

Leafmining Agromyzidae has been reported to cause damage a wide variety of crops. Spencer (1973) Compiled a comprehensive review of the damage caused by the family and listed 156 pest species. He also provided summarized information on the morphological identification, biology, distribution and control of agromyzid pest species.

This study is concerned with the identification of eleven agromyzid species that could be collected easily from legumes in Kenya. Although Kenya has approximately 602 species of leguminous plants only a total of 14 agromyzid species were reported to be associated with them. These were 3 species in the genera *Tropicomyia*, 3 in *Ophiomyia*, 2 in *Liriomyza*, 1 in *Chromatomyia* and 5 in *elanagromyza*.

First and foremost major determinants of diversity of Agromyzidae associated with leguminous plants were analysed using multiple regression. The theory that geographically ubiquitous species of plants have more species of insects feeding on them than similar but less widespread species was shown to hold true for the Kenya leguminous plants so area alone can explain most species richness in any region. Similarly the logarithmic plot of species-area relationship indicated that variations not accounted for was possibly due to the leaf-form, different number of habitats, altitude and taxonomic isolation. The drawback was inadequate botanical collecting of leguminous plants in Kenya, which possibly limited the species-area effects to only 16%.

Gel electrophoresis was also used to score enzyme mobilities of ten different species first using polyacrylamide gel then isoelectric points of the different proteins examined. All were diagnostic in separating the ten species of Agromyzidae. Starch gel electrophoresis was also carried out and an account of the species variation was provided, based on the data obtained. It can be suggested that enzymic data should be used as taxonomic characters in parallel with morphological, anatomical and multivariate characters. However from using the enzyme profile of mostly wild individuals all the ten species studied could be placed into distinctly separate genera. Out of four genera occurring in Kenya that were revised the species *O. spencerella*, *O. phaseoli*, *M. chalcosoma*, *M. vignalism*, *T. flacourtiae*, *Melanagromyza* spp. and *C. horticola* were found to be distinct. However overlap or relatedness existed between them the enzymes that distinctly separated these species were non-specific esterase enzyme, Malic dehydrogenase, Malic enzyme, Glucose-6-phosphate dehydrogenase, Hexokinase and phospho gluvoise isomerase.

An attempt was also made to see whether the populations from different host plants could be separated statistically by measurements calculated for both male and female using wilk's Lambada stepwise discriminant method, The measurements taken were ten morphological characters of *Chromatomyia horticola*, sixteen Morphological characters of *Ophiomyia spencerella* populations collected from different localities in Burundi and one locality in Kenya, sixteen morphological characters for *O. phaseoli* from Sri Lanka and Kenya and seventeen morphological characters for seven species associated with legumes. The proportion of the proximal to the distal part of the wing vein M3+4 was shown to be the best character that separated the five populations of *C. horticola* into two clusters. The first cluster consisted of *Galinsoga parviflora*, *Bidens pilosa* and *Sonchus oleraceus* while the second cluster consisted of *Solanum* spp. and *Solanum nigrum*. Moreover the other nine characters were similar for the five populations studied. This suggests the possible variation for populations of of agromyzid species on different host plants. the populations of *O. spencerella* from different areas in Burundi

and one locality in Kenya were shown to be easily separated by seven different characters showing differences in the populations from the different areas. All the seven species of Agromyzidae associated with legumes showed distinctness but overlap existed in male O. spencerella, O. phaseoli and C. horticola. Similarly overlap existed in female O. phaseoli, T. vigneae, L. trifolii and C. horticola.

Using genitalia preparation, multivariate analysis and gel electrophoresis, it was shown that the species of agromyzidae on legumes were not coherent and diverse. This confirms their placement into different genera in most existing keys.