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MODIFIED THREE STOREY PRIYATELENKO'S BEEHIVE WITH UNIQUE FRAMES

Peculiarities of application, structure and construction of modified 3-storey Priyatelenko's beehive are described here in detail. Original construction of beehive was tested in the apiary near Kiev (Ukraine) in 40 bee colonies during 8 years. It was found that application of modified comb frames with metal top bars and cross-ways positioning of the chambers ensures the integrity of honeybee nest like in a natural tree hollow, provides healthy conditions for brood, allows using the condensed water, and decreases the tendency to swarm and decreases the labor costs for beehive's maintenance.

Key words: *patent, innovation, beekeeping, technology, frames, beehive, tree hollow.*

Introduction. Many achievements from previous years and different beekeeping technologies were used to create the modified three-storey beehive of Vasyl Priyatelenko. This construction with unique 'n' cross-section metal top bars was described in several articles [1– 7]. The beehive has the Ukrainian Patent № 64536 and was registrated on 10.11.2011 [8].

The goal of the work. 1) To find and describe the peculiarities of natural honeybee nests; 2) To test the efficiency of construction of V.Ya. Priyatelenko's beehive; 3) To test and develop efficient beekeeping technology on the base of application of V.Ya. Priyatelenko's beehive.

Material and methods of research. Original construction of V. Ya. Priyatelenko's beehive was tested in the private apiary near Kiev (Ukraine) during 8 years. Forty beehives with 40 bee colonies were used for this study.

Results of research and discussion. Eight years of tests and observations showed us that tested model of beehive is close to the natural construction of the honeybee nest in a tree hollows and it allows the bee colony to develop in a natural way. The results of studies and observations allowed us to propose and describe here the original algorithms, or so called "formula of the honeybee nest" that is describing the peculiarities of natural honeybee nests. This formula has the following characteristics: 1) the distance between the centers of two neighboring honeycombs is 37 mm; 2) the spacing between the honeycomb and side wall of beehive body is 7,5 mm; 3) the necessity for a solid metal top bar on the frames; 4) the absence

of a bee space above the frame; 5) the original height of honeybee nest is not less than 50 cm; 6) the presence of integral beeswax connection of all the combs inside the honeybee nest; 7) free movement of all the individuals of the honey bee colony inside the nest; 8) constant opportunity for the vertical growth and development of the honeybee nest.

Vasyl Priyatelenko's beehive consists of three movable storeys with a removable stand and roof. The beehive consists of a shallow bottom body and a deeper central hive body which act as brood chambers, and a shallow standard upper "super" for storage of the honey. The honey super is covered with a standard wooden roof. The top bars of the frames in the super are covered with a transparent plastic sheet above which is an inner cover made up of strips of wood. There is no bee space between the top bars of the super frames, the plastic sheet, nor the inner wooden cover. The bottom body has 8 modified Dadant frames with metal 'n' cross-section top bars, and wooden side and bottom bars. The central brood body has 12 frames, again with the unique metal top bars, and wooden side and bottom bars. The honey super has 8 standard wooden Dadant frames. Instead of the frames in each box being aligned, the bottom frames and those in the honey super are parallel with the hive entrance, with the frames in the central chamber placed crosswise. There is no bee space between the metal top bars of the frames in the bottom box and the bottom bars of the frames in the central brood box.

Eight years of tests confirmed that the beekeeping technology on the base of Priyatelenko's beehive consists following steps. The honeybee colony (either a captured swarm or package bees) is initially hived inside a large brood box, or a single deep body, with 12 narrow-high removable comb frames to which is attached a removable floor and roof. To further the colony's development two additional storeys with 8 narrow-high comb frames are applied. One storey is set on the hive floor as the first, ie bottom hive box, and it allows the brood nest to expand downwards. The middle box consists of 12 narrow-high comb frames, on top of which is added the upper super storey with 8 narrow-high frames which are used for the storage and harvesting of honey. So far, all the seasonal needs of the bee colony are regulated through the use of the top and bottom hive bodies. All together, 28 hive frames used artificial beeswax foundation with size of 410 mm x 260 mm.

The most important feature of this modified beehive is the use of two types of hive frames and that the narrow-wide frames are set across, ie at right angles, to the narrow-high frames, and the bee space between the frames in the storeys both below and above the middle box is absent or only 3 mm.

The second important feature of the beehive is the special construction of the frame itself. The upper part of the frame (top bar) is unique in being made of metal with 'n'-shaped cross-section with the sides being 7 mm x 7 mm. Artificial wax foundation with standardized size of 410 mm x 260 mm is attached to the groove of the metal bar. The frames of original design have very small transverse dimensions for both the upper and lower parts. For the bottom bars, wooden strips with a cross-section size of 80 mm x 80 mm are used.

It was found in experiments and tests that the 'cross-way' positioning of the chambers and frames with unique design they contain, provides natural and integral wax connection throughout the nest and that feature considerably reduces the tendency of bee colony to swarm. Our observations showed that honeybee nest inside Priyatelenko's beehives keeps its integrity throughout the four seasons and it provides the beekeeper with a useful method of controlling the colony's development. The results of experiments showed that in this modified beehive the honeybee colony is almost completely provided with the water it needs from the condensation of collected nectar and from the humidity inside the hive during all four seasons. It was found in our tests that the construction of modified three-storey Priyatelenko's beehive creates a natural microclimate in a honeybee nest that significantly increases the productivity of the honeybee colony and, what is the most important, it helps provide the honeybee brood with resistance against some diseases.

It was recognized that the experience of effective use of this beehive's construction and beekeeping technology offers easy maintenance of bee colonies, thus significantly decreasing

time spent in labor, and yet allows the beekeeper to receive up to 50 kg of honey per season from one super.

Finally, it was found that the application of modified three-storey Priyatelenko's beehives with modified comb frames, metal 'n'-shaped top bars and cross-ways positioning of the chambers ensures the integrity of honeybee nest like in a natural tree hollow, provides healthy conditions for the development of the honeybee brood, allows using the condensed water, decreases the tendency to swarm and decreases the labor costs for beehive's maintenance.

REFERENCES

1. Priyatelenko V. Ya. Modified construction of beehive (Three-storey beehive with special comb frames) / V. Ya. Priyatelenko // Pasika. – 201 . – № 3. – 30 p.

2. Priyatelenko V. Ya. Modern beekeeping technology with "effect of honeybee nest inside a natural tree hollow" / V. Ya. Priyatelenko // Pasika. – 2013. – 32 p.

3. Priyatelenko V. Innovative beekeeping technology: the construction of a modified three-storey beehive with unique frames based on wild honeybee nests in hollow trees / V. Ya. Priyatelenko // Pasika. – 2013. – 38 p.

4. Priyatelenko V. Ya. A Ukrainian beehive which allows the bees to build a nest as they would in a hollow tree / V. Ya. Priyatelenko, E. V. Ilienko, V. N. Fursov. – The Beekeepers Quarterly (Liverpool, UK). – 2013. – Vol. 113. – P. 32-38.

5. Priyatelenko V. Ya. Unique three-storey beehive with modified frames with "n"-shaped top bars and effect of a hollow tree / V. Ya. Priyatelenko, E. V. Ilienko, V. N. Fursov. – Poster at 43-d International Apicultural Congress APIMONDIA (September 29th – October 4th, 2013). – Kiev, Ukraine, 2013. – P. 365.

6. Priyatelenko V. Ya. Innovative beekeeping technology: the construction of a modified beehive with unique frames based on wild honeybees' nests in hollow trees / V. Ya. Priyatelenko, E. V. Ilienko, V. N. Fursov. – Abstracts of reports of VIII Congress of Ukrainian Entomological Society (August 25-30th 2013, Kiev, Ukraine). – Kiev, Ukraine, 2013. – P. 129-130.

7. Priyatelenko V. Ya. A Ukrainian beekeeper's impressions of the Apimondia Congress and other thoughts / V. Ya. Priyatelenko. – The Beekeepers Quarterly (Liverpool, UK). – 2014. – Vol. 115. – P. 33–34.

8. Priyatelenko V. Ya. Patent for the model № 64536 named "Beehive of V. Ya.Priyatelenko", registrated in the State Registry of Patents of Ukraine on 10.11.2011, Kiev, Ukraine.

МОДИФИЦИРОВАННЫЙ ТРЕХКОРПУСНЫЙ УЛЕЙ ПРИЯТЕЛЕНКО С УНИКАЛЬНЫМИ СОТОРАМКАМИ / Приятеленко В. Я., Ильенко Е. И., Фурсов В. Н.

Приведены особенности строения улья и инновационной технологии эффективного применения трехкорпусного улья оригинальной конструкции Е. Я. Приятеленко. Ульи В. Я. Приятеленко были испытаны на частной пасеке из 40 ульев в окрестностях г.Киева (Украина). Установлено, что применение модифицированных рамок с металлической верхней планкой и перекрестное положение рамок в корпусах улья обеспечивает устойчивую конструкцию пчелиного гнезда, сходную с природным гнездом, обеспечивает более здоровые условия для развития расплода, обеспечивает пчелосемью водой за счет конденсированной влаги, уменьшает ройливость пчелосемьи и уменьшает трудозатраты на обслуживание улья.

Ключевые слова: *патент, пчеловодство, инновация, технология, пчелорамка, улей, дупло.*

МОДИФІКОВАНИЙ ТРИКОРПУСНИЙ ВУЛИК ПРИЯТЕЛЕНКО З УНІКАЛЬНИМИ СОТОРАМКАМИ / Приятеленко В. Я., Ільєнко Е. І., Фурсов В. М.

Наведено особливості конструкції вулика та інноваційної технології ефективного застосування трикорпусного вулика оригінальної конструкції В. Я. Приятеленко. Вулики В. Я. Приятеленко були випробовані на приватних пасіках із 40 вуликів на околицях м. Києва (Україна). Встановлено, що використання модифікованих рамок з металевою верхньою планкою та перехресне розміщення рамок в корпусах вулика забезпечує стійку конструкцію бджолиного гнізда, схожу із природним гніздом, забезпечує здорові умови для розвитку розплоду, забезпечує бджолосім'ю водою за рахунок конденсованої вологи, зменшує ройливість бджолосімей і зменшує трудовитрати на обслуговування вуликів.

Ключові слова: *патент, бджільництво, інновації, технологія, бджолорамка, вулик, дупло.*