

# Mechanism of Sexual Isolation Between of the Two Species (or strain), the Summer Fruit Tortrix, *Adoxophyes orana* and the Smaller Tea Tortrix, *Adoxophyes* sp. in Korea

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*Adoxophyes orana* and *Adoxophyes* sp. have not been clearly distinguished yet as a separate species in Korea. But recently, through more information about sex pheromone and ecology of *Adoxophyes*, it may be separated into two *Adoxophyes* species. *Adoxophyes orana* attacked apple, peach and pear trees mainly in the central and southern part of South Korea and *A. sp.* attacked on tea and pear trees in southern part of Korea. Their distributional regions overlap each other in the southern part of Korea. The mechanism of sexual isolation between *Adoxophyes orana* and *Adoxophyes* sp. may be due to differences in characters, such as sex pheromone composition. GC-MS analysis on sex pheromone gland extracts of *Adoxophyes orana* showed the unique sex pheromone composition, different from that of her neighboring countries, 95:5 ratio between Z11-14:Ac and Z9-14:Ac but 69:31:3:42 ratio between Z11-14:Ac, Z9-14:Ac, 10me-12:Ac and E11-14:Ac in *Adoxophyes* sp. In behavioral and field trapping assays, *Adoxophyes orana* males were attracted mainly to 95:5 ratio between Z11-14:Ac and Z9-14:Ac, but *Adoxophyes* sp. to various ratios of the two components. A component, 10me-12:Ac, enhanced the attractiveness of *Adoxophyes* sp. dramatically when added to blend of Z11-14:Ac and Z9-14:Ac, but not in *Adoxophyes orana*. Another component E11-14:Ac, detected in *Adoxophyes* sp. seemed to play an antagonistic role in male attraction of *Adoxophyes orana*. The diel rhythms of activities in mating and male response to pheromone trap of *Adoxophyes orana* and *Adoxophyes* sp. also were different, most *Adoxophyes orana* mated before lights-on but *Adoxophyes* sp. started to mate immediately after lights-on under 16L:8D photo regime. In addition to variation of sex pheromone composition, apparent differences in esterase isozyme pattern and mtDNA sequences between the two species imply the isolation of these two species is almost normal in nature.