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Studies on Influence of Breeding Success and Genetic Diversity with in Honey Bee Species

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Abstract

The majority of selection of traits desires in animal breeding are strongly influenced by the environment. The reason for this was that the simultaneous consideration of individuals and siblings performance in the early days of animal breeding /genetic diversity was rather intuitive. As a result of weighting factors account so for degree of kinship between the animals and describes the percentage of shared genes, originating from shared ancestors, inter relationship poses serious challenges in properly estimating breeding values of honey bee.

Keywords: Honey Bee species; Breeding; siblings; Breeding; Value Estimation; Genetic diversity; DNA; chip methods.

INTRODUCTION

The majority of selection traits desired in breeding are strongly influenced by the environment. Kent c., Formosa, 2008).[13] An important stride in animal breeding occurred when instead of relying solely on animals individual performance, Le conte, Haris, 2010)[7] test result of siblings were also taken consideration when selecting potential breeders for the next generation (Falconer and Mackay 1996)[4], this early foundation breeding value estimation(B V E), Wilson, M.A ,1971)[15] came into use and led to success in plants, animals, and insects. BVE combines the test data of related animals, (not only siblings) with reasonable weight factors and consider the different inheritance of traits correctly, identical by descent (genesoiriginate from shared ancestors. (Felcorner D. C 1996)[4]

The value is easily to calculate if two animals (kent, C Formosa 2008)[13]/insects are shared same mother and father expected result of identical genetic structure by 50% or s single parent in common 25% if shared ancestors are inbred as closely related animals shared more identical genes, therefore more meaning ful informants of underlying gentic potential and molecular structure of animals / insects who share few genes of same hereditary orgin. (Spotter, A Gupta, 2016)[19] virontou, 2006)[17], Wilson, M. A, (1971).[15]

Studies on Genetic Particularities in Honey be Species

Honey Bees poses a particular problem regarding the calculations of degree of kinship between related colonies, performance and behavior of honey bee colonies dependent upon the traits of both the queen and the workers bee Biene feld and Reinhardt, 2007).[3] The correct approach all three simultaneously of all kinship calculated

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together together the yield the correct link between the genetic heritage of the bee colonies and the performance test results. This complex interrelationship naturally poses serious.

Challenges in Property Estmating Breeding Value of Honey bee.

Breeding progress in *Honey Bee*, shows, a clear increase in genetic progress with regard to all selection criteria since introduction of BVE, identified by black triangle for each characteristic., (Oxley, and Oldroyd, B.P., 2010)[8] honey productions via genetic and molecular basis inheritance is increased 0.03% per /year, so the rate of genetic improvement was 13 times *Higher* at 0.61% annually, statistics from 2004, when we started evaluation for mites varroa species 2004 report stock using BVE notable improvement occured, both breeders due to improve colony fitness but also percolates through out entire bee keeping community. Oxley, p. and oldroyd, B.P, 2010).[8] As a result among breeders honey output has increased by 0.7 mg, annually per colony over the last 20 Years(oxley, and oldroyd B. P, 2010)[8] kent, M.A, 1971, wilson.M.A, 1971).[8,13,15]

In *Resent Years*, have come at high price a substantial decrease in genetic diversity, declining vitality, and increase in winter colony loses does exist then the loss rate in countries with negligible breeding activity should look much more optimistic, after the high loss rate during winter 2002 - 2003, an European Union wide surve

Bee mortality and Bee Surveillance a study

Study, indicated result show a Germany or Australia with their comparatively intense bee breeding activities have any higher winter losses than countries in which bee breeding is negligible or non existent. wilson E O (1971)[17]. The influence of breeding on Global honey bee genetic Diversity, no indication of negative impacts from breeding, selection / genetic diversity within the carniolan population, However such effect do exist namely among other honey bee sub species. Many countries were not satisfied with their performance of local honey bee varieties, to remedy perceived (Wilson, EO, 1973)[17] wilson, M.A, (1971)[15], Le conte, Harris, 2010)[7], Genersche, 2010)[5], kent, Formosa (2008)[13] inadequate, the import improved, in other word's the loss of genetic diversity has come about due to s lack of selection in other honey bee species

Genetic Diversity in Honey bee

Over 25 different subspecies of western honey bees have originated through bt he vastly different environment conditions across the species distribution area. The different subspecies of Apis Manage both the heat and dryness of Africa and Arab countries were not originally colonized by honey bees, but today honey bees found in this location in abundance over by immigrants Le conte ,Haris, 2010)[7] SpotterMatting of parents groups as well as the difficulty of standardizing environmental influence on honey bees mean that world wide and also minimally changed by breeding activity. Now recently has human influence through breeding has detectable with in two European honey bee subspecies (carniolan and Italian with the Buck fast bees a deliberate cross between different honey bee subspecies(virontontou, 2006), spotterA, Gupta, 2010)[17,9] kent, c, Formosa,(2008).[13]

DISCUSSION

This views, however its too one sided, because genetic diversity, and molecular structural changes each individual subspecies, are equally important between the subspecies. The resulting subspecies of Honey bee variety Egyptian honey bee, Apis mellifera lamarkii towards wasps (Vespa orientalis, in particular case, the bees stopt flying and focus on protecting the nest entrance the native bees has evolved a protective behaviour against this predators found in Near and middle East. (virontontou, 2006)[17]

However imported carniolan and Egyptian X carnica hybrids are often helpless, suffering high predator from this wasp. Bee subspecies are often well adaptation to local environmental conditions as well as local disease and parasites, because the native subspecies is seen to have insufficient traits for bee keeping or to cross breed them massively damage genetic diversity on a global level. (spotter, A, Gupta, 2016)[9], Le conte, Haris, 2010)[8] Research of *European Union* smart bees project launched in *November* 2014, declared, Will be used for such disappearance of other threatened *European Honey Bee*, subspecies. A survey in Asia showed a distressing level of displacement of native honey bee species (Apis cerana indica through selected European bee Apis mellifera stock (Bienefeld & Jones (2015).[3] Moreover the replacement of subspecies is not only disadvantageous for the countries which stand to lose their autochthonous subspecies but also globally, because of this development reduces the valuable gene pool of these displaced species, as a reducing for climate changes, as reduced genetic diversity world wide replacement of 1010) subspecies will reduce the change of successful adaption to changing environment. (Benfiled,

2010)[1]

Breeding Genetic Diversity; Taking The Long View

However, breeding Genetic diversity depletion and decrease Vitaliy inbreeding is an extreme form of breeding. Implementation skilfully, in breeding can Substayially accelerate selection sucess. Extreme inbreeding is known to be especially dangerous among Honey bees (Bienefeld, Reinhardt, & pirvhner (1989)[4] Responsible breeding mean not optimizing for short term breeding progress whatever the cost, but rather ensuring that the population is sustainability improved over a long time frame. Introducing unselected individuals of the same species in controlled manner or Applying selection methods based on long term strategies, also size and variation in size of the off spring groups and several other factors also impact long term breeding success. To combine all of these favorite factors in relevant simulation studies over long period of time is difficult and different times consuming. (Spotter A, Gupta, 2016)[9] Wilson, M.A, 1971),[15] Genrsche, (2010)[5] *Smart Bees* in project. announced in www.Beebreed.eu already contains some planing tools for breeding success to help yo limit the increase in breeding within the carniolan bee population.

RESULT

Breeding DNA Genetic method Chip Techonology

The Future of Bee Breeding success or Genetic Diversity in Honey bees, (*DNA Genetic Methods Chip Technology*)

The time consuming performance testing of honey bee species Apis cerana indica, Apis mellifera Ligustica, Apis mellifera Mellifera, Apis mellifera sicillana, Apis cerana indica, Apis dorsata, Apis florea, Apis dorsata, etc., fundamental requirements for selection of breeding colonies. For other animal species, molecular Genetics, methods are increasingly used in order to evaluate the genetic quality of potential animals direct from their genes. The integration of genetic marker increasingly discussed regarding the selection of honey bees colonies. (Benefeld, 2007).[2]

In various studies DNA markers have already been found which lie close to the genes which potentially influence varrora resistance (Lapidge, oldoryd & dpivak, 2002), spivak, Le conte et al., 2011, oldroyd 2010, Mayer and Gupta & Bienefeld, 2016, following new molecular genetic methods *DNA Chip Technology*, are increasingly used in the search for Genes. (SpotterA, Gupta, 2016)[9], kent, C, Formosa, (2008)

These can be also integrated into BVE (Meuwissen Hayes & Goddard, 2001). The automation and high through out put method we received used here enable a simultaneous and cost effective analysis of several thousand of genetic markers from individual animals and this gives an exact look into the genome of honey bee queens (Gupta, Reinsch, and Bielefeld, 2013).[6] In future it is possible but unlike that all colonies will be analysing by using the *DNA Chip Method*, spotter, A, Gupta 2026)[9] When used with the right colonies, widely used parental colonies, their molecular genetic Data can substantially improve breeding sucess of *Honey Bee Species*. (Gupta P. and spotter, 2013)[6]

CONCLUSION

Traits which are especially difficult and or time consuming to measure such as Varror mites (Le conte j. Harris, 2010)[10] particularly benefit from these new methods. Additionally as a sort of free by products, breeders will receive more precise information about presntal, decent, sub species classification (spotter, A Gupta, 2016)[9] the genetic molecular diversity with in the honey bee population. (spotter, A.) Genomic selection project, implement in 2015, project for genome implement is highly promising concept for the honey bee with new genetic advance s we open the door the honey bee selection.

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