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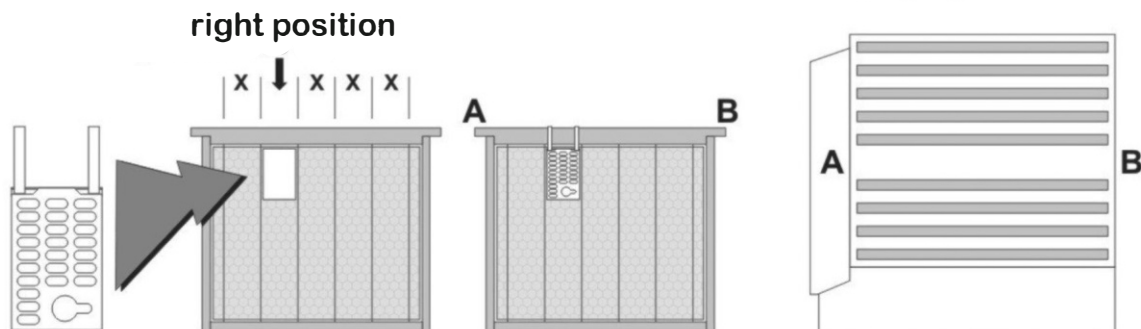
CAGE VAR-CONTROL



ENGLISH INSTRUCTIONS FOR USE 1) Insertion of the cage

Put the cage on the foundation on time or insert it on a comb at the centre of the beehive, cutting the part of comb that is sufficient to contain the small cage without cutting the threads of the framework (see figure).

Keep the comb always at the centre of the bees colony. This small cage can remain inside the beehive permanently and it can be also used in the swarming period: putting the queen bee in the cage just before the bees breed royal cells and keeping her in this state for ten days or more, the swarming can be reduced.



2) Insertion of the queen

When you insert the queen in the small cage you must be careful with smoke, the queen must not be irritated neither before nor after, especially when she is inside the small cage since she has no way out.

To find the queens easier we advise you to mark them before the putting in the cage, in this way you can understand, at the moment of the putting in cage, if the queen has recently been substituted, such a thing is a clear sign that the beehive is in crisis, since there is the varroa, such a thing happens very frequently.

3) Restriction of brood period

To make the putting in the cage at the appropriate moment see "Methods for the putting in cage of the queen for restriction of brood".

To set free the queen bee it is sufficient to open the small door of the small cage and then re-insert the honeycomb to its place.

Attention: do not let the queen bee go out with smoke or other, she will go out spontaneously inside the beehive.

Close the small door after some days to avoid that the bees build inside the small cage. Such a thing happens, if the operation is carried out in spring-summer, on the contrary, if this takes place in autumn, the re-closing of the small door can take place next spring.

Instructions

Be sure that the whole beehive is normal at the moment of the putting in the cage: if in some beehives the queen has been recently replaced (the marked one is not found and there is a young one) be sure that the new queen lays before being put in the cage. It can also happen that the queen is near to the replacement, because she is compromised by a great load of varroa. This can be understood from the presence of royal cells. If this will happen to put in cage the old queen in any case, without damaging the royal cells. After, the bees will choose which is the queen to keep. Finally, before the chemical treatment, if the new queen has laid a little brood, this must be removed. As concerns this, it is useful to remind that from the arrival of varroa, in August/September the beehives are already compromised, if during the previous year have not been treated well.

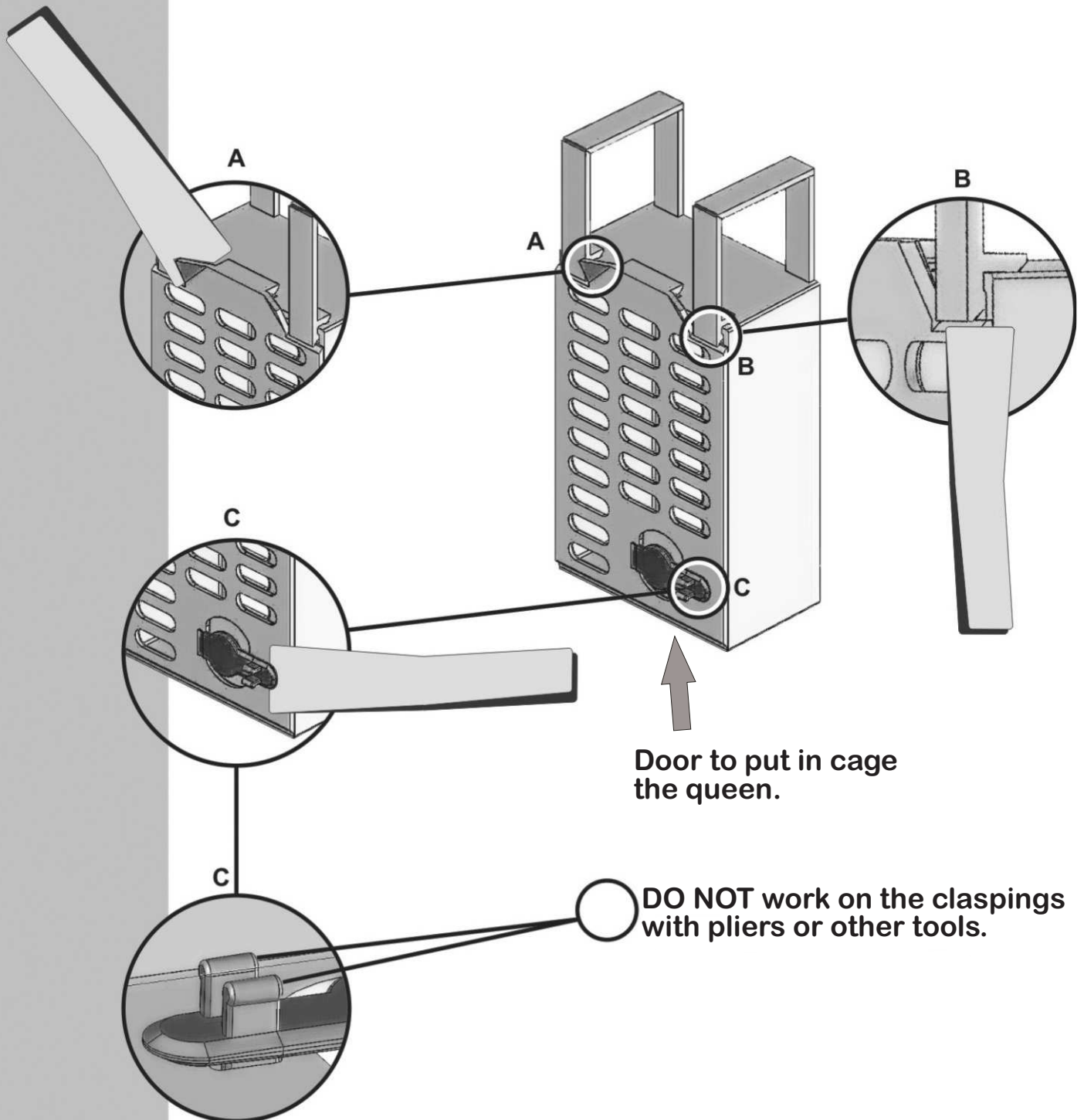


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OPENING AND CLOSING OF THE SMALL CAGE

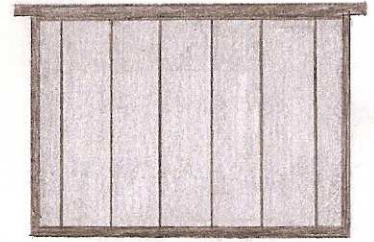
- To close the small cage it is sufficient to make a light pressure on the indicated points,

- To open it, one must work on the same points using the levers.

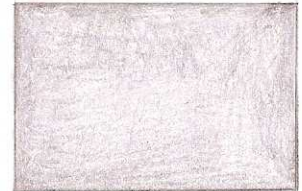


INSERTION OF THE VAR-CONTROL CAGE ON THE FOUNDATION

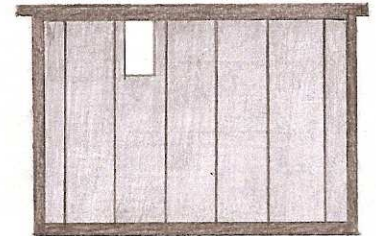
1) weld the foundation to the frame;



2) supply yourself with a 2 cm thickness and 26 cm x 41 cm dimension plank;



3) lay the frame with the welded foundation over the plank then with a blade knife cut into the rectangle that will contain the cage.



4) It is also useful a 2cm thickness and 5.5 x 9cm dimension plank, that is to be laid over the foundation in order to cut a rectangle.

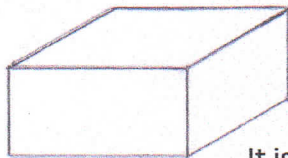


At the moment of the putting in cage it is better if the beehives have already the cages inserted inside, so that must introduced only the queen to start the restriction of brood. In this way times are speeded up.

It is better if the beekeeper prepares in the laboratory, the foundations or the brood combs built with the cages already inserted and that he introduces them in the beehive in advance.

NOTE: while inserting into the beehive a foundation with the already inserted cage, you must consider that the foundation must be worked by the bees. The right period is Spring/Summer. In the period Summer/Autumn the cage must be inserted on the cage built on the brood comb.

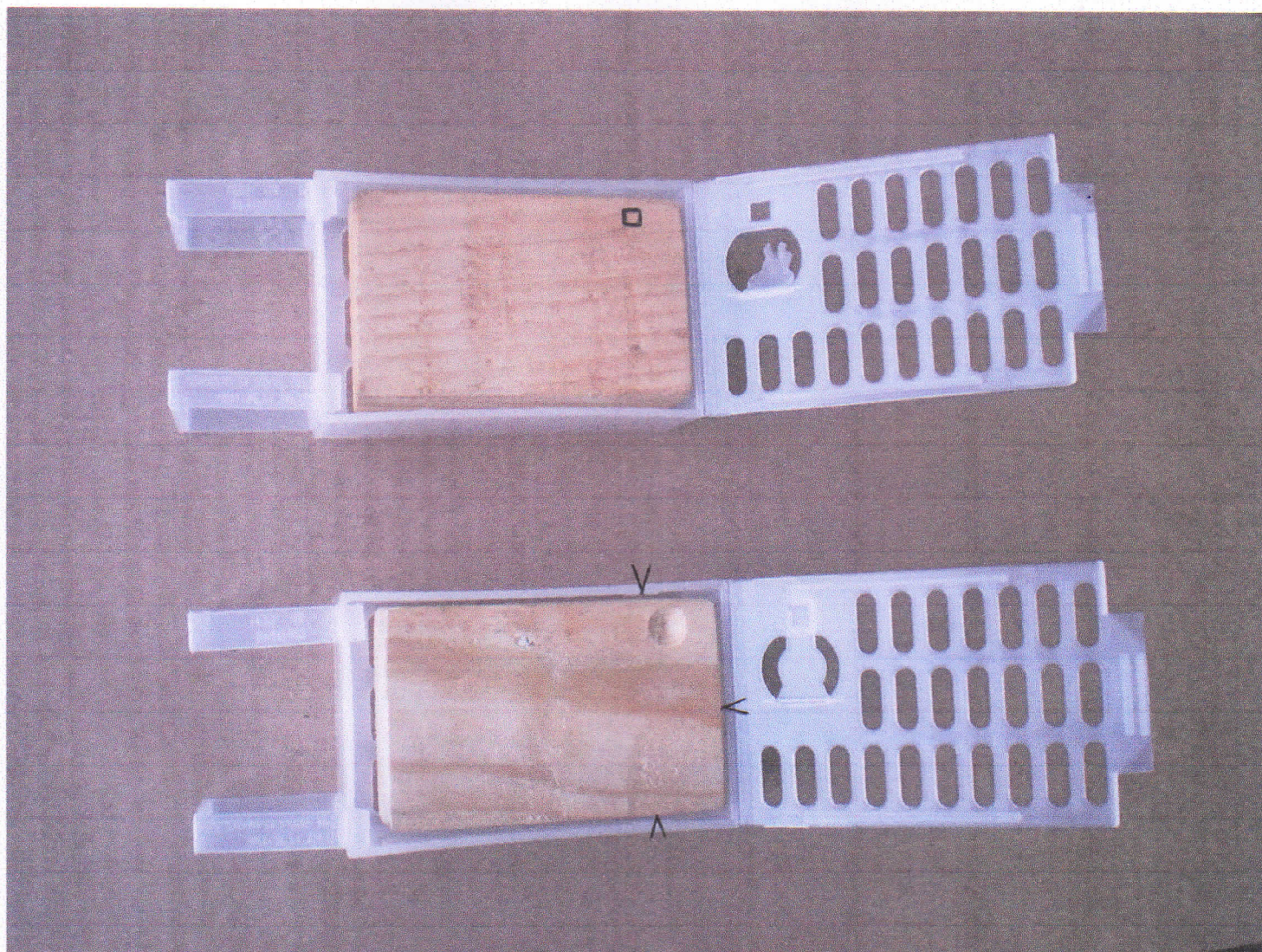




WOOD CUBE mm 25 x 43 x 68

It is useful to keep bees from building honeycomb inside the cage .

Keep the front wall closed and the little door is, then draw the hook position on the piece of wood.



Remove some material from the cube wood to give space to the door hook.

N.B to move the cube of wood from the cage pull on the points showed in the picture. DO NOT try to move the cube of wood away from the cage using any tools trough the holes.

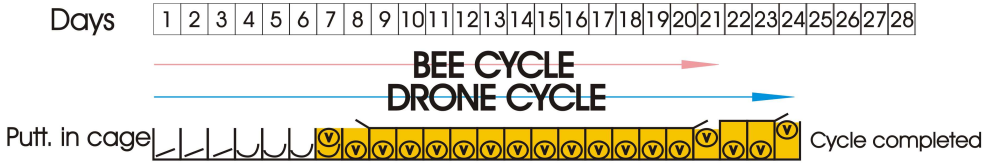
API-MO.BRU di Mozzato Bruno Via Palazzon, 48 35010 Campodoro (PD)
Tel .049/9065542 www.apimobru.com info@apimobru.com

METHODS FOR THE PUTTING IN CAGE OF THE QUEEN FOR RESTRICTION OF BROOD

The restriction of brood can be made **during the whole active season of bees**, from Spring to Autumn.

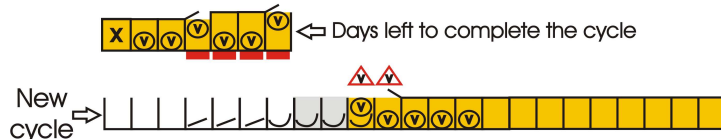
Here is a short analysis:

- the **complete** emerging cycle last 24 days (21 for bees – 24 for drones);
- two days after she has been freed, the queen lays;
- after 6 days from the laying, the brood is ready to get the varroa.



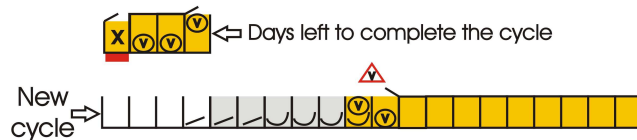
I Method

freeing of the queen at the 18th day
a treatment from the 21st to 24th day
brood that cannot get varroa for 2 days.



II Method

freeing of the queen at the 21st day
treatment at the 21st day
brood that cannot get varroa for 5 days.



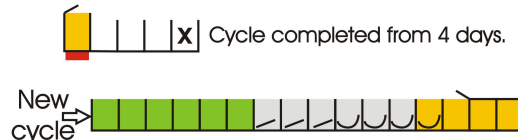
III Method

freeing of the queen at the 24th day
treatment at the 24th day
no brood for 2 days, brood that cannot get varroa for 6 days.



IV Method, four week restriction

freeing of the queen at the 28th day
treatment at the 24th day
no brood for 6 days, brood that cannot get varroa for 6 days.



- The restriction of brood in the period **Spring-Summer** can be reduced to the essential for a control of varroa:
 - o at the 18th day from the putting in cage, the queen bee can be freed (I Method). I advice you to do an antiseptic treatment from the 21st to the 24th, when the bees have already born and most of varroa is out of brood when treatment takes place;
 - o with the II and III Method there is the advantage to free the queen and treat at the same time: the varroa caused by the drones emerging is undergoing an antiseptic treatment;
 - the 4 week restriction of brood in **Autumn**, is important, because the treatment made with dripped oxalic acts ten days long and has a consequence if you free the queen 4 days after the treatment, you get 6 days with a total lack of brood plus a brood of 6 days in which it does not get varroa. So you have 12 days, during which varroa itself has not the possibility to shelter in a short time under a new operculation (capping of cells. Varroa in fact is not killed instantaneously (see table 1). In this way you get a more effective and safer end season cleaning, that allows you a better conyinuation for the following year.
- As concerns the Autumn treatment, the period must be adapted according to the residence zone and climate. The restriction anyway must take place before the cluster (a month in advance).

| Beehive Nr | Days following the treatment | | | | | | | | | | | |
|---------------|------------------------------|-----|----|----|-----|----|----|----|----|----|----|----|
| | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 |
| 3 | 1500 | 414 | 75 | 29 | 13 | 5 | 4 | 0 | 1 | 2 | 0 | 0 |
| 5 | 1670 | 247 | 72 | 34 | 17 | 10 | 4 | 2 | 1 | 1 | 2 | 0 |
| 6 | 1800 | 600 | 66 | 50 | 57 | 31 | 17 | 11 | 9 | 10 | 2 | 2 |
| 7 | 1400 | 350 | 38 | 24 | 22 | 9 | 6 | 0 | 2 | 3 | 2 | 0 |
| 8 | 1800 | 600 | 47 | 34 | 27 | 12 | 8 | 9 | 3 | 2 | 2 | 0 |
| 10 | 1100 | / | / | / | 332 | 64 | 24 | 12 | 16 | 11 | 3 | 2 |

Table 1: number of varroas fallen the days following the treatment with dripped oxalic acid (100 gr of oxalic acid, a Kg of sugar melted in a litre of water).



OTHER DOCUMENTS TO FOLLOW



METHOD TO CONTROL VARROA (RESUME OF OUR EXPERIENCE)

YEARS from 2000 to 2006

- Colonies in brood less state once only, obtained by trapping the queen for 4 weeks
- Queens trapped in cage during the first 10 days of September
- Treatment performed after 24 days, in the first days of October
- Queens released on the 28th day.

Number of varroa mites fallen in the first day: from 2000* to 3000*.

2007 (a particular year, warm winter, anticipated spring, 2 treatments, in brood less state, performed)
1st brood less state: queen trapped for 24 days:

- Queens trapped in cage on July the 8th **leaving the honey super in place to let the bees store honey and removing the queen excluder, in this way the queen will not feel oppressed during the hottest hours.**
- Honey super removed before the treatment.
- All queens were released and the treatments were performed on the same day: the 1st of August, after 24 days of trapping.

Treatment performed with drops of oxalyc acid (recipe: 100gr oss./1000 gr sugar/one litre of water)
5 cc each favus with bees, dripped for more than half on the port honeycomb slats and the rest on bees (oxalic distributed trickling sideways compared to honeycombs)

Beehive Numbers of varroa mites fallen from the first day to the twelfth day

| N° | 1° | 2° | 3° | 4° | 5° | 6° | 7° | 8° | 9° | 10° | 11° | 12° |
|----|-------|------|------|------|-----|----|----|----|----|-----|-----|-----|
| 3 | 1500* | 414 | 75 | 29 | 13 | 5 | 4 | 0 | 1 | 2 | 0 | 0 |
| 5 | 1670 | 247 | 72 | 34 | 17 | 10 | 4 | 2 | 1 | 1 | 2 | 0 |
| 6 | 1800* | 600* | 66 | 50 | 57 | 31 | 17 | 11 | 9 | 10 | 2 | 2 |
| 7 | 1400* | 350* | 38 | 24 | 22 | 9 | 6 | 0 | 2 | 3 | 2 | 0 |
| 8 | 1800* | 600* | 47 | 34 | 27 | 12 | 8 | 9 | 3 | 2 | 2 | 0 |
| 10 | 1100* | ---- | ---- | ---- | 332 | 64 | 24 | 12 | 16 | 11 | 3 | 2 |

2nd brood less state obtained by trapping the queen in cage four weeks:

- Queens trapped on October the 1st
 - Treatment on October the 25th
 - Queens released on October the 29th
- Treatment with oxalic acid dripped (solution 100 gr oss. / 1000 gr sugar / 1 liter of water),
5 cc per honeycomb covered with bees, dripped for more than a half on the port honeycomb slats and the rest on bees.

(oxalic distributed trickling sideways compared to honeycombs)

Beehive Numbers of varroa mites fallen from the first day to the eleventh day

| N° | 1° | 2° | 3° | 4° | 5° | 6° | 7° | 8° | 9° | 10° | 11° | 12° |
|----|-----|-----|-----|----|----|------|------|----|------|-----|-----|------|
| 3 | 207 | 137 | 33 | 21 | 1 | ---- | ---- | 2 | ---- | 2 | 0 | ---- |
| 5 | 775 | 278 | 20 | 7 | 1 | ---- | ---- | 0 | ---- | 1 | 0 | ---- |
| 6 | 337 | 292 | 44 | 16 | 2 | ---- | ---- | 2 | ---- | 0 | 0 | ---- |
| 7 | 260 | 308 | 146 | 76 | 10 | ---- | ---- | 4 | ---- | 1 | 1 | ---- |
| 8 | 116 | 186 | 96 | 62 | 16 | ---- | ---- | 12 | ---- | 5 | 2 | ---- |
| 10 | 359 | 356 | 104 | 55 | 11 | ---- | ---- | 14 | ---- | 1 | 4 | ---- |

* approximate numbers

---- days in which no count was performed

Taking into consideration the hive # 5: 1670 varroa mites fell on the 1st day, a total of 2060 varroa mites fell until the 12th day (considering that varroa doubles from month to month) and considering that for about 2/3 of July varroa could not multiply due to the brood less state, we can foresee the number of varroa mites possibly reached on August the 1st: (2060: 3x2) = 1373, we add 2060 + 1373 = **3433** varroa mites (number of varroa mites beyond which we would have the crisis of the colony the next month). Thanks to the two brood less states performed, one short in July and a longer one at the end of the season in October, I was able to sanitize my colonies.

NOTE: making a comparison of the years 2000 to 2006 with 2007, you notice that in 2007 varroa reached the same numbers 2 months before, if I waited one month more in intervening, the colonies could have been compromised .



The method adopted in 2007 and in the subsequent years, 2020 included, considers 2 brood less states: one in summer (starting on July 10 to July 15) and one in autumn (starting on October 5th until October 15th). The results are excellent: varroa mite hovered at low numbers throughout the year.

When did I trapped queens?

- One time In July, immediately after the honey storing, when the bees reached the maximum growth. From this point on, because of the heat and the lack of honey storing activities, the bees decreased the brood rearing. So, that is the most appropriate time to intervene. Thanks to the total absence of brood I apply a treatment against varroa of proven efficacy in the first days of August. You should not wait until mid-August to perform the caging, varroa may have reached high numbers and as a result brood can be heavily infested and will not give healthy bees. As a consequence the colony will collapse, when the bees born among May, June and July, will die at the end of their life cycle;

- **In the fall (October), a month before the Winter cluster, another queen entrap:** I make all hives, at the same time and as soon as possible, without brood and capable of receiving the treatment against varroa very soon, in the first days of November, not in December or January, when the varroa will have done irreparable damage.

Bees from November onwards are almost still as assets and also considering breeding brood, brood rearing can occur if the temperatures are good but it is always a small amount, that won't create the future colony. On the other hand, this little brood will be full of varroa mites, newborn bees will be debilitated and unable to flicker alone. The bees have made a useless work of rearing brood and also it will be difficult to clean them from varroa after the season.

Conclusion: contain varroa mite at low numbers to maintain healthy colonies.

To sum up, targeted treatments, in total absence of brood, thanks to queen caging is the ideal condition to reduce varroa:

- One treatment in summer to hover the number of varroa, in order to avoid the damage that high numbers of them will cause. **Beware:** we are still in active season for bees so, reinfestation can happen;

- An autumn cleaning at the end of the season, easy to apply because the hive is no longer crowded with bees, perform it when bees are retreating home and there is no longer the risk of re-infestation among apiaries because of drones or looting, I consider it essential for a good awakening in the next year, especially in areas where bees go on with brood rearing and never stop. The total absence of brood planned thanks to queen caging, is helpful in breaking down varroa, in order to keep bees healthy. Moreover, it allows you to avoid the repetition of the treatments several times that weaken the colonies.

Thinking about what dates it is better to perform the queen entrap and subsequent treatment, every beekeeper will have their own opinion, in accordance with the climate in their area.

The result of this method, confirmed also by beekeepers that have adopted it are:

- Colonies full of bees each year;
- Healthy bees in the fall that can easily pass through the winter;
- Excellent recovery in spring;
- Excellent honey production;

