>	<input type="checkbox"/>	
Quantity of varroa mites on adult bees	<input type="checkbox"/>	<input type="checkbox"/>	
Colony weakness	<input type="checkbox"/>	<input type="checkbox"/>	
The degree of risk (i.e. location, activities, history)	<input type="checkbox"/>	<input type="checkbox"/>	
Other	<input type="checkbox"/>	<input type="checkbox"/>	Specify:

- When a colony met the criteria(on) chosen, did you inspect only the targeted colony, several colonies in the same apiary or the entire apiary? (choose 1 answer)

<input type="checkbox"/> Targeted colony	<input type="checkbox"/> Several colonies	<input type="checkbox"/> Apiary
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1. d) Medicinal strategies for control of *Varroa*

2 pages

Question:

- |                               |                              |                                |
|-------------------------------|------------------------------|--------------------------------|
| <input type="checkbox"/> i.   | <input type="checkbox"/> iv. | <input type="checkbox"/> vii.  |
| <input type="checkbox"/> ii.  | <input type="checkbox"/> v.  | <input type="checkbox"/> viii. |
| <input type="checkbox"/> iii. | <input type="checkbox"/> vi. | <input type="checkbox"/> ix.   |

- Please list all the dates you applied this treatment?  
**Note:** *If you do not know the exact date, give the most accurate time possible.*
  - How many colonies were treated at each date?

Date	Nb of colonies

- Did you use this treatment on all your colonies in all your apiaries?

<input type="checkbox"/> Yes	<input type="checkbox"/> No
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**If no, answer the following questions (except for the mesh floor):**

- What criteria did you use to apply this treatment among the following? (several answers possible)

Criteria	Yes	No	If yes
Quantity of varroa mites naturally fallen on sticky cardboard	<input type="checkbox"/>	<input type="checkbox"/>	Nb of mites for treatment (i.e. 10 varroas/1 month):
Quantity of varroa mites in alcohol wash	<input type="checkbox"/>	<input type="checkbox"/>	Nb of mites for treatment (i.e. 5 varroas/100 bees):
Quantity of varroa mites in drone cells	<input type="checkbox"/>	<input type="checkbox"/>	
Quantity of varroa mites on adult bees	<input type="checkbox"/>	<input type="checkbox"/>	
Colony weakness	<input type="checkbox"/>	<input type="checkbox"/>	
The degree of risk (i.e. location, activities, history)	<input type="checkbox"/>	<input type="checkbox"/>	
Other	<input type="checkbox"/>	<input type="checkbox"/>	Specify:



- When a colony met the criteria(on) chosen, did you apply the treatment only to the targeted colony, to several colonies in the same apiary or to the whole apiary? (choose 1 answer)

<input type="checkbox"/> Targeted colony	<input type="checkbox"/> Several colonies	<input type="checkbox"/> Apiary
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- What percentage of your colonies were treated in 2017?

2. d) Medicinal strategies of foulbrood control

Question :

- i.       ii.

- Please list all the dates you applied this treatment?  
*Note: If you do not know the exact date, give the most accurate time possible.*
  - How many colonies were treated at each date?

Date	Nb of colonies

- Did you use this treatment on all your colonies in all your apiaries?

Yes       No

*If no, answer the following questions:*

- What criteria did you use to apply this treatment among the following? (several answers possible)

Criteria	Yes	No	If yes
Positive culture	<input type="checkbox"/>	<input type="checkbox"/>	
Colony weakness	<input type="checkbox"/>	<input type="checkbox"/>	
The degree of risk (i.e. location, activities, history)	<input type="checkbox"/>	<input type="checkbox"/>	
Other	<input type="checkbox"/>	<input type="checkbox"/>	Specify:

- When a colony met the criteria(on) chosen, did you apply the treatment only to the targeted colony, to several colonies in the same apiary or to the whole apiary? (choose 1 answer)

Targeted colony       Several colonies       Apiary

- What percentage of your colonies were treated in 2017?

WINTERING SURVEY

Beekeeper ID: \_\_\_\_\_

Interviewer name: \_\_\_\_\_ Date of interview: \_\_\_\_\_

Beekeeper name: \_\_\_\_\_

Complete address: \_\_\_\_\_

**Collected data is treated confidentially.**

**4. Indoor Wintering**

a. Did you keep colonies indoors in the winter of 2017-2018?

<input type="checkbox"/> Yes	<input type="checkbox"/> No
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**If not, go to section 2.**

b. How many mature colonies (do not include the nuclei) have been put indoors for wintering in the fall of 2016?

\_\_\_\_\_ mature colonies

c. How many suppers have been left per hive kept indoors for wintering in 2017-2018? If there are multiple answers, please indicate the percentage of hives for each.

1 supper : \_\_\_\_\_% of hives

2 suppers : \_\_\_\_\_% of hives

d. Of all the mature colonies kept indoors for wintering, how many were considered viable, that is to say that they hold at least 4 frames covered in bees when seen from above, as of May 15, 2018?

- ✓ This date implies that the spring problems were solved (i.e., reuniting weak colonies, solving queen problems, etc.).
- ✓ Do not include new colonies created by division or purchased in the spring of 2018.
- ✓ However, wintered colonies that have been sold before May 15, 2018 should be included.

\_\_\_\_\_ mature colonies

e. Was the storage room ventilated?

<input type="checkbox"/> Yes	<input type="checkbox"/> No
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f. Did you control the temperature of the storage room?

<input type="checkbox"/> Yes	<input type="checkbox"/> No
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i. If yes, at what temperature? (indicate if °C or °F)

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g. Did you control the humidity of the storage room?

<input type="checkbox"/> Yes	<input type="checkbox"/> No
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ii. If yes, at what humidity percentage did you keep the storage room?

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**5. Outdoor wintering**

a. Did you keep colonies outdoors in the winter of 2017-2018?

<input type="checkbox"/> Yes	<input type="checkbox"/> No
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***If not, go to section 2.***

b. How many mature colonies (do not include the nuclei) have been put outdoors for wintering in the fall of 2017?

\_\_\_\_\_ mature colonies

c. How many suppers have been left per hive kept outdoors for wintering in 2017-2018? If there are multiple answers, please indicate the percentage of hives for each.

1 supper : \_\_\_\_\_% of hives

2 suppers : \_\_\_\_\_% of hives

- d. Of all the mature colonies kept outdoors for wintering, how many were considered viable, that is to say that they hold at least 4 frames covered in bees when seen from above, as of May 15, 2018?
- ✓ This date implies that the spring problems were solved (i.e., reuniting weak colonies, solving queen problems, etc.).
  - ✓ Do not include new colonies created by division or purchased in the spring of 2018.
  - ✓ However, wintered colonies that have been sold before May 15, 2018 should be included.

\_\_\_\_\_ mature colonies

- e. Did you place insulating material directly around the hives for wintering?

<input type="checkbox"/> Yes	<input type="checkbox"/> No
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***If yes, answer the following questions:***

- i. With what material were the hives isolated?

**Note :** *thermofoil is insulating in itself and affixed directly to the hive.*

Thermofoil: \_\_\_\_\_ % of hives

Other: \_\_\_\_\_ % of hives

- ii. Were your hives kept in groups for wintering?

<input type="checkbox"/> Yes	<input type="checkbox"/> No
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- iii. If your hives were kept in groups, how many hives did each group have? If there are multiple answers, please indicate the percentage of hives for each.

Number of hives per group	% of hives
	%
	%

f. Did you place your hives in insulated boxes for wintering?

**Note :** wintering in insulated boxes consists in placing the hive in a box whose walls are about ten cm from those of the hive, and fill this space with insulating material.

<input type="checkbox"/> Yes	<input type="checkbox"/> No
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**If yes :**

i. What insulating material did you use? (multiple answers possible)

Material	Yes	No
Wood chips	<input type="checkbox"/>	<input type="checkbox"/>
Mineral wool	<input type="checkbox"/>	<input type="checkbox"/>
Styrofoam	<input type="checkbox"/>	<input type="checkbox"/>
Other	<input type="checkbox"/>	<input type="checkbox"/>

i. Were your hives kept in groups for wintering?

<input type="checkbox"/> Yes	<input type="checkbox"/> No
------------------------------	-----------------------------

ii. If your hives were kept in groups, how many hives did each group have? If there are multiple answers, please indicate the percentage of hives for each.

Number of hives per group	% of hives
	%
	%

**4. Causes of mortality**

a. In your opinion, for this year, what were the main causes of winter mortality in your colonies?

To the best of your knowledge, what percentage of your winter losses are due to this(these) cause(s)?

**Note:** The total should equal 100%, unless you check "No mortality".

Cause	Percentage
Starvation	
Queen problems	
Varroosis	
Nosemosis	
Foulbrood	
Weather conditions	
Colonies too weak in the fall	
Other (specify)	
Other (specify)	
Other (specify)	
No mortality	<input type="checkbox"/>

**5. Colonies of the project**

- a. For each colony that participated in the project, identified by its permanent number, please indicate what happened among the following choices (choose a single answer):
- Dead before wintering (i.e. eliminated or reunited with another colony in fall 2017, as it was deemed non-viable for overwintering);
    - If two project colonies have been reunited, indicate the number of each colony;
  - Dead at the end of wintering;
  - Eliminated or reunited with another colony between the end of wintering and May 15th (because of bad spring evolution);
    - If two project colonies have been reunited, indicate the number of each colony;
  - Survival in the winter.

Beekeeper ID: \_\_\_\_\_

Colony ID	Eliminated in fall	Reunited in fall (ID)	Dead winter	Eliminated in spring	Reunited in spring (ID)	Reason of mortality or elimination	Survival	Unknown
	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		<input type="checkbox"/>	<input type="checkbox"/>
	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		<input type="checkbox"/>	<input type="checkbox"/>
	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		<input type="checkbox"/>	<input type="checkbox"/>
	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		<input type="checkbox"/>	<input type="checkbox"/>
	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		<input type="checkbox"/>	<input type="checkbox"/>
	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		<input type="checkbox"/>	<input type="checkbox"/>
	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		<input type="checkbox"/>	<input type="checkbox"/>
	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		<input type="checkbox"/>	<input type="checkbox"/>
	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		<input type="checkbox"/>	<input type="checkbox"/>
	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		<input type="checkbox"/>	<input type="checkbox"/>

*N.B. The questionnaire is completed by Gabrielle, in a telephone interview after May 15th. She will identify the numbers of the participating colonies in advance for each beekeeper.*