Siddaveere Gowda, L., H.A. Ranganath and N.B. Krishnamurthy. University of Mysore, Manasagangothri, India. Virginity and longevity in Drosophila.

The viability, longevity, fecundity and fertility are some of the adaptive components of a population. Population density and its regulation depends on these characteristics. The present report deals with the longevity of virgin and non-virgin flies of D. nasuta. Virgins were isolated from the Coorg strain of D. nasuta. 30 males and 30 females were placed separately in milk bottles. Here the mating activity and hence reproduction is avoided. In another series, 15 males and 15 females were kept together thus allowing them to participate in copulation and reproduction. Once in 10 days, the flies were transferred to fresh bottles and the number of dead flies was recorded. Table 1 gives the mean longevity in days of the two sexes both in independent and mixed cultures. The summary of the student t-test is given

Table 1. Mean longevity in days of males and females in independent and mixed cultures

	Independent		Mixed	
Replicates	Males	Females	Males	Females
1	61.66 ± 3.25	60.33 ± 3.33	34.33 ± 3.70	42.33 ± 6.56
2	65.33 ± 3.97	55.83 ± 4.83	41.00 ± 4.86	23.00 ± 2.42
3	60.33 ± 2.58	62.00 ± 2.82	39.66 ± 5.47	33.00 ± 5.59
4	60.00 ± 3.87	63.00 ± 3.34	51.60 ± 4.79	33.00 ± 5.74
5	-	-	46.33 ± 4.48	33.00 5.47
Average	61.83 ± 1.66	61.50 ± 1.47	42.60 ± 2.10	32.86 ± 2.47

in the Table 2. In brief, the unmated males and females have more life span over the corresponding mated sexes. This confirms the concept of Dobzhansky (1968) that virgin females of Drosophila live longer on the average than those inseminated and actively ovipositing.

Table 2. Summary of the student t-test computed to compare the mean longevities of the two sexes.

1.	Independent males	= Independent females	t = 0.37	p > 0.50
2.	Independent males	> Mixed males	t = 2.56	p = 0.025-0.010
3.	Independent females	> Mixed females	t = 4.08	p = < 0.001
4.	Mixed males	> Mixed females	t = 7.10	p = < 0.001

This situation may not simulate the conditions in a natural population. Mating and actively reproducing individuals are the positive contributors to the population structure and growth. Stern (1970) has opined that the relative number of progeny produced by individuals is controlled by some systematic factors which are equally scrutinised by natural selection. One of them is the 'death of the organisms'. The indefinite prolongation of life and reproductive capacity would lead to overpopulation. It would interfere with further evolution since evolution involves replacement of older forms of life by newer ones and presumably better adapted ones (Dobzhansky, 1968). Thus, at the population level, natural selection puts an embargo on the higher longevity of the reproducing individuals, thus regulating the population density.

Relatively, the organisms involved in reproduction may wear out more with age than the non-reproducing ones. Thus, the physiological senescence may set-in at an earlier date and curtail the life span of reproducing individuals.

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References: Dobzhansky, Th. 1968, In: Evolutionary Biology Vol. II pp 1-34; Stern, J. T. 1970, In: Evolutionary Biology Vol. IV pp 39-66.