Fertile diploid drones in africanized honeybees, Apis mellifera adansonii

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Summary. 59 diploid drones of Apis mellifera adansonii, 12–37 days old, were tested for the presence of semen after provoked ejaculation; 13 drones ejaculated semen enough to be used in an instrumental insemination, but only three of them (5%) furnished 1 mm^3 of semen. The problems referring to the attainment of descendants from the 2n drones are briefly discussed.

Homozygosity of X alleles in Apis mellifera causes reduction in the size of the testes of diploid drones and the inheritance of this character is in accordance with the additive action of polygenes[1-3]. This paper reports data about the percentage of fertile diploid drones in Africanized honeybees (Apis mellifera adansonii). 59 diploid drones of Apis mellifera adansonii were reared by Woyke's method[4]. These drones (12–37 days old) were tested for the presence of semen on the penis tip, after provoked ejaculations. The males were marked on the first day of life (with special paint on the thorax) and maintained in a strong queenless colony until the experiment. This colony was housed in a Langstroth nest with 9 frames, 6 with sealed brood and 3 with honey and polen.

Haploid drones of Apis mellifera, 8–10 days old, are sexually mature[5,6] and ejaculate an average of 1.7 mm^3 of semen, this volume being equivalent to 11 million sperms[7]. Camargo[8] found 6 million sperms per mm^3 in haploid drones of Apis mellifera adansonii, apparently the only race that can produce diploid drones with large testes[2]. Honeybee queens that received from 1 to 20 mm^3 of semen in instrumental inseminations presented 1.4–5.8 million sperms in the spermateca[7]. This represents a percentage of success varying from 20 to 25% approximately. Only 13 diploid drones from our sample (22%) presented semen. These drones had the following ages: 12 days (2 drones), 13 (1), 15 (1), 17 (2), 23 (2), 25 (1), 30 (2), 33 (1), 37 (1). The volume of semen collected from the fertile 2n drones varied from 0.3 mm^3 to 1 mm^3. Nevertheless only three of the thirteen fertile drones ejaculated 1 mm^3 of semen (approximately 5% of the sample). Therefore, practically only these 3 drones would have a chance to produce descendants. These facts explain why it is so difficult to obtain descendants from diploid drones of Apis mellifera[9].

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Light-dependent homosexual activity in males of a mutant of Drosophila melanogaster

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Summary. Cytogenetical and behavioural studies on a γ-ray-induced mutant of *Drosophila melanogaster* is reported. The males of this mutant show abnormal phototactic response and light-dependent homosexual activity.

Sexual activity in males of *Drosophila*, like in most other animals including man, is a complex innate behavioural process which can be partitioned into a) act of pre-copulatory courtship and b) copulation. A sexually active *Drosophila* male performs acts of courtship consisting of a) recognition of female and orientation, b) wing vibration which is species specific and c) licking of female genitalia and attempted copulation, in a predictable order[2-5]. The first element of this series, the recognition of the female, is brought about through the agency of sex-pheromones emitted by mature females[6]. Thus, the sexual arousal in males is olfactory in nature and visual or other factors[2] do not seem to play a major role in the sexual activity of males of *Drosophila melanogaster*. In this communication, an interesting case of light-dependent sexually abnormal behaviour of males of a mutant of *Drosophila melanogaster* is reported. This mutant arose during experiments designed to isolate abnormal phototactic mutants. In these experiments, one-day-old Oregon-K males were irradiated with 3 kR of γ-rays and mated to attached-X virgin females. Resulting progeny was subjected to phototactic screening, using Benzer's[7] counter current distribution method. Flies not responding to light were isolated and designated as 'sluggish'. Males of one such sluggish mutant, besides showing abnormal

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