MECHANISMS OF SYMPATRIC HOST RACE FORMATION IN THE TRUE FRUIT FLIES (TEPHRITIDAE)

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Recent behaviour and genetic studies on stereophagous and monophagous representatives of two tephritid genera, *Rhagoletis* and *Procecidochares* indicate that reproductively isolated populations on different host plants can evolve within a few generations. As mating in these flies occurs on the host plant, the primary isolating mechanism is host preference. Hybridization studies indicate host recognition and selection is controlled by a single gene. Thus gene flow can be drastically reduced or eliminated between a newly established host race and its parent population as a result of a mutation at a single host recognition locus. Furthermore, allozyme studies have shown that no major genetic revolution has occurred in recently established host races. All evidence therefore indicated that reproductively isolated host races can evolve sympatrically without prior periods of geographic isolation as a result of simple genetic changes. Similar patterns of sympatric speciation may be widespread in other phytophagous and parasitic insects.