of X chromosomes (Table 1). Sometimes interchromosome connections have been found between heterologous chromosomes.

There were tight homologous and heterologous synapses of chromosomes during practically all the mitotic cycle. We propose that normal homologous synapses have been connected with the intact structure of the common chromocenter.

Table 1. Homologous synapses of chromosomes X and 2 in neuroblasts of D. melanogaster.

	Tight synapses (%)				
Chromosome	Canton-S	Df(2R)MS-2^{10}/+	Df(2L)C'/+	Df(2R)/Df(2L)	In(2LR)SMI/+
2	73.7	61.3	55.8*	29.3*	51.2*
X	48.0	52.7	51.3	48.9	57.6*

* significant differences from control (Canton-S), $P < 0.05$

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Sene, F.M., M.A.Q.R. Pereira, C.R. Vilela and N.M.V. Bizzo. IBUSP, São Paulo, Brazil. Influence of different ways to set baits for collection of Drosophila flies in three natural environments.

Bait traps have been used in South America and other parts of the world in most ecological and geographical surveys of Drosophila. Dobzhansky and Pavan (1943, 1950), Pavan, Dobzhansky and Burla (1950), Freire-Maia and Pavan (1950), Pavan and Cunha (1947), Peterson (1960), and others have used this technique.

On the other hand, several investigators, especially Dobzhansky and Pavan (1950), Pavan (1959) and Brncic (1957), have pointed out that the results obtained do not always represent natural conditions, since they are affected by many factors: the weather, kinds and conditions of bait, natural foods existing within the surveyed area, feeding and flight activities of the flies, and so on. Da Cunha et al. (1957) show that species of flies are attracted in different frequencies when different yeasts are used as bait.

In the present paper we report the influence of two different types of traps using the same kind of bait, on the attraction of species of Drosophila. Beppu and Toda (1976) did a similar study in Japan and conclude that the different ways to set bait cans affect species attraction.

The collections were made in three localities, two of which are adjacent to each other: (1) Mogi-Guacu (41°11'W-22°17'S). The area is covered by cerrado vegetation and is part of a Natural Reserve belonging to the Secretaria de Agricultura do Est. de São Paulo. Four collections were made in January, March, May and June 1978. (2) Peruibe (46°56'W-24°14'S). The area is covered by restinga (or strand) vegetation, which shows a transitional type of vegetation between the dunes and the Atlantic Forest. The place where the collection was made is about 2 km away from the sand beach. Four collections were made in May, July and October 1978 and in February 1979. (3) Peruibe (46°55'W-24°14'S). The area is covered by typical dune vegetation and is situated close to the sand beach. Three collections were made in May and July 1978, and in February 1979.

In all collections, bananas and oranges seeded with baker's yeast were used as bait. The collections were made 2 or 3 days after the baits were set. The bait was placed in two different ways: (1) On the ground--the banana-orange was simply placed on the ground in an area previously cleaned in order to avoid problems of sweeping with the net during collection. The collection was done by sweeping the net over the trap while the fruits were kicked. (2) In hanging cans--the banana-orange was put inside of 1-liter cans, which were ung by wire on trees at about 1.5 meter over the ground. The collection was done by lacing a net on the can's open side. A rubber band was used to keep the net fastened on the can. By carefully tapping the can, all flies can be collected inside the net. With this technique, no flies can escape. In each collection, we have three situations: (a) cans hanging close to the ground baits, never more than 3 meters from each other; (b) ground baits situated at least

SPECIES	CERRADO Jan/78		Mar/78		May/78		Jun/78		RESTINGA May/78		Jul/78		Oct/78		Feb/79		DUNES May/78		Jul/78		Feb/79	
	C	G	C	G	C	G	C	G	C	G	C	G	C	G	C	G	C	G	C	G	C	G
Sbg.willistoni	9.8	49.6	10.7	44.6	13.7	19.3	32.4	62.8	46.4	40.5	8.4	36.3	2.3	2.2	9.5	21.8	36.6	23.4	6.5	5.4	3.4	7.0
D.capricorni	-	-	-	-	-	0,1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
D.nebulosa	0.3	12.0	0.1	1.5	0.2	3.5	-	1.6	-	0.3	-	-	-	-	0.7	2.7	-	0.3	-	-	0.9	6.1
Sbg.bocainensis	-	-	-	-	-	0.5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
D.austrosaltans	-	-	-	-	-	-	0.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
D.prosaltans	0.5	-	0.6	0.1	4.9	0.8	1.5	-	0.2	-	0.1	-	-	-	0.1	-	0.1	-	0.1	-	-	-
D.sturtevanti	52.6	0.6	69.4	9.9	37.4	19.4	16.5	2.7	18.1	1.7	41.6	21.3	7.0	0.9	22.7	7.1	14.5	1.3	22.9	4.6	8.9	0.9
D.malerkotliana	1.1	0.4	8.7	14.8	2.3	2.3	0.1	0.4	3.9	7.8	3.3	5.4	0.1	1.8	5.9	15.8	4.6	2.3	3.9	7.2	11.3	22.7
D.simulans	21.3	6.8	1.0	2.0	19.2	15.4	20.2	7.4	16.6	15.9	29.8	12.1	55.4	64.7	31.9	36.2	13.0	14.0	46.3	52.7	45.5	41.5
D.latifasciaeformis	0.6	1.7	1.0	6.7	9.0	24.8	0.4	0.6	8.7	26.3	0.8	4.3	1.0	4.0	0.7	1.3	16.7	44.8	1.8	14.4	1.4	3.5
D.immigrans	-	0.2	-	0.1	0.2	0.1	0.3	0.8	-	-	-	-	-	-	-	-	-	-	-	-	-	-
D.ararama	-	-	-	-	-	0.2	0.1	0.1	-	-	-	-	-	-	-	-	-	-	0.1	-	-	-
Gr.cardini	4.1	15.2	4.6	13.1	4.3	7.7	14.0	14.0	2.1	1.1	3.4	7.2	1.9	2.7	23.3	13.6	3.5	0.3	3.8	2.8	22.3	18.3
D.guaramunu	-	0.8	-	0.2	-	0.3	0.3	1.0	-	-	-	-	-	-	-	0.4	-	-	-	-	-	-
D.guarani	-	-	-	-	-	-	0.5	-	-	-	-	-	-	-	-	-	-	0.3	-	-	-	-
D.pallidipennis	-	-	1.0	0.1	-	-	0.4	-	0.1	0.3	0.2	-	0.4	-	0.6	0.1	0.5	-	0.5	-	0.5	-
Gr.repleta	9.6	0.4	3.4	2.2	9.0	5.1	12.5	1.4	3.6	4.3	12.4	13.0	31.5	22.8	3.3	1.0	10.0	12.3	14.0	12.8	5.3	-
D.griseolineata	-	-	-	-	-	-	-	-	-	0.6	-	-	-	-	-	-	0.5	-	-	-	-	-
Gr.calloptera	-	-	-	-	-	-	-	-	-	0.3	-	-	-	-	-	-	-	-	-	-	-	-
Gr.tripunctata	-	11.8	0.2	4.6	-	0.5	0.6	6.8	-	-	0.1	0.1	-	0.4	-	-	-	0.6	-	-	-	-
Total	614	474	892	5262	511	1400	1645	482	1118	345	2986	831	1014	223	2380	920	852	299	2775	389	1686	299

C = Cans ; G = Ground

TABLE 1 - Results of collection made using baits setted at differents ways in three environments situation, in differents times.

200 meters away from any can baits; (c) can baits situated at least 200 meters away from any ground baits. Since we found no difference between the ground baits in cases (a) and (b), they are considered together here; the same happens with can baits in cases (a) and (c).

All flies were brought alive to the laboratory and classified. All of the specimens were deposited in the Museum of Zoology, USP. In the classification we placed some species in groups as follows: willistoni subgroup--consisting of the sibling species which were not identified; cardini group--consisting of three species, D. polymorpha, D. cardini and D. cardinoides. The identification of these flies is in progress. As far as we know, D. cardinoides is rare in all three areas studied, D. polymorpha is more common in cerrado and D. cardini is more abundant in restinga and dunes. Repleta group--this group will be the special subject for a future paper and we can say now that D. mercatorum is the most common species in the three areas; tripunctata group--the flies belonging to this group were not identified to species level.

The species and number of flies collected at the two different traps in the three ecological situations at different times are presented in Table 1. The preference of the different species to the two kinds of traps was not the same in the three environments analyzed. In the cerrado situation, the following flies show a preference: (a) to ground baits--willistoni subgroup, D. nebulosa, D. latifasciaeformis, cardini group, D. guaramunu and tripunctata group; (b) to can baits--D. prosaltans, D. sturtevanti, D. simulans and repleta group; D. malerkotliana show no preference and the other flies were collected in small numbers. In the restinga situation we found: (a) preference for ground baits--willistoni subgroup, D. nebulosa and D. latifasciaeformis; (b) preference for can baits--D. prosaltans and D. sturtevanti; D. malerkotliana D. simulans, cardini group and repleta group show no preference. In the dunes situation: (a) ground--D. nebulosa and D. latifasciaeformis; (b) can--D. prosaltans and D. sturtevanti; no preference--subgroup willistoni, D. malerkotliana, D. simulans, cardini group and repleta group.

We know from previous studies (cited above) that different kinds of baits attract different species of flies. But in this study we show that the same kind of baits give different results depending on the way they are set. In previous personal observations we have detected that the age of the bait, set on the ground, affects the attraction of different species. The same observation was made by Beppu and Toda (1976). Although we have no systematic data to show this, we have some evidence which seems to indicate that the species that were attracted preferentially by old baits set on the ground are the same as those that are attracted preferentially to baits set in cans. Based on this observation we have the hypothesis that the differences between baits set on the ground and those set in cans are caused by differences in the fermentation process.

As we can see from the results, the influence of the way the baits were set was strong in the cerrado, where 10 "entities" show preference and one was indifferent; in the restinga the effect was less obvious as only five showed preference while four were indifferent; in the dunes we have the smallest effect with four showing preference and five being indifferent.

A possible explanation is that in the dunes, the wind and the salty, dry situation affect the baits more strongly than in the cerrado, and interfere with the fermentation of the baits. Another hypothesis to explain the differences between the environments, that must be checked in the future, is that the species which have been grouped into what we have called the willistoni subgroup or cardini group could be different species in the cerrado and in the restinga or dunes (Dobzhansky and Pavan 1950), and instead of differences due to environmental situations we may have different species in each area. For the repleta group, we know for sure that the dominant species in the three environments was D. mercatorum. D. nebulosa shows a constant preference for ground baits in spite of the environmental situation; the same happens with tripunctata group species and D. latifasciaeformis. The flies of saltans group showed a strong preference for the can baits.

These data increase the problem of conducting a survey of the Drosophila fauna by using bait set in only one way for attracting the flies. For instance, the more extreme data found was the collection in the cerrado in January 1978. If we compare the collection made on the ground with the collection made in the can, we would be led to believe that they were made in two different environments and that the faunal composition of each were very different.

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Shadravan, F. and J. McDonald. Iowa State University, Ames, Iowa. The effect of environmental 2-propanol on the ability of flies to survive in alcohol environments.

Anderson and McDonald (1980) have recently demonstrated that Drosophila exposed to an environment containing 2-propanol undergo (1) a post-translational conversion of their alcohol dehydrogenase, (2) a significant drop in ADH specific activity, (3) an increase in ADH in vivo stability, and (4) a consequent increase in in vivo levels of ADH. These authors suggest that this phenomena may have adaptive significance for Drosophila living in those environments abundant in secondary alcohols (e.g., Heed 1978) by preventing the production of highly toxic ketones. A second prediction which follows from these data is that Drosophila exposed to environmental 2-propanol should be more sensitive to the toxic effect of alcohols due to a decrease in ADH specific activity. In this note we present the results of a study designed to test this prediction.

The strains used in this study are F-2 and S-1 as described by McDonald et al., 1980. These flies are completely homozygous (McDonald and Ayala 1978) and are fixed for an ADH-fast (F-2) and ADH-slow (S-2) allele. The relative survivorship of flies pretreated with 2-propanol and non-pretreated were examined at 0, .125, .250, .500, 1.00, 3.00, 5.00 and 8.00% ethanol. For each experiment 6 vials (3 vials of females, 3 vials of males) each containing 10 flies (6-10 days post-eclosion) were set up for each strain and alcohol concentration tested. Flies were allowed to fully recover from very light etherization for a period of 1-2 hours before

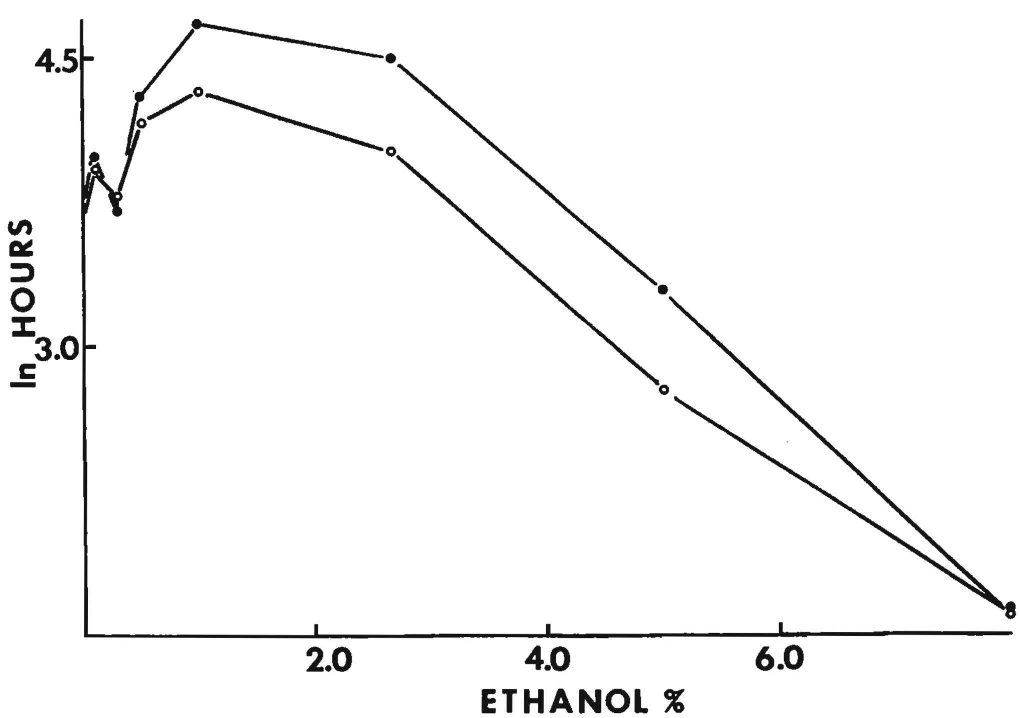

Fig. 1. Mean longevities given in lh(hr) for Fast strain exposed to increasing concentrations of ethanol. Closed circles are control flies and open circles are pretreated flies with 1% 2-propanol for 1 day.