

Ushakumari, A., N.B. Ramachandra and H.A. Ranganath. University of Mysore, India. Relative performance of two strains of *D.nasuta nasuta* (wild and mutant) on different food media.

Drosophila species utilize a variety of sugar sources (Hassett 1948; Taylor & Condra 1983). Recently Ramachandra & Ranganath (1984) have recorded the existence of "subtle" differences between ecologically closely placed and between phylogenetically closely linked forms of *Drosophila*

to the media with different types of sugars. Sang (1972) has preferred that the mutant of *Drosophila* can be used to assess the significant role of nutritional resources on some aspects of the biology of *Drosophila*.

The present experiment involves two strains of *D.nasuta nasuta*, namely a wild strain and a mutant (white eye) strain. The adaptedness of these two strains has been measured in four different types of media containing either molasses or sucrose or fructose or glucose. The aim of this experiment is to assess and to quantify the ecological differences, if any, under laboratory conditions, between a wild and a mutant strain of *D.n.nasuta*.

These strains were maintained in four different media by adopting the serial transfer technique of Ayala (1965). Four replicates were made for each type of media. The populations were maintained at 21°C for 16 weeks. The mean values for population size, productivity, mortality and flies per bottle were calculated and the same is presented in Table 1. The mean square error from the test of analysis of variance was used to ascertain the inter strain differences in different media.

Table 1. Mean values (for 4 replicates) along with standard errors for population size, productivity, mortality, and flies per bottle in 4 different media for wild and mutant strains of *Drosophila nasuta nasuta*.

D.n.n. Strain	Parameter	SUGAR:			
		Molasses	Sucrose	Glucose	Fructose
Wild	Pop. size	211.30± 9.75	221.12±3.59	234.85±4.77	115.12±7.36
	Productivity	133.75± 3.49	111.32±3.33	119.01±3.91	54.74±4.72
	Mortality	118.73± 4.45	101.00±2.81	110.14±2.80	50.83±4.49
	Flies/bottle	58.27± 2.68	57.99±0.94	61.60±1.25	30.19±1.93
Mutant	Pop. size	125.16±10.52	66.98±1.64	31.26±3.68	37.86±4.74
	Productivity	71.09± 6.64	37.37±2.44	10.95±1.30	15.07±2.11
	Mortality	50.82± 7.54	30.77±1.79	12.46±0.92	11.68±1.31
	Flies/bottle	37.33± 3.70	20.04±0.59	9.79±0.89	11.02±1.38

Adaptedness refers to ability of the carriers of a genotype or a group of genotypes to survive and reproduce in a given environment (Dobzhansky 1968). This provides means for comparing the overall biological performance of one gene pool with another, where both are maintained under similar or defined environmental conditions. The statistical comparison of the performance of the strains under investigation reveals the following:

(a) The population size of wild strain in the media containing either molasses or sucrose or glucose is almost the same without significant differences, while in the media containing fructose, it has attained the least values for population size. Therefore, the relative performance of the wild strain is as follows: Glucose = Sucrose = Molasses > Fructose.

(b) On the other hand, there exists striking differences in the ability of the mutant strain of *D.n.nasuta* to exploit the media with different sugars. This can be represented as follows: Molasses > Sucrose > Fructose = Glucose.

(c) Interstrain comparison reveals, that the wild strain of *D.n.nasuta* has attained better adaptedness values than the mutant strain in all the four types of media under study.

Similarly, the relative viability of five mutant strains and a wild strain of *D.melanogaster* has been studied by Ribo & Prevosti (1969). Rudkin & Schultz (1949) have shown that mutants (yellow, white, Vermilion) of *D.melanogaster* survive better than the wild type on tryptophane diets. Gale (1964) has found that the mutant vestigial was more superior to dumpy mutant and dumpy is superior to Oregon K strain for their inter and intra specific competitive abilities.

Thus, the present investigation has revealed the differential ability of the wild and the mutant strains of *D.n.nasuta* to utilize the media containing different types of sugars.

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