

Review Article

Methods of Zootechnical Evaluation of the Queens

Pablo Montesinos Arraiz*

Faculty of Veterinary, Universidad Centroccidental Lisandro Alvarado (UCLA), Barquisimeto, Venezuela

*Corresponding author: Pablo Montesinos Arraiz, Faculty of Veterinary, Universidad Centroccidental Lisandro Alvarado (UCLA), Barquisimeto, Venezuela

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In the genetic selection and improvement programs of the reproductive animals, an assessment must be made of the quantitative or measurable characteristics whose hereditary differences are transmitted from generation to generation by the same mechanisms of the genes responsible for the qualitative differences [1]. A reproductive animal can be evaluated through the analysis of several aspects: assessment of its genetic potential at the request of the qualities of its ancestors (pedigree), by that of its half-siblings (collaterals), by that of its descendants (testing), or through their own genetic material (studying their genome); and it can also be evaluated through its productive performance and its phenotype [2]. Despite the fact that honey bees were the first intensively breeding animals, after the silkworm *Bombyx mori* L [3] and that the first research carried out on intensive livestock farming was directed at beekeeping [4] there have not set criteria, patterns and parameters to describe the queens bees phenotype and neither the reproductive performance, as has been done in other livestock farms with their breeding animals. All of which bring about a great void in the queens evaluation. The races of bees have been differentiated based on biometric methods and behavioral characteristics [5]. Biometric measurements have to do with the width of the thorax and abdominal segments; the length of the tongue, legs and wings; the color of the first segment dorsal abdomen; the length of the tongue; the hairy covering and the wings nervation [6,7]. Thus we see that the biometric methods have an eminently entomological approach and basically oriented to the bee workers, not giving importance to the zootechnical-reproductive characteristics of queens. In the queens has been studied: the relationship of weight with the number of ovarioles [8]; how the fecundity of queens is influenced by their weight [9]; the relationship among the weight of the queens at birth with the number of ovarioles and the volume of the spermatheca [10]; how the selection for the width of the abdomen of the queens improves some production characteristics [11]; the correlation among the genetic and phenotype parameters and the weight, width and length of the abdomen [12]. From a zootechnical point of view, of queens in general it has only been said that those with large abdomen, rounded flanks that gradually thin out and have uniform color are good for laying eggs, although sometimes a queen with the characteristics described above is not necessarily a good egg-laying queen [13]. The criteria used to assess the behavioral characteristics of the queens are inferred from the behavior of the colonies (of their progeny) the ability to winter, the degree of docility, the tranquility on the combs when the hives are been inspecting, the non-willingness to swarm, or that if it is a good honey-producing colony queen [13]. There have been indicated of the queens imprecise aptitudes, such as: whether she has filled three

or four combs with brood or whether the egg laying is concentric and concentrated and with brood of similar ages, she is a good queen; that if she is erratic in her movements it is not desirable; that if she lays continuously, producing brood through out the season and into late fall, she is a good queen [13]. Hence, the absence of criteria, patterns, parameters, indicators and zootechnical characteristics of phenotypic and reproductive value to evaluate queens creates a great void in the exploitation of bees as livestock animals. Consequently, it is necessary to establish practical and easy-to-apply zootechnical methods with the following objectives:

1. Provide the beekeeper with some parameters and patterns that, at the time of the inspection of the hives, allow him to zootechnically describe the queens, in a technical, truthful and fast way; relying on the observation of its most outstanding phenotypical aspects.
2. Make available a technique for quantifying the queen egg laying, based on biological criteria that are easy to understand and apply, with which the beekeeper can evaluate the reproductive behavior of queens within the conception of a farm animal.

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