

REMOVAL OF THE BEES FROM THE HONEY CHAMBER BY MEANS OF A BLOWER

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In 1994 and 1995, the Professional Beekeepers' Austrian Association elaborated — in cooperation with the Stihl company — a research project which purpose was to rationalize the time used to remove the bees from the honey chamber.

In the professional beekeeping, the removal of the honey combs and of the bees on them takes most of the time. This tiresome work, which requires a lot of time is done by hand by over 95% of the beekeepers. For this reason, often, in the periods in which there is a lack of honey yield, robberies take place, thus making the beekeepers' work even more difficult. Some beekeepers use the bee escape, but even this device is very rarely used. In the case of the bee escape, the beekeeper has to go to the apiary twice and the honey chambers have to be removed twice as well.

My most distant apiaries are 240 km away from home, and, only for this reason, I have supplementary expenses for these 500 km and the time and the work which are needed make the utilization of the bee escape impossible. The large enterprises overseas use blowers. By means of special devices, the bees

in the honey chamber are blown in front of the entrance. These blowers are very heavy and are placed on the ground during the work. Generally, 4—6 people are needed to handle it. In Central Europe, the apiaries are much smaller and this is why beekeepers are looking for a reasonable and efficient method, which might be applied by 1—2 persons.

The solution occurred to us in an emergency situation. In 1993, after the sunflower forage, I had to collect the honey from approximately 500 colonies, which meant that I had to remove the bees, to centrifugalize the honey, to ensure the food of the colonies, to effect the varroacide treatment and to replace the queens. I worked under great pressure, at the limit of my efficiency, and I decided that, in 1994, I would do something to improve the situation.

After several discussions with other beekeepers (Porrini — Italy, Preissal and Neuburger — Austria), I contacted Mr. Resch, the chief of the commercial service of the Stihl company, and I proposed him a research project. I tried to test if the bees may be blown from the honey chambers by means of the BR 400 blower, of course, without being harmed.

Mr. Resch was interested in my proposal and promised that he would put at my disposal a BR 400 blower.

Before the experiment, many things crossed my mind:

— Would the bees be hurt? Which would be their behaviour, considering that the noise and the strong vibrations often cause an increased disquiet and aggressiveness. What would happen to the bees in the hive?

— Is it possible to work in any kind of weather and at any hour of the day? Would a slight rain — during the proceeding — influence the quality of honey?

— Would I be able to prevent the robbery by using the blower?

— How would the environment (animals, neighbours, passers-by) react?

— Should I expose myself and my fellow-workers to such a noise and such a smell?

I will answer all these questions after I will briefly describe the apparatus and the working method.

Brief Description of the Stihl Company Blower

The Stihl blower is used mainly for cleaning large surfaces. It is used to remove leaves, mowed grass, as well as other mowed materials which remain stuck on a certain surface. I also tried and succeeded to remove the fresh snow from the stairs, the car and the pavements. This device has many fields of application. Its efficiency is increased by the high speed of the air that comes out of the nozzle. This speed is of 80m/second in the case of the BR 400 apparatus.

Because of their special structure, the blowers may also be used as watering cans (in fruit growing, wine-growing, vegetable gardening). The Stihl company also has other apparatuses, such as the B 320 L and the BR 106, which do not make noise and have a damper for vibrations. But their efficiency is lower, as we may see in the following table.

Table 1

Technical Data of the Stihl Company Apparatuses

Type	Cubic capacity (cm ³)	Efficiency (kW/CP)	Weight (kg)	Maximum air passage (m ³ /h)
Stihl BR 106	34.4	1.1/1.5	8.0	760
Stihl BR 320 L	44.9	1.4/1.9	9.0	870
Stihl BR 400	56.5	2.5/3.4	8.9	1.060

Method

The apparatus is started while it is placed on the ground. At the moment in which the gasoline engine

starts to work, the gas pedal is switched on "run idle". The pedal is manipulated with the right hand, as it has the shape of a handle. After the apparatus starts functioning,

it is taken on the beekeeper's back, like a knapsack, and the air spurt is directed in the desired direction, by means of the handle for direction and support (also with the right hand). The adjustment to the air spurt is made by means of the gas pedal. Because of the good suspension system, the vibrations are almost imperceptible. But, as there is a strong noise, the beekeeper will wear a helmet for the protection of the ears.

For a greater objectivity of the experiment, I decided to use apiaries which had at least 300 bee colonies, managed by professional beekeepers. But because of the conservatism and of the prejudices, I didn't receive any affirmative answer. Then, I started the action on my own, being subjectively influenced by my positive ideas.

The utilization of the BR 400 blower in the bee colonies

I chose the beekeeping overalls and the beekeeping mask as working equipment, as some of the bees are pushed backwards because of the strong air draught. It is not necessary for the beekeeper to wear gloves, but he has to wear a helmet.

I use multiple-storey hives with 12 frames, *Carnica* bees, and the size of the combs corresponds to the Austrian standards. The frames in the brood chamber are of 25 x 42 cm, while those in the honey chamber are of 25 x 42 cm, but especially

of 16 x 42 cm and of 12 x 42 cm. The hives are kept in the open.

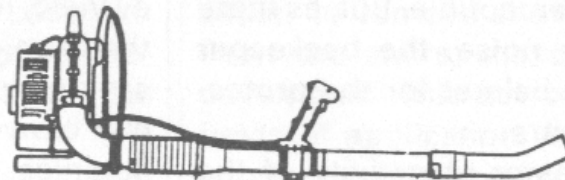
Now let's see what I do when I want to have no more bees in the honey chambers. For example, I go to a 30 bee colonies' apiary, together with 2 probationers. Let's suppose that it is August 10th and that we must collect the sunflower honey yield, in order to be able to effect the formic acid treatment. Only by saving time, by means of the BR 400 blower, am I able to treat my colonies with formic acid once again. First, the probationers prepare a suitable smoker. Meanwhile, I pour the gasoline into the BR 400 blower. The roofs of all the 30 colonies are removed. The state of general agitation prevents robberies. Three strong smoke gusts in the open colonies will determine the bees in the hive to regroup together at the bottom of the hive. The foragers remain in the upper parts of the hive. No queens should be present in the honey chambers. In the case of this proceeding, a long time is wasted on the removal of the brood combs, while during the blowing some queens may be lost. In June 1994, while we were collecting the acacia honey, we lost 58 queens from 500 colonies, as we used the blower in the honey chambers without a screen board. Thus, we exceeded the "pain" limit by 10% and, for this reason, in 1995, when we collected the acacia honey again, we repeated the experiment by using a screen board this time. In the colonies with screen boards, we lost only 5 queens

during the blowing. 2 queens managed to pass through the screen board, while 3 were forgotten when the combs were put back into the hive.

The car is prepared and its doors remain open during the entire

proceeding. Therefore, having the BR 400 blower on my back and into service, I go to the first open hive, I lift up the upper honey chamber without rabbit, by means of the hive tool, and I put it with its highest tin on top of the honey

STIHL BR 400



chamber below. The top bars of the frames are directioned towards me and the bees in each interval of the honey chamber will be blown towards the hive entrance. In order to do this, I move the nozzle of the blower along the respective interval, and I accelerate with my right hand. If the honey chamber is put inversely, the empty frames may fall out.

After the first honey chamber, I apply the same proceeding for the second, the third and even the fourth, if it exists.

Most of the bees which are blown outside the hive gather on the front side of the hive and, after approximately 10 minutes, almost no bees are left in the grass outside the hive. I obtained very good results with the half-measure honey chambers and with the 12 and 16 cm high ones. According to my test, this system is not suitable for 25 cm high frames, as the intervals are

too long. The high air pressure takes the bees out of the intervals at high speed (80 m/second). But the bees are neither hurt, nor confused. The entire proceeding is much more peaceful for bees than one would think.

I need 10 seconds for a half-measure honey chamber with capped combs. If the combs are not capped and the bees still take honey, I need 30 seconds.

The two practitioners that transport the honey chambers without bees to the car cannot cope with my rhythm of work. Thus, I need 20 minutes, for 11 colonies and 55 honey chambers (approximately 650 kg of honey), to effect the following operations: starting the blower, lighting the smoker, the transport of the honey chambers effected by the beekeeping foreman, Mr. Schleining, and by a practitioner, and the closing of the hives. The time saved by using this method

convinced my friend, Mr. Schleining. During this season robberies are usual, but they stopped when we used this method because of the lack of time. The hives are covered with their roofs only after all the honey chambers are taken to the car.

This method allows us to work at temperatures starting from 13°C and up to the maximum values in the summer, from morning to evening, in dry weather or in slightly damp weather. The honey chambers which are removed when it rains, will be dried in the centrifugation room, by means of a blow drier.

The bees do not become more aggressive because of the noise caused by the engine, or because of the smell, as we suspected before. And the animals in the environment are not frightened by the noise.

Also, the noise and the smell had no effect on myself and on my fellow-workers. But, we saved a lot of time by using this method.

Conclusions

During the research project entitled "The Removal of the Bees from the Honey Chamber by means

of a Blower", effected with the professional Beekeeper's Austrian Association and with the Stihl company, we tested the efficiency of the BR 400 blower along a period of 2 years. This apparatus is extremely suitable for half measures and for small measures, as it does not affect the quality of honey and does not harm the bee colonies. This apparatus is recommended for middling and large enterprises, for amateur and professional beekeepers who lack time and who want to save certain invariable expenses.

On behalf of the Professional Beekeeper's Austrian Association, I thank Mr. RESCH, the chief of the sales department at the Stihl company, for his cooperation, and I hope that this report has narrowed the gap between my fellow-beekeepers and the technique.

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