

Band, H.T. Michigan State University, East Lansing, Michigan. *Chymomyza amoena* - not a pest.

The genus *Chymomyza* in the family *Drosophilidae* is of world-wide distribution (Throckmorton 1975). In North America they are typically regarded as forest or woodland species and are generally considered to be sap feeders (Wheeler 1963, 1965,

1970). As late as 1952 *Chymomyza amoena* in Michigan was still being collected around the cut ends of trees (Steyskal 1952) while Sturtevant (1921) reported that this species had been bred from walnut and butternut husks and acorns.

C. amoena in Michigan has now been found to be breeding in fallen apples in abandoned, remnants of abandoned and in commercial apple orchards. Both adults and larvae are able to use fresh apple as a food source. However, adults require a break in the skin in order to feed, and at the study sites outside East Jordan, Michigan eggs have only been found on apples on the ground, especially those which have been nibbled on by small animals or pecked by birds. Hence although individuals can be found in the trees, the MSU Pesticide Center does not consider *C. amoena* to be a pest.

Wheeler (1965) has commented that although economic pests in the family *Drosophilidae* are rare, some species may act as vectors for the transmission of plant diseases. Judging from the diseases manifest by the fruits on these long unattended trees at the East Jordan study sites, *C. amoena* may be such a species. Males are territorial, aggressive, and spar vigorously since lek behavior has not evolved. In the trees individuals may sit quietly wing-waving (a genus characteristic) on apples, but if challenged, chase one another over stems, leaves, branches and attached apples. Certainly they may transport mites; newly established mini-cages (small glass jars placed horizontally from which food dishes may be removed and inserted with forceps) may sometimes contain as many as 3 species of mites and several transfers of *C. amoena* larvae are required to get rid of them.

References: Steyskal, G. 1952, letter to Dr. Marshall Wheeler (courtesy of Dr. Wheeler); Sturtevant, A.G. 1921, *Carn. Inst. Publ.* 301, Carnegie Inst., Washington, D.C.; Throckmorton, L.H. 1975, *Handbook of Genetics* (R.C. King, ed.) 3:421-469; Wheeler, M.R. 1952, *Univ. Texas Publ.* 5204, pp. 162-180; _____ 1965, *USDA, Ag. Res. Serv., Ag. Handbook No. 276*, pp. 760-772; _____ 1970, *Catalogue of the Diptera of the American South of the U.S., Museu de Zoologica, Universidade de Sao Paulo*, part 79, pp. 1-65.

Band, H.T. Michigan State University, East Lansing, Michigan. Ability of *C. amoena* preadults to survive -2°C with no preconditioning.

Chymomyza amoena, a member of the Family *Drosophilidae*, in Michigan is now living in apple orchards where it can overwinter in some pre-adult stage, presumably the late larval stage. Development of a media for growing this species in the laboratory has enabled experimental work

on the mechanism of cold hardiness. In the process of determining that neither larvae nor pupae accumulate glycerol or other polyols when stored for 4 or more weeks at -2°C, late instar larvae--when disturbed--were found to have a tendency to leave the media en masse. This migratory tendency is not abated by mere transfer to 10°C for preconditioning at a low non-freezing temperature prior to subzero treatment.

Therefore larvae and pupae have been transferred directly from room temperature (22°C) to -2°C. The following data have been accumulated on the subsequent ability of either phase to complete development. Larval size is approximately 1 mg in weight.

Table 1. Emergence time following storage at -2°C for *C. amoena* larvae and pupae--no preconditioning.

Source	Stage	Days at -2°C	No. larvae or pupae	No. to emerge	No. days to emerge after -2°C
E. Jordan '78	larvae	3	7	6	14 days minimum
E. Jordan '79	larvae	3	4	4	14 days minimum
E. Jordan '78	larvae	8		larvae dead	
Grand Rapids	larvae	7		larvae reactive but not motile	
Lansing	pupae	1	5	5	3 days
E. Jordan '78	pupae	5	20	1	7 days
E. Jordan '79	pupae	4	20	2	12 days
E. Jordan '78	pupae	8	5	5	no record

Under random photoperiod in the laboratory, all larval stages and pupae can endure 24 h at -2°C. Late instar larvae (1 mg or larger) can resume development, pupate and emerge after 72 h at -2°C, but by 7 days are per-