



ESSAY ON THE INFLUENCE OF THE POPULATION OF BEE APICOMPLET IN THE CUB FOOD.

Preparation of the Beehive for the start of campaign.

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INTRODUCTION

HONEY LLOVELL has become the market a novel food which aims, inter alia, enhance the strength of the hives increasing its population. Using a simple test we wanted to verify that met this premise..

Feeding of bees is relatively simple, get their

nutritional requirements of the nectar from the flowers (exceptions as plant secretions or animals), collect pollen and water that is acopian in the vicinity of the hive. The bees as whole be alive, require protein, carbohydrates, minerals, fats, vitamins and water for the performance of their vital functions which are obtained through the collection of nectar, pollen and water..

Nectar is the largest source of the diet of bees carbohydrates. Contains from 5 to 75 % of solid soluble sugars although many néctares range between 25 and 40 %, among the most abundant sugars that contains the nectar are sucrose, glucose and fructose. Nectar also contains small amounts of minerals, amino acids, vitamins, organic acids, essential oils, flavonoids, etc... These néctares with high lipids content come with organic acids to avoid their enranciamiento. Alkaloids, phenols and glycosides are also part of the composition of the nectar.

The largest source of protein for bees is pollen, the percentage varies from 10 to 36 %, but some pollens are deficient in certain essential for bees nutrition amino acids.

In the year 1953 Dr. A. de Groot studied the requirements of amino acids in the bee and reached the conclusion that 10 amino acids essential for the human also it is for bees threonine (valine,) methionine, Leucine, isoleucine, (phenylalaline, lysine, Histidine, arginine and tryptophan). In relation to the amino acids companions to contains APICOMPLET should be emphasized that has at least 80 % of these amino acids essential, along with asparagine, while not usually appear in the nectar (BAKER & BAKER, 1978; GOTTSBERGER & al, 1984) and the PROLINE. We must stress that both the amino acids, fatty acid and vitamins that contains this food has a natural source, come from plant extracts used to its preparation. APICOMPLET is designed so that mimics the composition of the nectar.

MATERIAL Y METHODS

Work started on a colmenar of 30 hives layens 12 boxes with closed head. This sample is sufficient and data will be significant with a high level of trust, environment to 95 per cent. The settlement was situated in the municipality of Benimarfull (Alicante) (x 729324m and 4297383), the Beehive stayed in this place from 1 July 2008 until the job completion. The hives were placed in a single row and the piqueras have been marked individually, be guided Southeast direction. SEE PICTURE # 1 has a natural source of water, the reservoir of Beniarrés, less than 500 m.



Picture N° 1

The area chosen for the study is mixed in that alternate different fruit trees, pine and Rosemary bushes cultivation areas and by its proximity to the Beniarrés reservoir also shown Bank forest. At the beginning of the trial with beekeeping use flora closest to the colmenar was composed of almond (*Prunus dulcis*) and other fruit trees, Rosemary (*Rosmarinus officinalis*), Heather (*Erica SP.*), some zimovka (*Helianthemum SP*), and certain species of jaramagos and rabanizas. This flora was accompanied by aliaga (*Ulex*

sp.), lentisco (*Pistacia lentiscus*), endrino (*Prunus spinosa*) and others.

To verify that effect has APICOMPLET on the Beehive was appraised, a one and box to box, all the Beehive before and after of feed leaving half of the hives as a witness.

The evaluated product was provided to the hives in 1 kg to them was a cut plastic bags. Two were placed on frameworks bags and the temporary separation of its implementation was 15 days recommendation by the manufacturer.

Development of the work

6 March 2009 becomes the first revision that helped to exclude from the 30 initial hives 4 testing three of them be unduly weakened and not enough viable, and the fourth written affected ascosferosis.

In this first review the following parameters were measured:

1. Breeding boxes

In this study farming is measured in fractions of 0.5, so we have the value of 2 for a table with both sides covered breeding and 0.5 to a table with average busy face (taking into account that breeding boxes comes almost always accompanied by a fraction of pollen and honey reserves, that can reach a third of the surface). SEE IMAGE 2.

We decided to do so in fractions of 0.5 because us was easier and more accurate assessment. This measurement method relies on the one described by Burgett and Burikam (1985) and Kostarelou and al., (1995) with adaptations later (Orantes and al., 1997).



Picture nº 2

2. Workers

This parameter is calculated by counting the number box covered bee still 4 equivalent to 10000 bees boxes, or what is it about 1 kg of live weight.

To standardize criteria taken data fractions of 0.5 by what we have the value of 2 for a box with both sides covered completely with bee. SEE IMAGE 3. This measure also baso methodology Burgett and Burikam (1985) and Kostarelou and al., (1995) with adaptations later (Orantes and al., 1997).



3. Pollen reserves

This parameter is measured by calculating the amount of pollen stored in each hive boxes. Also measured in fractions of 0.5 and qualify in the following manner:

-Signup: > 6 (fractions of 0.5)

-A-half: 2-6 (fractions of 0.5)

-Low: 2 (fractions of 0.5)

According to Burgett and Burikam (1985) and

Kostarelou and al., (1995) with

later adaptations (Orantes and al., 1997)

4. Honey reserver

This parameter is calculated similar to reservations pollen but with the following variables:

-Signup: > 12 (fractions of 0.5)

-A-half: 6-12 (fractions of 0.5)

-Low: 6 (fractions of 0.5)

According to Burgett and Burikam (1985) and

Kostarelou and al., (1995) with

later adaptations (Orantes and al., 1997)

These two recent assessments (reservations of honey and pollen) were used to select the hives that were to belong to each group of thirteen Beehive (to feed and witness), so you could select two groups as homogeneous as possible, but did not intervene in the final analysis of the trial, we wanted to focus on the evolution of the breed and bee quantity.

After the first assessment 6 February 2009 values average obtained were

those shown in the 1 TABLAN.

Once made the two groups, on 7 February 2009, the first bag of 1 kg of APICOMPLET was placed in the hives belonging to the group to feed. Within 15 days, on February 23, placed second 1 kg bag of APICOMPLET and the final evaluation was conducted on 9 March 2009. Election of the time of food

Initially wanted to start work with the APICOMPLET in the middle of January (which is what advised the) (manufacturer for the zone where the colmenar was established). As the manufacturer, this type of food, tells us aims to prepare the hives have plenty of workers to meet with efficiency the blooms of season, logon to employ its forces already directly in the collection of nectar (Rosemary, fruit etc). But this year 2009, cold and rain in the North Centre of the province Alicante, have dragged to the end of January, average January temperature was 7.8 °C (AEMET), the output of the wintering both low temperatures and rainfall, winds and days has been delayed

Table nº 1. Results of the valuation on 6th February, before feeding.

Groups of hives	Nº of hives	Average. Bee quant.	Average. Breeding boxes	Average. Honey Res.	Average. Pollen Res.
Group witness	13	11,54	7,62	8,15	2,62
Group for breeding	13	9,08	6,85	6,62	3,00

wet. The average of precipitation in the 1960 - series 1991 the Atlas Climate of the community Valencian for the month of January in Alcoy is 43,8 mm while this year 2009, the station plans managed by the

Table nº 2. Feed assessment results after feeding on 9th March

Groups of hives	Nº of hives	Average Bee. Quantity	Average Breeding Boxes	Average Honey. Reserves	Average Pollen. Reserves
Group witness	13	13,69	11,92	9,15	5,00
Group for breeding	13	18,31	15,31	10,00	6,00

Service of the irrigation technology of the Government of Valencia has accumulated a precipitation in January of 86 mm, the average precipitation is doubled. Due to weather conditions delay by the beginning of this study until early February.

Table 3. Statistical summary of cases

Group	Categoría	Obreras	Crías
Fed start	Add	118	89
	Min	4	3
	Max	18	12
	Range	14	9
	Average	9,08	6,85
	Stand. Dev.	4,821	3,051
	Variance	23,244	9,308
Fed end	Add	239	199
	Min	7	5
	Max	32	27
	Range	25	22
	Average	18,38	15,31
	Stand. Dev.	7,763	6,088
	Variance	60,256	37,064
Witness start	Add	150	99
	Min	4	3
	Máximo	28	15
	Range	24	12
	Average	11,54	7,62
	Stand. Dev.	6,765	3,254
	Variance	45,769	10,590
Witness end	Add	178	155
	Min	5	2
	Max	27	20
	Range	22	18
	Average	13,69	11,92
	Stand. Dev.	7,364	5,361
	Variance	54,231	28,744
Total	Add	685	542
	Min	4	2
	Max	32	27
	Range	28	25
	Average	13,17	10,42
	Stand. Dev.	7,425	5,665
	Variance	55,126	32,092

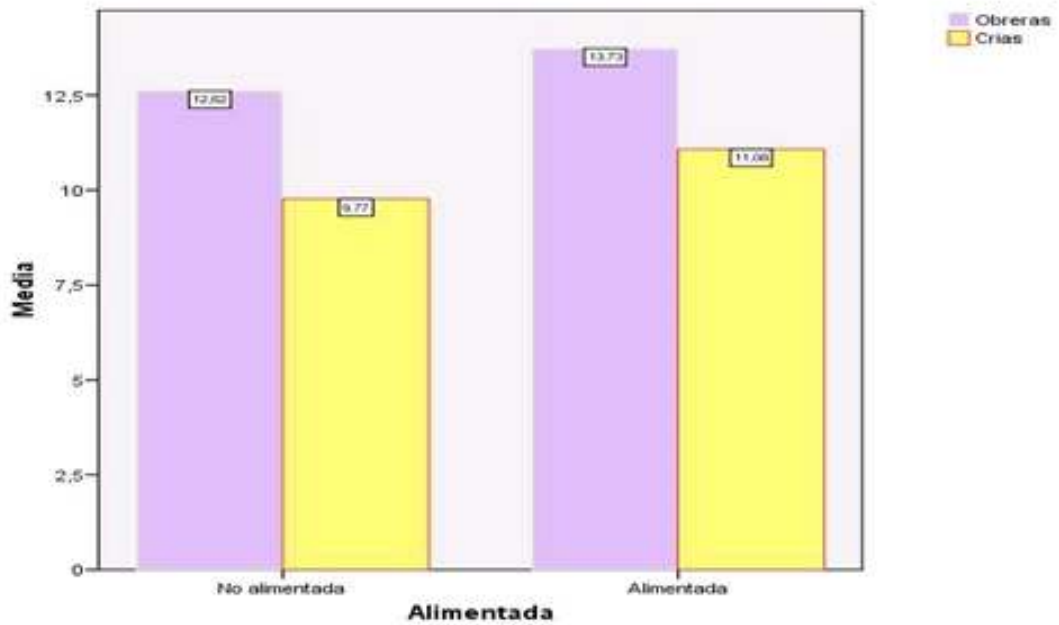
RESULTS

To study the data obtained a statistical analysis has been descriptive variables of interest are (expressed as already mentioned in fractions of 0.5) breeding and the number of workers also expressed the form. VIEW tables 1 and 2 and 3.

In graphic 1 let us see if the feed factor creates increased in the population of working and FRY.

Shown that there is an increase in workers and the amount of breeding, fed both not fed, the increase in the workers is 1,11 fractions per hive, while in the FRY is 1,31 fractions by colmena..

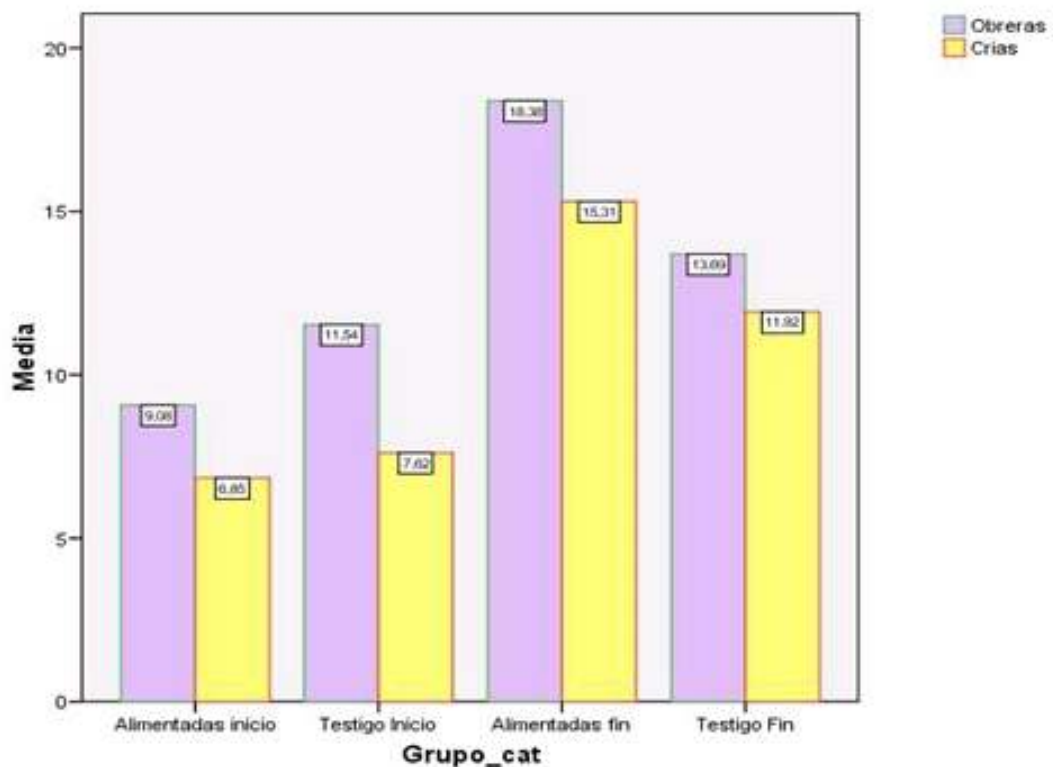
GRAPHIC 1 - Number of workers and FRY, with regard to food



In printing 2, represent by separate the beginning and end of the study for the Fed hives and the witness, where you can see that the differences are significant. The first couple of columns represent the average of both workers and FRY honeycombs in the start of the

study for the group to be them has feed, the second pair of columns represent the honeycombs average at the beginning of the study of the witness, the third pair of columns representing the honeycombs mean the end of the study of bees that have been fed and the fourth column pair represents the

GRAPHIC 2 - Average number of workers and FRY, regarding the period and food

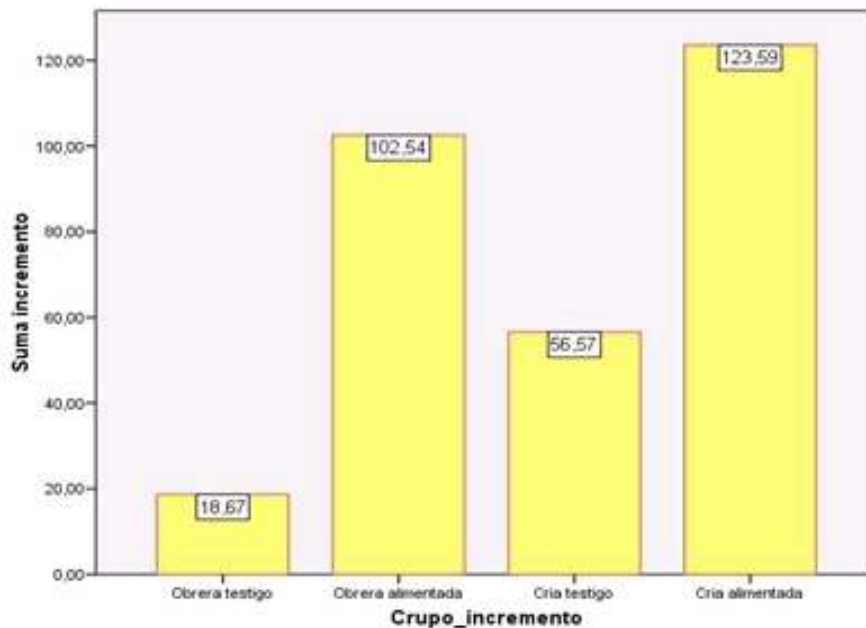


average honeycombs at the end of the study witness.

As you can see the rising among the Fed workers is 9.3 honeycombs per hive front to the not fed 2.15 honeycombs average increased by colmena; with regard to the FRY the increase in the Fed is of 8,46 to the increase of 3.4 of the

bees, whether obrera, breeding, fed or not fed, but the increase in workers ' bees fed at the beginning of the study is 102,54 per cent against the an increase of 18,67 per cent of the not fed workers bees. The greatest increase is the Fed hives breeding which is 123,59 % compared to the period, compared to 56,57 per cent of the hives breeding not

GRAPHIC 3 - Increases as bees feeding



not fed. It notes that the not fed at the beginning of the study group had slightly much breeding and obrera than the group to be fed, so results are even more interesting.

A percent data analysis gives us as a result there is an increase in the number in all cases of

fed. Graphically we see in the graphical 3 and 4.

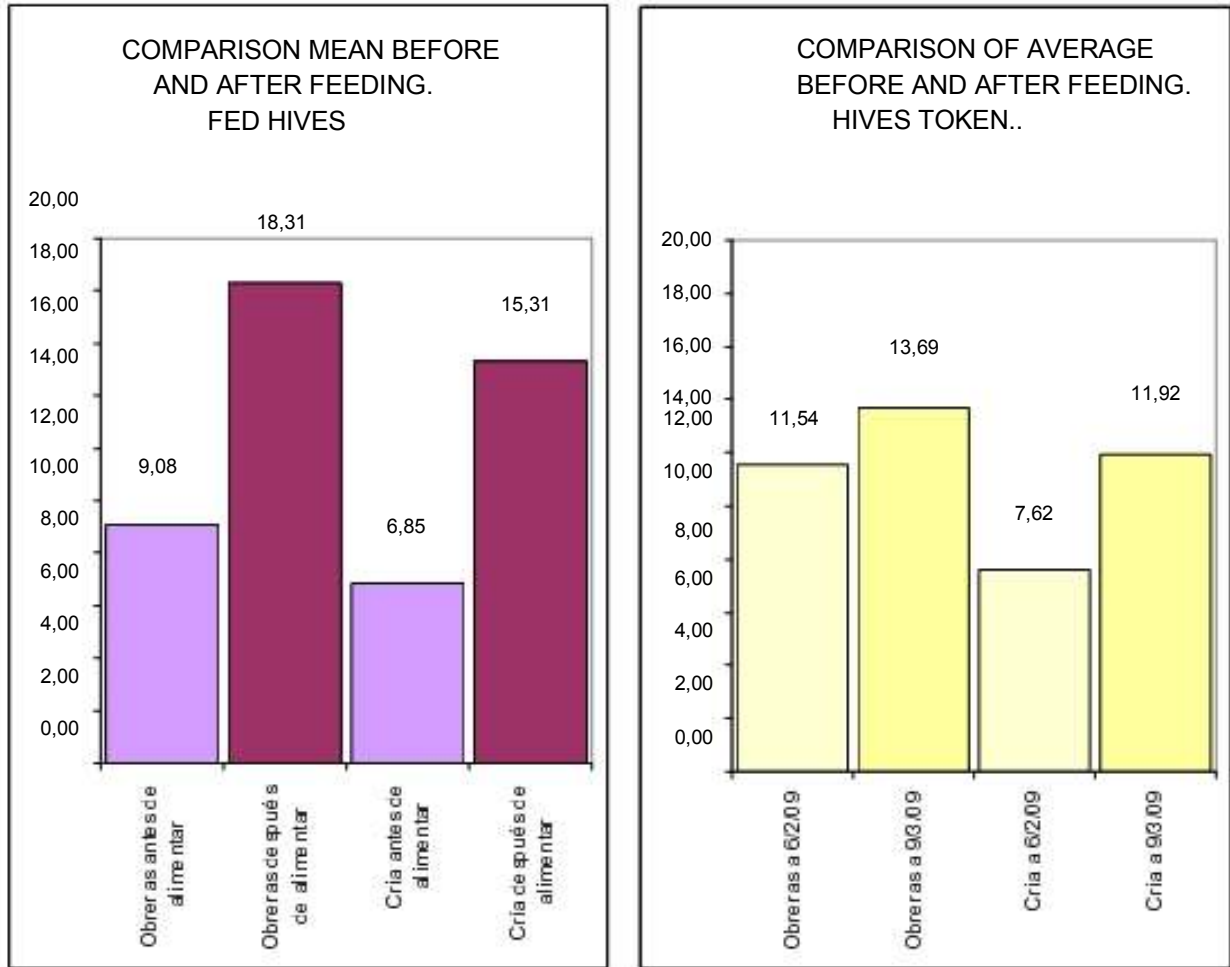
CONCLUSIONS AND DISCUSSION

Food has a very positive influence in the amount of bee both the amount of breeding.

Is point out that the climax of the Rosemary and almond bloom in the

We have indicated before, is to stimulate the hives to advance the output of the

GRAPHIC 4. the percentage differences between the Fed hives and the witness.



place of settlement was, practically, while that the addition of bags of food. An increase in fed both the witness is seen in the graphics. The influence of these blooms has positively influenced both the fed and the witness, although in the graphical 3 and 4, we are witnessing a greater difference between the start and end of the trial for the fed, so if we could start the trial on the planned date surely this difference between groups had been greater, because the objective of this food, as

hibernated with a population of bee strong and vibrant for the efficient use of the early blooms. We also believe that this food would be also suitable for the preparation of the Beehive for the hibernada, to have enough bee to spend the winter with guarantees and thus reduce casualties. It would be interesting to conduct a study during the autumn period.

We have seen during the trial that the acceptance of the food by bees was very good, as 72 hours of

the introduction of the first bag the stronger hives had already consumed food as a whole in that time MIME the weakest had swallowed between 20 and 30 % of the volume of the bag. The case in the second bag, 7 days of your placing no longer existed remains of the first bag in any colmena feed and only in 3 hives (the weakest) remained a 25-30 % but the second bag. It seems very indicative of its acceptance, as all the Beehive ate food, including the weakest, although these at a slower, understandably pace.

SEE IMAGE 4.



THANKS

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