

CHAPTER ONE

Diversity of Agromyzidae and associated hymenopteran parasitoid species in the Afrotropical region: implications for biological control

Abstract

Agromyzidae (Diptera) is a family with many species of economic importance on agricultural plants. However, many species are attacked by hymenopteran parasitoids which are known to be habitat rather than species specific. In the Afrotropical region, information about agromyzid and parasitoid diversity in different habitats is scattered in literature. The aim was to provide a snapshot of this dispersed information and discuss future needs of biological control efforts against invasive agromyzids in the Afrotropics. From published information, 599 agromyzid records comprising 301 species from 20 genera were recorded from 48 plant families. Parasitoids (105 records) were associated only with 20 agromyzid species belonging to 10 different genera. The comparatively low parasitoid diversity in the Afrotropical region is however, most likely a result of poor sampling effort and lack of taxonomic expertise for parasitoid species in this area. More research on native parasitoids and associated Agromyzidae is therefore required before embarking on extensive biological control programmes.

Introduction

The Agromyzidae is a dipteran family consisting of approximately 2,750 species (Tschirnhaus, 2000). Of these, about 110 species are known to be major pests of cultivated crops (Dempewolf, 2007). All known agromyzid larvae are internal feeders on living plant tissue and exhibit an array of different feeding habits such as leaf-mining, stem-mining, stem-tunnelling and cambium-mining (Dempewolf, 2007). Leaf mining is generally the most widespread feeding behaviour shared by more than 75 % of the species (Spencer, 1973).

The Afrotropical region, which includes Sub-Saharan Africa, the southern and eastern fringes of the Arabian Peninsula, the islands of Madagascar and the western Indian Ocean, represents a unique ecozone characterized by a diverse flora, fauna and climate. The subject of agromyzid diversity in this region was documented by Spencer (1973) and Cogan (1980), who recorded 19 genera. Since then, the distribution and pest status of several species have changed considerably.

The accidental introduction of the invasive *Liriomyza huidobrensis* (Blanchard), *Liriomyza sativae* Blanchard and *Liriomyza trifolii* (Burgess) to the Afrotropical region has caused considerable economic losses to the production of vegetable and ornamental plants, (e.g. Kotzee & Dennill, 1996; Murphy & LaSalle, 1999; Musundire, 2002; Neuenschwander *et al.*, 1987; Spencer, 1985). For example, the polyphagous Neotropical species *L. trifolii* caused serious damage to *Chrysanthemum* (Asteraceae) species in the lowlands of Kenya, resulting in the cessation of production and consequent loss of substantial exports (Spencer, 1985). In Senegal, Neuenschwander *et al.* (1987) reported *L. trifolii* to be a major pest of indigenous vegetables. In South Africa, *L. trifolii* caused serious losses in tomatoes, *Solanum lycopersicum* L. (Solanaceae) (Kotzee & Dennill, 1996). *Liriomyza huidobrensis* has been shown to cause up to 40 % damage in faba bean (*Vicia faba* L., Fabaceae) in Zimbabwe (Musundire, 2002). *Ophiomyia phaseoli* (Tryon) (Diptera: Agromyzidae), has been shown to cause widespread damage in haricot bean (*Phaseolus vulgaris* L.) and was rated the most serious problem in East Africa (Abate, 1990). In Mozambique, the same pest has been recorded to cause a yield reduction of between 12 to 71 % on field beans depending on time of planting of the crop and level of infestation (Davies, 1998).

Agromyzid pests are controlled mainly chemically or using biological control methods. There is limited documentation available on pesticides used for the control of agromyzids in the Afrotropical region, but it appears that mostly broad spectrum insecticides have been applied (Abate, 1990; Davies, 1998; Musundire, 2002). In general, problems associated with chemical control include the development of resistance to pesticides by agromyzids such as the *Liriomyza* species (Parella *et al.*, 1984; Keil *et al.*, 1985; Murphy & LaSalle, 1999). In addition, the use of broad-spectrum pesticides to control primary pests has been reported to eliminate natural enemies of leafminers (Johnson *et al.*, 1980), which in turn has been reported to lead to pest outbreaks (Parrella, 1987).

The management of major agromyzid pests, therefore, requires sustainable methods of which biological control with parasitoids is a key aspect. Agromyzid leafminers are known to have rich natural enemy fauna, particularly in their areas of origin, and there is evidence that they can regulate leafminers in pesticide free areas (Waterhouse & Norris, 1987; Murphy & LaSalle, 1999). In central Argentina 46 hymenopteran parasitoid species from 29 agromyzid species in a natural habitat have been recorded (Valladares & Salvo, 2001). The same authors also noted that the parasitoids recorded were highly polyphagous.

Indigenous parasitoid species of agromyzid leafminers have also been found in the adventive areas of the invasive agromyzids. Burgio *et al.* (2007) reported 53 hymenopteran parasitoid species from Agromyzidae colonizing weeds in northern Italian agro ecosystems. In his work on the Agromyzidae of economic importance, Spencer (1973) lists parasitoids from different families, including Eulophidae, Pteromalidae, Tetracampidae, Braconidae and Eucoilidae that regulate *Liriomyza* species in areas other than those of *Liriomyza* species origin. Previous biological control programmes against *L. trifolii* and *L. sativae* have been documented by Greathead & Greathead (1992) and Johnson (1993). Evidence from a number of sources suggests that natural enemies can limit the distribution and incidence of leafminers. Neuenschwander *et al.* (1987) reported that invading leafminer populations declined naturally after a few years in Senegal due to the action of local natural enemies. Davies (1998) reported a significant control effect of locally occurring *Eucoilidea nitida* (Benoit) (Hymenoptera: Braconidae) and *Opius melanagromyzae* (Fischer) (Hymenoptera: Braconidae) on

Ophiomyia spencerella (Greathead), *O. phaseoli* Tryon and *O. centrocematis* de Meijere in Mozambique.

Efforts to contain the losses by invasive agromyzid pests in the Afrotropical region through biological control strategies should therefore include the use of existing native parasitoids of agromyzids in this region.

Diversity of natural enemies has been documented in detail in the Neotropical parts of the southernmost USA (Waterhouse & Norris, 1987; Schuster *et al.*, 1991; Schuster & Wharton, 1993; Noyes, 1998), central Argentina (Valladares & Salvo, 2001), the eastern Palaearctic region (Chen *et al.*, 2003; Fisher & LaSalle, 2005), Australia (Spencer, 1989), the western Palaearctic and Nearctic region (i.e. the greatest part) of North America (LaSalle & Parella, 1991; Belokobylskij *et al.*, 2004; Edwards & LaSalle, 2004; Gençer, 2004; Çikman *et al.*, 2006) and Hawaii (Johnson & Hara, 1987). Although information on the diversity of the agromyzid fauna and associated host plants and hymenopteran parasitoid species in the Afrotropical region exists, it is widely dispersed in literature, thus rendering it of less practical use in designing improved biological control programmes of specific agromyzid species in this region.

The present study was carried out to collate and assemble the dispersed information. In addition, examination of the diversity of Agromyzidae and their associated natural enemies in the Afrotropical region is made in relation to the future needs of classical, augmentative and conservation biological control efforts against agromyzids in the Afrotropical region.

Materials and Methods

This review is based on previously published information on the economically important agromyzids of the world. Some of the key references include Spencer (1959; 1960a,b; 1961a,b,c,d,e; 1963; 1964; 1965; 1973; 1977; 1985; 1989; 1990), Cogan (1980) and Dempewolf (2007). Literature data from Kenya and South Africa were verified with reliable records of Agromyzidae in the collections of the National Museums of Kenya and the National Collection of Insects of the ARC-Plant Protection Research Institute of South Africa. The data for Agromyzidae were also cross-

referenced with the Species 2000 Biodiversity of World Diptera (BDWD), Catalogue of Life: 2008 Annual Checklist (Bisby *et al.*, 2008).

The diversity and distribution of the agromyzid species and associated natural enemies within the Afrotropical sub-regions are illustrated based on the records. Host plant families associated with the agromyzid species are listed. A discussion is given on the diversity of Afrotropical agromyzids and the occurrence of parasitoid species. Synonyms for agromyzid and parasitoid species are not given, but can be found in the Catalogue of Life: 2008 Annual Checklist (Bisby *et al.*, 2008) for agromyzid species and in the catalogue of the Universal Chalcidoidea Database (Noyes, 2003) for parasitoid species.

Results

Diversity and distribution of Agromyzidae within the Afrotropical region

In total, 301 agromyzid species belonging to 20 genera have been recorded from the Afrotropical region (Table 1). Of the 599 agromyzid species recorded from the Afrotropical region, 36 % are from East Africa, 34 % from Southern Africa, 7 % from West Africa, 11 % from East Islands (Comoros, Madagascar, Mauritius and Seychelles), 11 % from the Central African region, and 4 % from the Cape Verde Islands (Fig. 1.1).

The highest number of agromyzid species recorded from the Afrotropical region is from *Melanagromyza* Hendel with 97 species and 178 records, followed by *Ophiomyia* Braschnikov with 35 species and 72 records. The majority of records for these two genera are from countries in the Southern and East African regions (Table 1). The lowest number of records is from the genera *Hexomyza* Enderlein (2), *Penetagromyza* Spencer (2), *Amauromyza* Hendel (1), *Haplomyza* Hendel (1) and *Pseudoliriomyza* Spencer (1). *Melanagromyza* and *Liriomyza* Mik are the only two genera with records in all Afrotropical sub-regions.

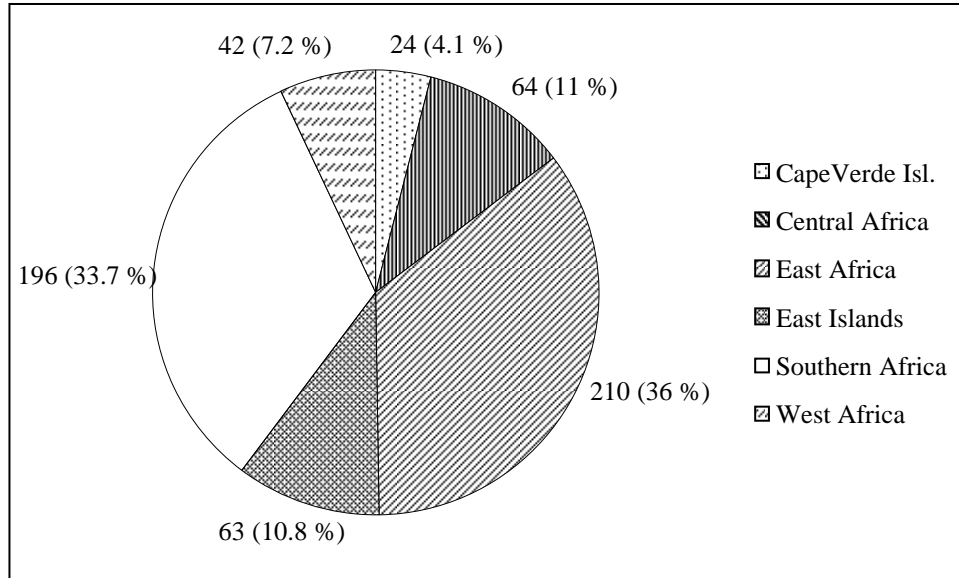


Fig. 1.1. Total number of agromyzid records and percent of total records (in parenthesis) within the Afrotropical sub-regions

Diversity and distribution of agromyzid hymenopteran parasitoids within the Afrotropical region

There are 105 parasitoid records with species belonging to 10 families and 28 genera. These are associated with 7 %, that is, 20 out of 301, agromyzid species, recorded from the Afrotropical region. Of the parasitoids records from the Afrotropical region, 58 % are from East Africa, 27 % from Southern Africa, 22 % from West Africa, 8 % from East Islands and 2 % from the Central African region (Fig. 1.2). No records exist from the Cape Verde Islands. Only 21 of the parasitoids recorded have been identified to species level (Table 1).

The majority of parasitoid records are from *Ophiomyia phaseoli* with 32 records and *Liriomyza trifolii* with 18 records. There are only 10 parasitoid records for *Melanagromyza*, the genus with highest number of agromyzid species records. Data on parasitoids attacking agromyzids of no economic importance are scarce.

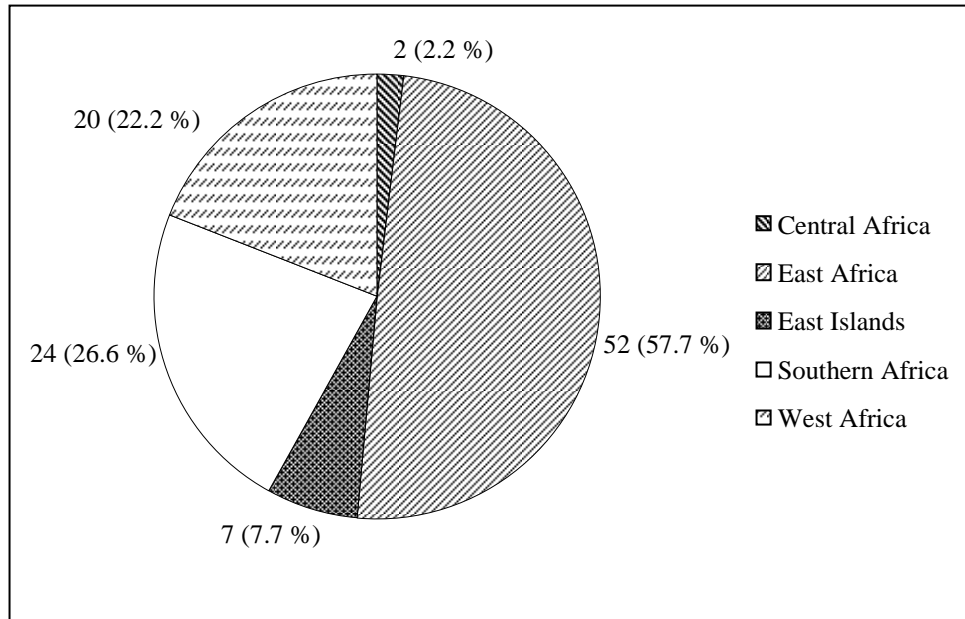


Fig. 1.2. Total number of parasitoid species records and percent of total records (in parenthesis) within the Afrotropical sub-regions

Host plants associated with agromyzids and their natural enemies

The agromyzid species of the Afrotropical region have been recorded from 48 plant families according to this review. The highest number of agromyzid records is from Fabaceae (86) and Asteraceae (Compositae) (80). There are 376 records of agromyzids with records of host plants. The majority of the host plant records are associated with the agromyzid genera *Liriomyza* (82), *Tropicomyia* (65) and *Melanagromyza* (58) (Table 1.1). However, records of host plants and agromyzid and parasitoid species associations are not available in most cases.

Discussion

Although the data used in this review may not be exhaustive, the number of records suggests that the family Agromyzidae has been studied comparatively more extensively in East and Southern Africa compared to Central and West Africa. However, this trend is likely to be due to inadequate sampling of agromyzids in these regions.

Results suggest that parasitoid sampling efforts concentrated on economically important agromyzid species. For example, *Melanagromyza* has the highest number of species but a low number of parasitoid records. In contrast, the highest number of parasitoid records is from the genus *Ophiomyia*, which comprises fewer species than *Melanagromyza* but includes many agriculturally important pest species on legumes. Similarly, *L. trifolii*, another important pest species, has a relatively high number of parasitoid records.

Parasitoids attacking agromyzids in natural habitats could nevertheless be important in controlling agromyzid pests. A study by Valladares & Salvo (2001) in Central Argentina on community dynamics of leafminers and their parasitoids revealed a diverse parasitoid fauna in a natural habitat. Furthermore, in northern Italy, Burgio *et al.* (2007) reported 53 parasitoid species from agromyzids colonizing weeds. Schuster *et al.* (1991) reported 17 parasitoid species on agromyzids infesting weed species, while Schuster & Wharton (1993) reported 14 species of parasitoids attacking *Liriomyza* species on non-sprayed tomatoes in Florida. These studies form a basis for undertaking intensive sampling in both agricultural and non-agricultural ecosystems in the Afrotropical region. A pressing challenge, though, is the identification of the collected parasitoid specimens to species level.

The scarcity of records of associations between agromyzids, their host plants and parasitoids makes it difficult to assess the importance of natural habitats in biological control in the Afrotropical region. Similarities in assemblages of many parasitoids attacking leafminers have been observed in managed and natural habitats (Gratton & Welter, 2001) and the frequent proximity of the two habitats potentially enhances control of agromyzids in agricultural areas through the possible exchange of natural enemies between the two habitats.

The agromyzid records show that the economically important genera *Ophiomyia* and *Liriomyza* are present in most countries of the Afrotropical region. It is most likely that these species occur in agro-ecosystems where pesticide use interferes with parasitoid abundance. On the other hand, natural ecosystems are an important reservoir of agromyzid and associated parasitoid species (Schuster *et al.*, 1991; Masetti *et al.*, 1997; Gratton & Welter, 2001; Valladares & Salvo, 2001; Burgio *et al.*, 2007). Conservation biological control may have high potential for agromyzid pest

management in the Afrotropical region. In Uganda, Greathead (1971) recorded a number of hymenopteran parasitoids *Habrocytus* sp. (Pteromalidae), *Eurytoma* sp. (Eurytomidae) and *Eucoilidea* sp. (Eucoilidae) on *Melanagromyza bonavistae* Greathead, *M. chalcosoma* Spencer and *M. vignalis* Spencer (Diptera: Agromyzidae) from the pods of the bonavist bean (*Lablab niger* L.). Some parasitoids in the Eucoilidae (*Eucoilidea* spp.) family were also reported from the same country on *O. phaseoli*, an economically important pest of cultivated legumes. Given the polyphagous nature of some hymenopteran parasitoids of agromyzids (Murphy & LaSalle, 1999), parasitoids of agromyzids that are not major pests of agricultural crops, such as in the genera *Agromyza*, *Melanagromyza* and *Tropicomyia*, could form an important part of conserved natural enemies in non-cropped areas and cropping boundaries where pesticides are not applied.

The genus *Ophiomyia*, which has been suggested to have evolved in the Afrotropical region (Spencer, 1973), has been widely recorded on Fabaceae (legumes). The highest number of parasitoid records (30 %) is from *Ophiomyia*. Although agromyzid parasitoids, especially Eulophidae, are thought to be polyphagous, *Ophiomyia* and *Liriomyza* (a new invasive agromyzid species in the Afrotropical region) do not share all of their parasitoid species. The present records suggest that parasitoids associated with *Ophiomyia* are not associated with any of the modern genera of leafminers such as the *Liriomyza* species. Although the data available are insufficient to make any conclusion about *O. phaseoli*-parasitoid association patterns, it can be hypothesised that there might have been an early diversity in parasitoid species associated with this group especially in East Africa (where most records have been made), but that parasitoids associated with this mostly stem-tunnelling species seem unable to adapt to the more modern leaf-mining taxa. Hence, these parasitoid species are not expected to control any other invading agromyzid species such as the invasive *Liriomyza* species. This could be an interesting and important research area to pursue in future.

Scheffer *et al.* (2007) report the genus *Ophiomyia* to be polyphyletic with five species (*Ophiomyia* group A) related to *Tropicomyia* and *Hexomyza* (Enderlein) and two species (*Ophiomyia* group B) forming a sister group to *Melanagromyza*. In-depth studies of parasitoid diversity in such polyphyletic groups within the family

Agromyzidae could be vital in establishing relationships between parasitoid guilds of phylogenetically related agromyzid species. This knowledge could be effectively used in conservation biological control, which is a vital component of an integrated pest management programme.

When multiple species of natural enemies are released into a crop, or if a mass-reared species is introduced into a system containing existing natural enemy populations, competitive interactions are likely to occur (Kang *et al.*, 2009). For example, the parasitoid *Diglyphus isaea* (Walker) (Hymenoptera: Eulophidae) has been recorded in Senegal, South Africa, Kenya and Zimbabwe (Neuenschwander *et al.*, 1987; Musundire, 2002; Chabi-Olaye *et al.*, 2008). Although this parasitoid is of Palaearctic origin (Minkenberg, 1989), it has been reported to have successfully established in these countries. However, without comprehensive studies on the diversity of the native agromyzid parasitoid fauna in the Afrotropical region, the presence of this introduced parasitoid could cause unwanted non-target effects, such as outcompeting native parasitoid species (van Lenteren *et al.*, 2006). Non-target effects could include larval ecto-parasitoids parasitizing leafminers that already contain a living endo-parasitoid (Mitsunaga & Yano, 2004). Although the parasitoids *Opius phaseoli* Fischer (Hymenoptera: Braconidae), *D. isaea*, *Hemiptarsenus albens* (Delucchi), *Meruana elegans* (Delucchi) and *Meruana liriomyzae* Bouček (Hymenoptera: Eulophidae) are potentially suitable candidates for mass-production for augmentative releases based on their association with agriculturally important agromyzids, these parasitoid-parasitoid interactions need to be investigated further.

In conclusion, the family Agromyzidae has probably been more extensively studied than its associated natural enemies in the Afrotropical region. The recorded parasitoids belong to 10 families. Only 21 species out of the 105 recorded cases (20 %) have been identified to species level. Parasitoids (105 records) were associated only with 20 agromyzid species belonging to 10 different genera hence indicating a possible lack of diversity in parasitoids associated with agromyzid species in the Afrotropical region. The comparatively low parasitoid diversity in the Afrotropical region is however, most likely a result of poor sampling effort and lack of taxonomic expertise for parasitoid species in this area. In addition, records on the distribution and abundance of parasitoids of agromyzids presented here with respect to insect hosts and crop

habitats are largely lacking. More research on parasitoid fauna and associated Agromyzidae is therefore required before embarking on extensive biological control programmes.

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Table 1.1 Agromyzid species, origin, host plant species and their hymenopteran parasitoids in the Afrotropical region.

Agromyzid species	Agromyzid distribution	Host plant family	Host plant species	Parasitoids	Parasitoid distribution
Agromyza Fallén 1810					
<i>abutilonis</i> Spencer 1959	Kenya (3, 7, 31, 37), South Africa (3, 7, 31, 33), Uganda (3, 7, 23, 34, 37)	Malvaceae Malvaceae	<i>Abutilon mauritianum</i> (Jacq.) Medik (31) <i>Abutilon</i> sp. (21, 23, 37), <i>Hibiscus</i> sp. (34, 37)	-	-
<i>abyssinica</i> Spencer 1964	Ethiopia (3, 7, 32)	Convolvulaceae	<i>Ipomea</i> sp. (32)	-	-
<i>albipila</i> Becker 1908	South Africa (3, 7, 33)	-	-	-	-
<i>catherinae</i> Spencer 1959	South Africa (7, 23, 31, 32, 33, 37) Zimbabwe (3, 7, 33, 37)	Poaceae	? <i>Setaria megaphylla</i> (Steud.) T. Durand & Schinz (32, 33, 37)	-	-
<i>confusa</i> Spencer 1961	Madagascar (3, 7, 30)	-	-	-	-
<i>eyeni</i> Spencer 1959	DRC (3, 7, 23)	-	-	-	-
<i>graminacea</i> Spencer 1985	Kenya (3, 36)	-	-	-	-
<i>infusca</i> Spencer 1959	Ethiopia (3), Kenya (3), Tanzania (3, 7, 23)	-	-	-	-
<i>malvaceivora</i> Séguy 1951	Madagascar (3, 7, 21, 23, 30, 37)	-	-	-	-
<i>munduleae</i> (Séguy 1951)	Angola (3), Benin (3), Cameroon (3) Madagascar (3, 7, 21, 23, 30), Zambia (3)	Fabaceae	<i>Mundulea sericea</i> (Willd.) A. Chev. (21, 23, 30, 37)	-	-
<i>ocularis</i> Spencer 1961	Botswana (3, 23), Lesotho (3, 7), South Africa (3, 7, 28, 31)	-	-	-	-
<i>oliviae</i> Spencer 1959	Ethiopia (3, 7, 28, 31, 32), Tanzania (3, 7, 23, 28, 31)	-	-	-	-
<i>pallidifrons</i> Spencer 1959	DRC (3, 7, 23, 37), South Africa (3, 7, 31, 37), Zimbabwe (3, 7, 23, 37)	Poaceae	<i>Urochloa panicoides</i> P. Beauv. (30, 31, 37)	-	-
<i>penniseti</i> Spencer 1959	Cameroon (3, 7, 23, 34, 36, 37), Nigeria (3, 7, 34, 36, 37), Senegal (3, 7, 23, 24, 36), South Africa (3, 7, 34), Uganda (3, 7, 34, 36, 37)	Poaceae Poaceae Poaceae Poaceae	<i>Digitaria ciliaris</i> (Retz.) Koeler (23, 36, 37) <i>Eleusine coracana</i> (L.) Gaertn. (37) <i>Pennisetum glaucum</i> (L.) R. Br. (37) <i>Pennisetum pedicellatum</i> Trin. (34, 35, 36) <i>Pennisetum purpureum</i> Schumach. (23,	Braconidae <i>Opius</i> sp.	Nigeria (34)



Agromyzid species	Agromyzid distribution	Host plant family	Host plant species	Parasitoids	Parasitoid distribution
			34, 36)		
<i>somereni</i> Spencer 1959	Kenya (3, 7, 23, 36)	-	-	-	-
<i>sulfuriceps</i> Strobl 1898	Niger (3, 7)	-	-	-	-
<i>susannae</i> Spencer 1959	Malawi (7, 23), Mozambique (7, 23), South Africa (7, 23, 37), Zambia (37)	Poaceae	<i>Urochloa panicoides</i> P. Beauv. (37)	-	-
<i>ugandae</i> Spencer 1985	Uganda (3, 36)	-	-	-	-
<i>uniseta</i> Spencer 1959	Madagascar (3, 7, 23, 30)	-	-	-	-
<i>verdensis</i> Spencer 1959	Cape Verde Is (3, 7, 23, 33), Namibia (3)	-	-	-	-
<i>Amauromyza</i> Hendel 1931					
<i>triseta</i> (Spencer 1959)	South Africa (3, 7, 23)	-	-	-	-
<i>Calycomyza</i> Hendel 1931					
<i>gigantissima</i> (Spencer 1959)	DRC (3, 7, 23, 24, 31), South Africa (3, 7, 24, 31)	-	-	-	-
<i>humeralis</i> (von Roser 1840)	Cameroon (7, 23), Ethiopia (7, 32), South Africa (7)	Asteraceae Asteraceae Asteraceae	<i>Conyza bonariensis</i> (L.) Cronquist (15) <i>Dicrocephala</i> sp. (23) <i>Dichrocephala chrysanthemifolia</i> (Blume) DC (32)	-	-
<i>lantanae</i> (Frick 1956)	South Africa (2, 17)	Asteraceae Verbenaceae	<i>Erigeron</i> sp. (23) <i>Lantana camara</i> L. (2)	Eulophidae <i>?Chrysonotomyia</i> sp. <i>Diglyphus ambiguus</i> Hansson & LaSalle 1996	South Africa (2) South Africa (14)
<i>Cerodontha</i> Rondani 1861					
<i>aberdarensis</i> Spencer 1985	Kenya (36)	-	-	-	-
<i>abyssinica</i> Spencer 1961	Ethiopia (3, 7, 31), South Africa (3, 7, 31)	-	-	-	-
<i>africana</i> Spencer 1985	Kenya (3, 36), South Africa (3, 36)	-	-	-	-
<i>aristella</i> (Spencer 1961)	South Africa (3, 7, 31, 33, 37), Zimbabwe (3, 7, 33, 37)	Poaceae	<i>Setaria megaphylla</i> (Steud.) T. Durand & Schinz (33, 37)	Eulophidae <i>Chrysocharis</i> sp.	Zimbabwe (33)
<i>cariciphaga</i> (Spencer 1963)	Cameroon (3, 7, 31, 36, 37)	Cyperaceae	<i>Carex</i> sp. (31, 36, 37)	-	-
<i>caricivora</i> (Groschke 1954)	Cameroon (3, 7, 23, 36), Ethiopia (3)	Cyperaceae	<i>Carex</i> sp. (23)	-	-



Agromyzid species	Agromyzid distribution	Host plant family	Host plant species	Parasitoids	Parasitoid distribution
<i>denticornis</i> (Panzer 1806)	DRC (7, 23, 24, 32, 36, 37), Lesotho (24), South Africa (7, 23, 24, 32, 36, 37), Tanzania (7, 37), Uganda (7, 23, 24, 36, 37)	-	-	-	-
<i>elevata</i> Spencer 1985	Ethiopia (3, 36), Kenya (3, 36), South Africa (3, 36)	Poaceae	-	-	-
<i>geniculata</i> (Fallen 1823)	South Africa (7, 23, 32, 37)	Cyperaceae	<i>Eriophorum</i> sp. (37)	-	-
<i>guineana</i> Zlobin 1993	Guinea (3)	-	-	-	-
<i>heringiella</i> Spencer 1961	Ethiopia (3, 7, 31, 34, 36), Kenya (3, 34, 36), South Africa (3, 7, 31, 34, 36), Tanzania (3, 34, 36)	-	-	-	-
<i>kakamegae</i> Spencer 1985	Kenya (3, 36)	-	-	-	-
<i>kenyana</i> Zlobin 2001	Kenya (3, 39, 40)	-	-	-	-
<i>kivuensis</i> (Spencer 1959)	DRC (7, 23, 40)	-	-	-	-
<i>magnificans</i> (Spencer 1959)	DRC (3, 7, 23, 33), South Africa (3, 7, 33)	-	-	-	-
<i>orbitona</i> (Spencer 1960)	Gambia (9), Ghana (3, 7, 34, 36, 37), Kenya (3, 9, 36, 37), Nigeria (9)	Poaceae	<i>Hyparrhenia cymbaria</i> (L.) Stapf (36, 37)	Ceraphronidae <i>Ceraphron</i> cf. <i>fijiensis</i> (Ferrierre 1933) Eucoilidae <i>Eucoilidea</i> sp. Eulophidae <i>Achrysocharoides</i> sp. <i>Hemiptarsenus varicornis</i> (Girault 1913) <i>Sympiesis</i> sp. Pteromalidae <i>Callitula</i> sp.	Ghana (34)
	Réunion (3, 36), South Africa (3, 7, 24, 34, 36, 37), Uganda (36)	Poaceae	<i>Oryza sativa</i> L. (34, 36, 37)		
		Poaceae	<i>Zea mays</i> L. (36, 37)		
<i>piliseta</i> (Becker 1903)	Cape Verde Is. (7, 23, 36), Kenya (36, 37), Seychelles (7, 23), Tanzania (36), Zimbabwe (7, 23, 36, 37)	Cyperaceae	<i>Fimbristylis</i> sp. (23, 37)	-	-
<i>pubicata</i> (Spencer 1959)	DRC (7, 23, 36, 37), Kenya (3, 23,	-	-	-	-



Agromyzid species	Agromyzid distribution	Host plant family	Host plant species	Parasitoids	Parasitoid distribution
<i>setariae</i> (Spencer 1959)	37) Cameroon (3, 23, 37), Sierra Leone (3, 7, 23, 37)	Poaceae	<i>Setaria</i> sp. (23, 37)	-	-
<i>stuckenbergiella</i> Spencer 1977	South Africa (3, 7, 37)	-	-	-	-
Chromatomyia Hardy 1849					
<i>anonera</i> (Séguy 1951)	Ethiopia (36), Madagascar (36)	Asteraceae	<i>Vernonia appendiculata</i> Less. (36)	-	-
<i>elgonensis</i> Spencer 1985	Kenya (3, 36)	-	-	-	-
<i>horticola</i> (Goureau 1851)	Cameroon (34, 37), Ethiopia (1, 5, 19), Kenya (34, 36, 37), Madagascar (34, 37), South Africa (1, 34, 36, 37)	Asteraceae Asteraceae Asteraceae Asteraceae Asteraceae Asteraceae Brassicaceae Fabaceae Fabaceae Fabaceae Solanaceae Solanaceae Solanaceae	<i>Bidens</i> sp. (36) <i>Chrysanthemoides</i> sp. (37) <i>Dahlia</i> sp. (36) <i>Erigeron</i> sp. (36) <i>Galinsoga</i> sp. (36) <i>Sonchus</i> sp. (36) <i>Brassica rapa</i> L. (37) <i>Pisum</i> sp. (36) <i>Trifolium alexandrinum</i> L. (37) <i>Vicia faba</i> L. (37) <i>Petunia</i> sp. (36) <i>Solanum melongena</i> L. (37) <i>Solanum</i> sp. (36)	Eulophidae <i>Meruana liriomyzae</i> Bouček 1988	Ethiopia (1, 5), South Africa (5)
<i>nigrissima</i> Spencer 1985	Kenya (3, 36, 37)	-	-	-	-
<i>seneciophila</i> Spencer 1985	Kenya (3, 36, 37), Tanzania (3, 36)	Asteraceae Asteraceae	<i>Senecio johnstonii</i> Oliv. (36, 37) <i>Senecio</i> sp. (36, 37)	- -	- -
<i>seneciovora</i> (Spencer 1959)	Cameroon (23, 33, 36, 37), Uganda (36)	Asteraceae	<i>Sonecio mannii</i> (Hook.f.) C. Jeffrey (36, 37)	-	-
<i>subnigra</i> Spencer 1985	Kenya (3, 36, 37)	Asteraceae -	<i>Senecio moorei</i> R.E.Fr. (23) -	- -	- -
Haplomyza Hendel					
<i>diminuella</i> Spencer 1961	South Africa (7)	-	-	-	-



Agromyzid species	Agromyzid distribution	Host plant family	Host plant species	Parasitoids	Parasitoid distribution
<i>Hexomyza</i> Enderlein 1936					
<i>gymnosporivora</i> (Spencer 1963)	Kenya (3, 36, 37), South Africa (7, 31, 36, 37)	Celastraceae	<i>Gymnosporia buxifolia</i> (L.) Szyszyl. (31, 36, 37)	-	-
<i>Japanagromyza</i> Sasakawa 1958					
<i>meridiana</i> Spencer 1961	South Africa (3, 7, 29)	-	-	-	-
<i>nigrihalterata</i> (Spencer 1959)	Kenya (3, 7, 23, 24), Rwanda (7)	-	-	-	-
<i>parvula</i> Spencer 1961	Kenya (37), Tanzania (7, 27, 37)	Fabaceae	<i>Crotalaria agatiflora</i> Schwief. (37)	-	-
<i>Liriomyza</i> Mik 1894					
<i>atrescens</i> 1961b	Ethiopia (3, 7)	-	-	-	-
<i>brassicae</i> (Riley 1885)	Cape Verde Is. (7, 23, 33), Ethiopia (7, 33), Kenya (7, 34, 36, 37), Mauritius (1, 5, 23, 37), Mozambique (7, 34), Senegal (7, 23, 34), South Africa (7, 23, 33, 37), Zimbabwe (7, 32, 34, 36)	Brassicaceae Brassicaceae Brassicaceae Brassicaceae Brassicaceae Fabaceae Tropaeolaceae	<i>Brassica oleracea</i> L. (36, 37, 38) <i>Brassica</i> sp. (23, 38) <i>Erucastrum arabicum</i> Fisch. & C. A. Mey. (36, 37) <i>Nasturtium officinale</i> W. T. Aiton (38) <i>Nasturtium</i> sp. (23) <i>Pisum</i> sp. (36, 37, 38) <i>Tropeolum majus</i> L. (15, 23)	Eulophidae <i>Meruana liriomyzae</i> Bouček 1988	Mauritius (1, 5)
<i>diminuella</i> Spencer 1961	South Africa (3)	-	-	-	-
<i>emiliae</i> Séguy 1951	Madagascar (3, 7, 21, 23, 30, 37)	Asteraceae Asteraceae Tropaeolaceae	<i>Emilia citrina</i> DC. (21, 23, 30, 37) <i>Emilia</i> sp. (37) <i>Tropaeolum</i> sp. (37)	-	-
<i>enormis</i> Spencer 1961	Madagascar (3, 7)	-	-	-	-
<i>flavalis</i> Spencer 1959	South Africa (3, 7, 23, 24, 33)	-	-	-	-
<i>helichrysivora</i> Spencer 1965	Kenya (3, 37), South Africa (3, 7, 33, 37), Uganda (3, 37)	Asteraceae Asteraceae	? <i>Helichrysum cooperi</i> Harv. (33) <i>Helichrysum foetidum</i> (L.) Moench (37)	-	-



Agromyzid species	Agromyzid distribution	Host plant family	Host plant species	Parasitoids	Parasitoid distribution
		Asteraceae	<i>Helichrysum nudifolium</i> (L.) Less. (33, 36)		
		Asteraceae	<i>Helichrysum odoratissimum</i> (L.) Sweet. (37)		
<i>huidobrensis</i> (Blanchard 1926)	Comoros (10), Kenya (6), Mauritius (10, 37), Réunion (10), Seychelles (10), South Africa (10, 17), Zimbabwe (16)	Polyphagous	Highly polyphagous	Braconidae	
		Aliaceae	<i>Allium cepa</i> L. (37)	<i>Dacnusa sibirica</i> Telenga 1934	Zimbabwe (16)
		Apiaceae	<i>Apium graveolens</i> L. (37)	Eulophidae	
		Asteraceae	<i>Lactuca sativa</i> L. (37)	<i>Diglyphus isaea</i> (Walker 1838)	Kenya (6), Zimbabwe (16)
		Asteraceae	<i>Sonchus</i> spp. (37)	<i>Meruana</i> spp.	Zimbabwe (16)
		Asteraceae	<i>Tagetes</i> spp. (37)		
		Brassicaceae	<i>Brassica oleracea</i> L. (37)		
		Caryophyllaceae	<i>Dianthus caryophyllus</i> L. (37)		
		Chenopodiaceae	<i>Spinacia oleracea</i> L. (6, 37)		
		Fabaceae	<i>Pisum sativum</i> L. (6, 37)		
		Fabaceae	<i>Vicia faba</i> L. (16)		
		Solanaceae	<i>Solanum lycopersicum</i> L. (6, 37)		
		Solanaceae	<i>Solanum tuberosum</i> L. (6, 37)		
<i>manni</i> Spencer 1985	Kenya (3, 36)	Asteraceae	<i>Tithonia diversifolia</i> (Helmsl.) A. Gray (36)	-	-
<i>melantherae</i> Spencer 1959	Cameroon (3, 7, 23, 37)	Asteraceae	<i>Melanthera ?brownei</i> Sch. Bip. (23, 37)	-	-
<i>mikaniopsidis</i> Spencer 1961	Ethiopia (3, 7, 33)	-	-	-	-
<i>mirifica</i> Spencer 1963	Uganda (7, 31, 33)	-	-	-	-
<i>mosselensis</i> Spencer 1965	Lesotho (3, 7, 33), South Africa (3, 7, 33)	-	-	-	-
<i>nana</i> Spencer 1965	South Africa (3, 7, 33)	-	-	-	-
<i>novissima</i> Spencer 1960	South Africa (7, 24, 31, 32, 33)	-	-	-	-
<i>sativae</i> Blanchard 1938	Cameroon (10), Kenya (6, 37), Mauritius (5, 37), Nigeria (9, 10), Réunion (5, 36, 37), Sudan (10), Zimbabwe (10)	Polyphagous	Polyphagous, Pest of vegetables and ornamental plants, e.g. <i>Chrysanthemum</i> spp. (37)	Eulophidae	
		Asteraceae	<i>Chrysanthemum</i> spp. (37)	<i>Hemiptarsenus variconis</i> (Girault 1913)	Ethiopia (5), Ghana (5), Kenya (5), Senegal (5), Sudan (5), Tanzania (5)
		Chenopodiaceae	<i>Beta vulgaris</i> L. (37)		
		Cucurbitaceae	<i>Cucumis melo</i> L. (37)	<i>Meruana liriomyzae</i>	Mauritius (5),
		Cucurbitaceae	<i>Cucumis sativus</i> L. (37)	Bouček 1988	Réunion (1, 5)



Agromyzid species	Agromyzid distribution	Host plant family	Host plant species	Parasitoids	Parasitoid distribution
		Euphorbiaceae	<i>Ricinus communis</i> L. (37)		
		Fabaceae	<i>Phaseolus vulgaris</i> L. (6, 37)		
		Fabaceae	<i>Pisum sativum</i> L. (6, 37)		
		Malvaceae	<i>Abelmoschus esculentus</i> (L.) Moench (6, 18)		
		Solanaceae	<i>Capsicum frutescens</i> L. (37)		
		Solanaceae	<i>Solanum aethiopicum</i> L. (37)		
		Solanaceae	<i>Solanum lycopersicum</i> L. (6)		
		Solanaceae	<i>Solanum tuberosum</i> L. (6, 37)		



Agromyzid species	Agromyzid distribution	Host plant family	Host plant species	Parasitoids	Parasitoid distribution	
<i>trifolii</i> (Burgess 1880)	Benin (10, 37), Cote d'Ivoire (3, 7, 10, 37), Ethiopia (10, 37), Guinea (10), Kenya (5, 7, 10, 36, 37), Madagascar (10), Mauritius (10, 36), Mayotte (10), Nigeria (10, 37), Réunion (10, 36, 37), Senegal (10, 18, 36), South Africa (10, 18, 37), Sudan (10, 37), Tanzania (10, 36), Zambia (10, 37), Zimbabwe (5, 10, 37)	Polyphagous	Polyphagous, e.g.	Braconidae		
		Acanthaceae	<i>Peristrophe bicalyculata</i> (Retz) Nees (18)	<i>Opius dissitus</i> Muesebeck 1963	Senegal (18)	
		Aliaceae	<i>Allium cepa</i> L. (18)	Eucoilidae		
		Amaranthaceae	<i>Amaranthus viridis</i> L. (18)	<i>Eucoilidea futura</i> Quinlan 1986	Senegal (18)	
		Apiaceae	<i>Apium graveolens</i> L. (18)	Eulophidae		
		Apiaceae	<i>Daucus carota</i> L. (18)	<i>Cirrospilus</i> sp.	South Africa (17)	
		Asteraceae	<i>Bidens pilosa</i> L. (36)	<i>Cirrospilus</i> sp. nr	Senegal (18)	
		Asteraceae	<i>Chrysanthemum</i> spp. (36)	<i>cinctiventris</i> Ferrière 1936		
		Asteraceae	<i>Gerbera</i> sp. (36)	<i>Closterocerus formosus</i>	South Africa (17, 19, 20)	
		Asteraceae	<i>Lactuca sativa</i> L. (18)	Westwood 1833		
		Asteraceae	<i>Launaea cornuta</i> (Hochst. Ex Oliv. & Hiern) C. Jeffrey (36)	<i>Chrysonotomyia</i> sp. 1	Senegal (18)	
		Asteraceae	<i>Tagetes minuta</i> L. (36)	<i>Chrysonotomyia</i> sp. 2	Senegal (18)	
		Asteraceae	<i>Tagetes patula</i> L. (18)	<i>Diglyphus isaea</i> (Walker 1838)	Senegal (18), South Africa (18)	
		Asteraceae	<i>Tithonia diversifolia</i> (Hemsl.) A. Gray (36)	<i>Hemiptarsenus albens</i>	Senegal (18)	
		Asteraceae	<i>Tridax procumbens</i> L. (36)	Delucchi 1962		
		Brassicaceae	<i>Brassica napus</i> L. (18)	<i>Hemiptarsenus varicornis</i>	Senegal (18), Tanzania (34)	
		Chenopodiaceae	<i>Beta vulgaris</i> L. (18)	(Girault 1913)		
		Chenopodiaceae	<i>Spinacia oleracea</i> L. (37)	<i>Meruana camerounensis</i>	Cameroon (34)	
		Cucurbitaceae	<i>Citrullus lanatus</i> (Thunb.) Matsum. & Nakai (18)	(Risbec 1955)		
		Cucurbitaceae	<i>Cucumis melo</i> L. (18)	<i>Meruana elegans</i> Delucchi 1962	Tanzania (34)	
Cucurbitaceae	<i>Cucumis sativus</i> L. (18)	<i>Meruana liriomyzae</i> Bouček 1988	Kenya (5), Zimbabwe (5)			
Euphorbiaceae	<i>Ricinus communis</i> L. (18, 36)	Figitidae				
Fabaceae	<i>Canavalia ensiformis</i> (L.) DC. (18)	<i>Nordlanderia plowa</i>				
Fabaceae	<i>Phaseolus</i> spp. (36)	Quinlan 1986				
Fabaceae	<i>Phaseolus vulgaris</i> L. (18)	Ichneumonidae				
Fabaceae	<i>Pisum sativum</i> L. (18)	<i>Allophrys</i> sp.	Senegal (18)			
Fabaceae	<i>Senna occidentalis</i> (L.) Link (18)					
Fabaceae	<i>Trifolium repens</i> L. (37)					
Fabaceae	<i>Vicia faba</i> L. (6)		Senegal (18)			
Fabaceae	<i>Vigna unguiculata</i> (L.) Walp. (18)					



Agromyzid species	Agromyzid distribution	Host plant family	Host plant species	Parasitoids	Parasitoid distribution
		Lamiaceae	<i>Ajuga remota</i> Benth. (36)		
		Lamiaceae	<i>Ocimum basilicum</i> L. (18)		
		Malvaceae	<i>Abelmoschus esculentus</i> (L.) Moench (6, 18)		
		Malvaceae	<i>Gossypium herbaceum</i> L. (18)		
		Passifloraceae	<i>Passiflora foetida</i> L. (18)		
		Poaceae	<i>Zea mays</i> L. (18)		
		Solanaceae	<i>Capsicum annuum</i> L. (18)		
		Solanaceae	<i>Capsicum frutescens</i> L. (18)		
		Solanaceae	<i>Datura metel</i> L. (18)		
		Solanaceae	<i>Solanum lycopersicum</i> L. (18, 36)		
		Solanaceae	<i>Solanum melongena</i> L. (18)		
		Solanaceae	<i>Solanum tuberosum</i> L. (18)		
		Solanaceae	<i>Sonchus bruneri</i> L. (18)		
<i>volatilis</i> Spencer 1965	Ethiopia (7, 33)	-	-	-	-
Melanagromyza Hendel 1920					
<i>acaciae</i> Spencer 1963	Tanzania (3, 7, 31, 37)	Fabaceae	<i>Acacia drepanolobium</i> Harms ex Y.Sjöstedt (31, 37)	-	-
<i>albiquama</i> (Malloch 1927)	Cape Verde Is. (7, 23, 33, 36, 37), Mauritius (7, 24, 33, 37), Principe (7, 36), Uganda (36)	Fabaceae	<i>Desmodium incanum</i> DC. (24) <i>Desmodium</i> sp. (33, 37)	-	-
<i>annae</i> Spencer 1964	South Africa (3, 7, 32, 33)	-	-	-	-
<i>aprilis</i> Spencer 1959	DRC (3, 7, 23)	-	-	-	-
<i>argentea</i> Spencer 1964	DRC (3, 7), South Africa (3, 7, 32)	-	-	-	-
<i>aurea</i> Spencer 1959	DRC (3, 7, 23), South Africa (7)	-	-	-	-
<i>ballardi</i> Spencer 1965	South Africa (3, 7, 33)	-	-	-	-
<i>barbata</i> Spencer 1960	South Africa (3, 7, 24)	-	-	-	-
<i>blepharidis</i> Spencer 1960	Kenya (3, 37), South Africa (3, 7, 24, 37)	Acanthaceae	<i>Blepharis</i> sp. (24, 33, 37)	-	-
<i>bonavistae</i> Greathead 1971	Kenya (36), Sudan (37), Tanzania (3, 7, 34), Uganda (7, 13, 34, 36)	Fabaceae	<i>Dolichos</i> sp. (37)	Eucoilidae	
		Fabaceae	<i>Lablab purpureus</i> (L.) Sweet (13, 34,	<i>Eucoilidea</i> sp.	Uganda (13, 34)



Agromyzid species	Agromyzid distribution	Host plant family	Host plant species	Parasitoids	Parasitoid distribution
			36, 37)	Eulophidae	
		Fabaceae	<i>Pachyrhizus</i> sp. (37)	<i>Pediobius</i> sp.	Uganda (13)
		Fabaceae	<i>Vigna unguiculata</i> (L.) Walp. (13, 34, 36)	Eurytomidae	
				<i>Eurytoma</i> sp.	Uganda (13, 34)
				Pteromalidae	
				<i>Pteromalus</i> subgenus	Uganda (13, 34)
				<i>Habrocytus</i> sp.	
<i>brassica</i> Spencer 1990	Zimbabwe (34, 37)	Brassicaceae	<i>Brassica</i> sp.(34, 37), <i>Brassica</i> spp. (37)	-	-
<i>bulbifrons</i> Spencer 1959	Malawi (3, 7, 23, 34)	-	-	-	-
<i>caeruleana</i> Spencer 1959	DRC (23), Rwanda (3, 7, 23), Tanzania (3, 7, 23)	-	-	-	-
<i>candidipennis</i> (Lamb 1912)	Kenya (3, 7, 23, 24, 34, 36, 37), Malawi (3, 24, 37), Nigeria (3, 7, 34, 36, 37), Seychelles (3, 7, 23, 24, 34, 36, 37), South Africa (3, 7, 24, 34, 36, 37), Tanzania (3, 7, 23, 24, 34, 36)	Fabaceae	<i>Vigna unguiculata</i> (L.) Walp. (34, 36, 37)	-	-
<i>chalcosoma</i> Spencer 1959	Kenya (7, 23, 34, 36), Madagascar (24, 30, 37), Malawi (7, 23, 24, 34, 36, 37), Nigeria (23, 24, 30, 37)	Fabaceae	<i>Cajanus cajan</i> (L.) Millsp. (13, 23, 30, 34, 36, 37)	Eucoilidae	
	South Africa (7, 24, 37), Uganda (7, 13, 23, 24, 30, 34, 36), Zanzibar (23, 24, 30, 37)	Fabaceae	<i>Cajanus</i> sp. (24)	<i>Eucoilidea</i> sp.	Uganda (12, 13)
		Fabaceae	<i>Flemingia grahamiana</i> Wight & Arn. (23, 30, 34)	Eurytomidae	
		Fabaceae	<i>Flemingia</i> sp. (24, 30)	<i>Eurytoma</i> sp.	Uganda (13)
		Fabaceae	<i>Lablab purpureus</i> (L.) Sweet (13, 23, 37)	Pteromalidae	
		Fabaceae	<i>Vigna unguiculata</i> (L.) Walp. (E. Mey.) (13, 34, 36, 37)	<i>Pteromalus</i> sp.	Uganda (13)
<i>compositana</i> Spencer 1959	Cape Verde Is. (7, 23), DRC (3, 7, 23, 27), Kenya (7, 23, 27, 36, 37), Malawi (7, 23, 27), Mauritius (23, 27), Mozambique (7, 29), South Africa (7, 27, 29, 36), Tanzania (7, 27), Zambia (24)	Asteraceae	<i>Bidens pilosa</i> L. (23)	-	-
		Asteraceae	<i>Senecio ruderalis</i> Harv. (23, 37)		
		Asteraceae	<i>Senecio</i> sp. (23, 27)		
<i>cotyledonus</i> Spencer 1960	South Africa (3, 7, 24, 37)	Crassulaceae	<i>Cotyledon orbiculata</i> L. (26, 30, 37)	-	-



Agromyzid species	Agromyzid distribution	Host plant family	Host plant species	Parasitoids	Parasitoid distribution
<i>crassocephali</i> Spencer 1985	Kenya (3, 36)	Asteraceae	<i>Crassocephalum</i> sp. (36)	-	-
<i>crotalariae</i> Hering 1957	South Africa (7, 15, 23, 31), Uganda (7, 23)		<i>Crotalaria capensis</i> Jacq (15)		
<i>crotalariaana</i> Spencer 1961	Ethiopia (7, 32), Uganda (7, 37)	Euphobiaceae	<i>Croton macrostachyus</i> Hochst ex Delile (32, 34, 36, 37)	-	-
		Fabaceae	<i>Crotalaria laburnifolia</i> (32)		
		Fabaceae	<i>Crotalaria</i> sp. (37)		
<i>cunctans</i> (Meigen 1830)	DRC (3, 7, 23), Madagascar (3, 7, 30), South Africa (3, 7, 23), Uganda (3, 7, 23)	-	-	-	-
<i>curiosa</i> Spencer 1959	DRC (3, 7, 23)	-	-	-	-
<i>curvibucca</i> Spencer 1959	DRC (7, 23), South Africa (3, 37)	-	-	-	-
<i>cussoniae</i> Spencer 1964	South Africa (3, 7, 32, 37)	Araliaceae	<i>Cussonia</i> sp. (32, 37)	-	-
<i>cyrtanthi</i> Spencer 1960	South Africa (3, 7, 24, 37)	Amaryllidaceae	<i>Cyrtanthus sauguinens</i> (Lindl.) (24, 37)	-	-
<i>cyrtorchidis</i> Spencer 1985	Kenya (3, 36, 37)	Orchidaceae	<i>Cyrtorchis arcuata</i> (Lindl.) Schltr. (36, 37)	-	-
		Orchidaceae	<i>Rangaeris amaniensis</i> (Kraenzl.) Schltr. (37)		
<i>dakarensis</i> Spencer 1959	Senegal (3, 7, 23)	-	-	-	-
<i>damnata</i> Spencer 1961	Mozambique (3, 7, 29)	-	-	-	-
<i>devia</i> Spencer 1961	Madagascar (3, 7, 30)	-	-	-	-
<i>difficilis</i> Spencer 1959	Mozambique (3, 7, 23)	-	-	-	-
<i>drakensbergi</i> Spencer 1965	South Africa (3, 7, 33)	-	-	-	-
<i>elgonensis</i> Spencer 1965	Kenya (3, 7, 33)	-	-	-	-
<i>elongata</i> Spencer 1959	Zimbabwe (3, 7, 23)	-	-	-	-
<i>frigida</i> Spencer 1961	Madagascar (3, 7, 30)	-	-	-	-
<i>frontata</i> Spencer 1960	South Africa (3, 7, 24)	-	-	-	-
<i>funebri</i> (Lamb 1912)	Seychelles (3, 7, 23)	-	-	-	-
<i>fuscalis</i> Spencer 1961	Madagascar (3, 7, 30)	-	-	-	-
<i>galactoptera</i> Bezzi & Lamb 1926	Rodriguez (3, 7, 23)	-	-	-	-
<i>genata</i> Spencer 1959	South Africa (3, 7, 23)	-	-	-	-
<i>generosa</i> Spencer 1961	Ethiopia (3, 7, 36), Kenya (3, 36)	-	-	-	-
<i>gerberae</i> Spencer 1960	South Africa (3, 7, 24, 29, 37)	Asteraceae	<i>Gerbera jamesonii</i>	-	-



Agromyzid species	Agromyzid distribution	Host plant family	Host plant species	Parasitoids	Parasitoid distribution
<i>gerberivora</i> Spencer 1960	South Africa (3, 7, 23, 25, 37)	Asteraceae	Bolus ex Hook. f. (23, 24, 25, 28, 37) <i>Gerbera jamesonii</i>	-	-
		Asteraceae	Bolus ex Hook. f. (23, 37) <i>Gymnosporia buxifolia</i> (L.) Szyszyl. (37)	-	-
<i>ghanensis</i> Spencer 1965	Ghana (3, 7, 33)	-	-	-	-
<i>gracilis</i> Spencer 1959	DRC (7, 23)	-	-	-	-
<i>gynurae</i> Spencer 1959	Madagascar (3, 7, 23, 30, 37)	Asteraceae	<i>Crassocephalum rubens</i> (Juss. ex Jacq.) S. Moore (23, 30)	-	-
<i>heatoni</i> Spencer 1990	Kenya (3, 37)	Asteraceae	<i>Senecio moorei</i> R.E.Fr. (37)	-	-
<i>indubita</i> Spencer 1961	Madagascar (3, 7, 30)	-	-	-	-
<i>insolita</i> Spencer 1959	Cape Verde Is. (3, 7, 23)	-	-	-	-
<i>inulivora</i> Spencer 1961	South Africa (3, 7, 29, 37)	Asteraceae	<i>Helichrysum nudifolium</i> (L.) Less. (29, 37)	-	-
		Asteraceae	<i>Inula glomerata</i> Oliv. & Hiern. (37)	-	-
<i>kenyensis</i> Spencer 1959	Kenya (3, 7, 23, 33, 36, 37)	Euphorbiaceae	<i>Croton</i> sp. (23, 28, 36, 37)	-	-
<i>laburuiboriae</i> Spencer 1985	Kenya (36)	-	-	-	-
<i>leguminosarum</i> Spencer 1985	Kenya (36)	-	-	-	-
<i>lindneri</i> Spencer 1961	Ethiopia (7, 27, 33), South Africa (7, 33), Tanzania (7, 27, 33)	-	-	-	-
<i>livida</i> Spencer 1985	Kenya (3, 36)	-	-	-	-
<i>longibucca</i> Spencer 1959	Zimbabwe (3, 7, 23)	-	-	-	-
<i>lustralis</i> Spencer 1959	Cape Verde Is. (3, 7, 23)	-	-	-	-
<i>luthulii</i> Spencer 1964	South Africa (3, 7, 32)	-	-	-	-
<i>metallica</i> (Thomson 1869)	Cape Verde Is. (3, 7, 27, 32), DRC (3, 7, 23, 37), Ethiopia (3, 7, 37), Kenya (3, 36, 37), Madagascar (3, 7, 30, 37), Mauritius (3, 7, 37), Mozambique (3, 7, 28, 37), Rodriguez (3, 7, 23, 37), Seychelles (3, 7, 37), South Africa (3, 7, 23, 24,	Asteraceae	<i>Ageratum conyzoides</i> L. (36, 37)	-	-
		Asteraceae	<i>Bidens pilosa</i> L. (36, 37)	-	-
		Asteraceae	<i>Inula glomerata</i> Oliv. & Hiern. (24, 37)	-	-
		Rubiaceae	<i>Pavetta</i> sp. (32)	-	-



Agromyzid species	Agromyzid distribution	Host plant family	Host plant species	Parasitoids	Parasitoid distribution
	28, 29, 32, 37), Tanzania (3, 7, 27, 37), Uganda (3, 36, 37)				
<i>montana</i> Spencer 1965	South Africa (3, 7, 33)	-	-	-	-
<i>mugungae</i> Spencer 1959	DRC (7, 23)	-	-	-	-
<i>nairobensis</i> Spencer 1959	Kenya (3, 7, 23, 33, 36)	-	-	-	-
<i>natalensis</i> Spencer 1959	South Africa (3, 7, 23)	-	-	-	-
<i>neutralis</i> Spencer 1961	Madagascar (3, 7, 30)	-	-	-	-
<i>nicolaudis</i> Spencer 1959	Cape Verde Is. (3, 7, 23)	-	-	-	-
<i>nigrimaculata</i> Spencer 1959	DRC (23, 27), Nigeria (27), Tanzania (27), Uganda (23, 27)	-	-	-	-
<i>nudifolii</i> Spencer 1965	South Africa (3, 7, 33, 37)	Asteraceae	<i>Helichrysum nudifolium</i> (L.) Less. (33, 37)	-	-
<i>obscura</i> Spencer 1977	Principe (7)	-	-	-	-
<i>ocellata</i> Spencer 1961	Madagascar (3, 7, 30)	-	-	-	-
<i>ochrasquamata</i> Spencer 1961	Mozambique (3, 7, 29)	-	-	-	-
<i>ornatissima</i> Spencer 1961	South Africa (3, 7, 29)	-	-	-	-
<i>parvisetula</i> Spencer 1959	Madagascar (3, 7, 23, 30)	-	-	-	-
<i>perinetensis</i> Spencer 1959	Madagascar (3, 7, 23, 30)	-	-	-	-
<i>principensis</i> Spencer 1977	Principe (7, 35)	-	-	-	-
<i>provecta</i> (Meijere 1910)	DRC (3, 7, 23, 24), Ethiopia (3, 7, 31, 36), Kenya (36), Mozambique (3, 7, 31), South Africa (3, 7, 24, 36), Tanzania (3, 7, 23, 24), Uganda (36), Zimbabwe (3, 7, 32)	Asteraceae	<i>Bidens pilosa</i> L. (23)	-	-
<i>pubescentis</i> Spencer 1959	Burundi (3, 7, 23), DRC (3, 7, 23), Kenya (3, 7, 23), Zimbabwe (3, 7, 23, 32)	-	-	-	-
<i>purpurea</i> Spencer 1959	South Africa (3, 7, 23)	-	-	-	-
<i>purpureana</i> Spencer 1959	Madagascar (7, 23, 30), South Africa (30)	-	-	-	-
<i>ruandae</i> Spencer 1959	Burundi (3, 7, 23, 37), Ethiopia (3, 7, 37), Ghana (3, 7, 37), Kenya (37), Rwanda (3, 7, 23, 37)	Asteraceae	<i>Senecio moorei</i> R. E. Fr. (37)	-	-



Agromyzid species	Agromyzid distribution	Host plant family	Host plant species	Parasitoids	Parasitoid distribution
<i>rutshurensis</i> Spencer 1959	DRC (3, 7, 23), Rwanda (3, 7, 23)	-	-	-	-
<i>scottburghensis</i> Spencer 1965	South Africa (3, 7, 33)	-	-	-	-
<i>seneciocaulis</i> Spencer 1960	Ethiopia (3, 7, 34, 37), South Africa (3, 7, 24, 31, 34, 37)	Asteraceae Asteraceae Asteraceae Asteraceae Solanaceae	<i>Senecio juniperinus</i> L. f. (24, 37) <i>Senecio pterophorus</i> DC. (31) <i>Senecio ruderalis</i> Harv. (24, 37) <i>Senecio</i> sp. (28) <i>Solanum</i> sp. (24)	-	-
<i>setulana</i> Spencer 1959	DRC (3, 7, 23)	-	-	-	-
<i>setulifera</i> Spencer 1959	Madagascar (23, 30)	-	-	-	-
<i>sojae</i> (Zehntner 1900)	South Africa (3, 7, 33, 34)	Fabaceae Fabaceae	<i>Glycine max</i> (L.) Merr. (34) <i>Medicago sativa</i> L. (34)	-	-
<i>solanidis</i> Spencer 1959	South Africa (7), Tanzania (7), Uganda (3, 7, 23, 37)	Solanaceae Solanaceae	<i>Solanum melongena</i> L. (23, 37)	-	-
<i>spenceriana</i> Zlobin 2001	Kenya (3)	-	-	-	-
<i>spungaberensis</i> Spencer 1959	Mozambique (3, 7, 23), Zimbabwe (23)	-	-	-	-
<i>stuckenbergi</i> Spencer 1959	Madagascar (3, 7, 23, 30, 33)	-	-	-	-
<i>suborbitalis</i> Spencer 1959	DRC (7, 23), Zimbabwe (7, 23)	-	-	-	-
<i>tamsi</i> Spencer 1977	Principe (3, 7)	-	-	-	-
<i>thunbergiae</i> Spencer 1960	South Africa (3, 7, 24, 37)	Acanthaceae Acanthaceae	<i>Thunbergia natalensis</i> Hook. (37) <i>Thunbergia</i> sp. (24, 37)	-	-
<i>verdata</i> Spencer 1961	Cape Verde Is. (3, 7, 29)	-	-	-	-
<i>vignalis</i> Spencer 1959	Kenya (3, 7, 24, 27, 31, 32, 34, 37), Mali (3, 7, 37), Nigeria (3, 34, 37), Sierra Leone (3, 7, 23, 24, 27, 32, 34, 37), South Africa (3, 7, 27, 31, 32, 34, 37), Sudan (23, 24, 27, 34, 37), Tanzania (7, 27)	Fabaceae Fabaceae Fabaceae	<i>Glycine</i> sp. (31, 34, 37) <i>Vigna</i> sp. (23, 27, 37) <i>Vigna unguiculata</i> (L.) Walp. (23, 24, 34, 37)	Eucoilidae <i>Eucoilidea</i> sp. Eurytomidae <i>Eurytoma</i> sp. Pteromalidae <i>Pteromalus</i> sp.	Uganda (13) Uganda (13) Uganda (13)
<i>viridissima</i> Spencer 1959	Ghana (31), South Africa (3, 7, 24, 29, 33), Zimbabwe (3, 7, 23, 24, 29, 31)	Acanthaceae	<i>Thunbergia</i> sp. (24, 33)	-	-



Agromyzid species	Agromyzid distribution	Host plant family	Host plant species	Parasitoids	Parasitoid distribution
<i>volubilis</i> Spencer 1965	Cape Verde Is. (3, 7, 33)	-	-	-	-
<i>wulfi</i> Spencer 1959	DRC (3, 7, 23)	-	-	-	-
<i>zomandoae</i> Spencer 1961	Madagascar (3, 7, 30)	-	-	-	-
<i>Napomyza</i> Haliday 1840					
<i>drakensbergensis</i> Spencer 1963	South Africa (3, 7, 31, 33)	-	-	-	-
<i>munroi</i> Spencer 1960	Lesotho (7), South Africa (7, 24)	-	-	-	-
<i>renovata</i> Spencer 1960	Kenya (37), South Africa (37)	Ranunculaceae	<i>Ranunculus multifidus</i> Forssk. (37)	-	-
<i>strana</i> Spencer 1960	Tanzania (3, 7, 33)	-	-	-	-
<i>subeximia</i> Spencer 1985	Kenya (3, 36, 37)	Ranunculaceae	? <i>Ranunculus multifidus</i> Forssk. (36, 37)	-	-
<i>vivida</i> Spencer 1965	Lesotho (3, 7, 33)	-	-	-	-
<i>Ophiomyia</i> Brazhnikov 1897					
<i>aberrans</i> (Spencer 1959)	DRC (3, 7, 23, 37), South Africa (3, 7, 24, 37)	-	-	-	-
<i>acutalis</i> Spencer 1959	DRC (3, 7, 23, 33)	-	-	-	-
<i>albivenis</i> Spencer 1959	South Africa (3, 7, 23)	-	-	-	-
<i>anomala</i> Spencer 1961	South Africa (3, 7, 29)	-	-	-	-
<i>atralis</i> (Spencer 1961)	Kenya (3, 28, 29, 31, 32), South Africa (7, 37)	Asteraceae	<i>Cyanthillium cinereum</i> (L.) H. Rob. (37)	-	-
		Asteraceae	<i>Vernonia appendiculata</i> Less. (37)	-	-
		Scrophulariaceae	<i>Striga hermonthica</i> (Delile) Benth. (31, 32, 37)	-	-
<i>beckeri</i> (Hendel 1923)	South Africa (7, 15, 23, 27, 33, 37), Tanzania (7, 8), Zimbabwe (7, 8, 23, 27)	Asteraceae	<i>Sonchus oleraceus</i> L. (15, 23, 33, 37)	-	-
<i>camarae</i> Spencer 1963	South Africa (13)	Verbenaceae	<i>Lantana camara</i> L. (13)	-	-
<i>centrosematis</i> (de Meijere 1940)	Kenya (7, 12, 34, 36, 37), Mozambique (8), Tanzania (7, 12, 27, 34, 36, 37), Uganda (7, 12, 34, 36, 37)	Fabaceae	<i>Centrosema pubescens</i> Benth. (12)	Braconidae	
		Fabaceae	<i>Crotalaria pallida</i> Aiton (12, 36, 37)	<i>Opius melanagromyzae</i>	Uganda (12, 34)
		Fabaceae	<i>Glycine max</i> Siebold & Zucc (12, 34)	Fischer 1963	
		Fabaceae	<i>Phaseolus lunatus</i> L. (12, 34, 36)	Eucoilidae	



Agromyzid species	Agromyzid distribution	Host plant family	Host plant species	Parasitoids	Parasitoid distribution
		Fabaceae	<i>Phaseolus vulgaris</i> L. (34, 36)	<i>Eucoilidae</i> sp.	Uganda (12, 34)
		Fabaceae	<i>Vigna unguiculata</i> (L.) Walp. (12, 34, 36)		
<i>colei</i> Spencer 1965	South Africa (3, 7, 33, 37)	Lamiaceae	<i>Ocimum gratissimum</i> L. (36, 37)	-	-
		Lamiaceae	<i>Solenostemon scutellarioides</i> (L.) Codd (33, 37)		
<i>crotalariella</i> Spencer 1990	Kenya (3, 37)	Fabaceae	<i>Crotalaria agatiflora</i> Schwief. (37)	-	-
<i>decembris</i> (Spencer 1959)	Cape Verde Is. (7, 23, 24), South Africa (24)	-	-	-	-
<i>helichrysi</i> Spencer 1960	South Africa (3, 7, 24, 37)	Asteraceae	<i>Helichrysum argyrosphaerum</i> DC. (32, 37)	-	-
<i>kenyae</i> Spencer 1985	Kenya (3, 36)	-	-	-	-
<i>kilembensis</i> Spencer 1985	Uganda (3, 36)	-	-	-	-
<i>kilimanii</i> Spencer 1985	Kenya (3, 36)	-	-	-	-
<i>labiatalis</i> Spencer 1959	Cameroon (3, 7, 23)	Labiatae	<i>Labiatae</i> sp. (23)	-	-
<i>lantanae</i> (Froggatt 1919)	Kenya (3, 7, 23, 31), South Africa (2, 3, 34), Tanzania (34), Uganda (34), Zambia (3)	Verbenaceae	<i>Lantana camara</i> (L.) (23)	Braconidae	South Africa (2)
		Verbenaceae	<i>Lantana</i> sp. (23, 37)	<i>Bracon</i> sp.	South Africa (2)
				<i>Opius</i> sp.	South Africa (2)
				Eucoilidae	
				indet. sp. (2223)	South Africa (2)
				Eulophidae	
				<i>Euderus</i> sp. (2220)	South Africa (2)
				Eupelmidae	
				<i>Eupelmus</i> sp. 2219	South Africa (2)
				<i>Eupelmus</i> sp. 2221	South Africa (2)
<i>lucidata</i> Spencer 1961	South Africa (3, 7, 29)	-	-	-	-
<i>lunatica</i> Spencer 1961	South Africa (3, 7, 29)	-	-	-	-
<i>mesonotata</i> Spencer 1961	Ethiopia (3, 7)	-	-	-	-
<i>nigerrima</i> Spencer 1959	Kenya (3, 7, 23)	-	-	-	-
<i>ocimi</i> Spencer 1965	Guinea (3, 7, 33, 37)	Lamiaceae	<i>Ocimum gratissimum</i> L. (33, 37)	-	-
<i>ocimivora</i> Spencer 1985	Kenya (12, 36, 37)	Lamiaceae	<i>Ocimum lamiifolium</i> Hoscht. ex Benth (36, 37)	-	-
<i>perversa</i> Spencer 1965	South Africa (3, 7, 33)	-	-	-	-



Agromyzid species	Agromyzid distribution	Host plant family	Host plant species	Parasitoids	Parasitoid distribution
<i>phaseoli</i> (Tryon 1888)	Botswana (12), DRC (3, 7, 23), Ethiopia (1, 3, 12), Kenya (3, 12, 22, 34, 36, 37), Madagascar (12), Malawi (3, 7, 8, 23), Mauritius (3, 12, 23, 34), Mozambique (3, 8), Nigeria (4) Rwanda (3, 7), Senegal (3, 7, 23, 37), South Africa (3, 7, 23), Tanzania (12), Uganda (3, 7, 12, 23, 34, 36, 37), Zimbabwe (3, 7, 8, 12, 23, 37)	Fabaceae Fabaceae Fabaceae Fabaceae Fabaceae Fabaceae Fabaceae Fabaceae Fabaceae Fabaceae Fabaceae	<i>Cajanus cajan</i> L. (12) <i>Crotalaria juncea</i> L. (12) <i>Crotalaria laburnifolia</i> L. (1) <i>Crotalaria pallida</i> Aiton (12) <i>Glycine max</i> (L.) Merr. (1, 12) <i>Lablab purpureus</i> (L.) Sweet (12) <i>Phaseolus lunatus</i> L. (12, 23) <i>Phaseolus</i> spp. (12) <i>Phaseolus vulgaris</i> L. (1, 8, 22, 23) <i>Vigna mungo</i> (L.) Hepper (12) <i>Vigna umbellata</i> (Thunb.) Ohwi & H. Ohashi (12) <i>Vigna unguiculata</i> (L.) Walp. (1, 4, 12, 23)	Braconidae <i>Opius liogaster</i> Szépligeti 1932 <i>Opius melanagromyzae</i> Fischer 1963 <i>Opius phaseoli</i> Fischer 1963 Eucoilidae <i>Eucoilidea nitida</i> Benoit 1956 Eulophidae <i>Aprostocetus</i> sp. <i>Cirrospilus</i> sp. <i>Chrysonotomyia</i> sp. nr. <i>erythraea</i> (Silvestri 1914) <i>Closterocerus formosus</i> Westwood 1833 <i>Meruana liriomyzae</i> (Boucek 1988) <i>Pediobius metallicus</i> (Nees, 1834) Eupelmidae <i>Eupelmus</i> sp. <i>Eupelmus</i> sp. nr. <i>urozonus</i> Dalman 1820 Eurytomidae <i>Eurytoma</i> sp. Pteromalidae	Ethiopia (1), Mauritius (34) Zimbabwe (12, 34) Madagascar (12), Mauritius (12), Mozambique (8), Uganda (12) Kenya (22), Ethiopia (1) Mozambique (8) Ethiopia (1) Ethiopia (1) Mozambique (34) Ethiopia (1) Ethiopia (1, 34), Kenya (34), Tanzania (34), Uganda (34) Ethiopia (1), Mauritius (1) Ethiopia (1) Ethiopia (1), Kenya (12)

Agromyzid species	Agromyzid distribution	Host plant family	Host plant species	Parasitoids	Parasitoid distribution
				<i>Callitula filicornis</i> Delucchi 1962	Ethiopia (1)
				<i>Halticoptera</i> <i>?circulus</i> (Walker 1833)	Ethiopia (1)
				<i>Herbertina</i> sp.	Ethiopia (1)
				<i>Sphegigaster brunneicornis</i> (Ferrière 1930)	Ethiopia (1), Gambia (1)
				<i>Sphegigaster stepicola</i> Bouček 1965	Ethiopia (1)
				Tetracampidae <i>Epiclerus</i> sp. nr <i>nomocerus</i> (Masi 1934)	Ethiopia (1)
<i>pretoriensis</i> Spencer 1960	South Africa (3, 7, 24)	-	-	-	-
<i>productella</i> Spencer 1960	South Africa (3, 7, 24, 29)	-	-	-	-
<i>pulicaria</i> (Meigen 1830)	Kenya (36, 37)	Asteraceae	<i>Sonchus oleraceus</i> L. (36)	-	-
		Asteraceae	<i>Sonchus</i> sp. (37)	-	-
<i>rhodesiensis</i> Spencer 1959	Zimbabwe (3, 7, 23, 31)	-	-	-	-
<i>solanivora</i> Spencer 1961	Ethiopia (3, 7, 32, 37), Kenya (3, 37), Madagascar (3, 7, 30, 31, 32, 37), South Africa (3, 7, 31, 32, 33, 37)	Solanaceae	<i>Solanum incanum</i> L. (30, 32, 37)	-	-
		Solanaceae	<i>Solanum lasiocarpum</i> Dunal (30, 31, 32, 37)	-	-
		Solanaceae	<i>Solanum panduriforme</i> E. Mey (33)	-	-
<i>spencerella</i> Greathead 1969	Kenya (3, 7, 12, 22, 34, 36, 37), Mozambique (8), Nigeria (3, 7, 34, 37), Tanzania (3, 7, 12, 34, 37), Uganda (3, 7, 12, 34, 37)	Fabaceae	<i>Lablab purpureus</i> (L.) Sweet (12, 34)	Braconidae <i>Opius phaseoli</i> Fischer 1963	Kenya (25)
		Fabaceae	<i>Phaseolus lunatus</i> L. (12, 34)	Eucoilidae <i>Eucoilidea nitida</i> Benoit 1956	Mozambique (8)
		Fabaceae	<i>Phaseolus</i> sp. (22, 34, 36, 37)	<i>Eucoilidea</i> sp.	Uganda (12, 34)
		Fabaceae	<i>Phaseolus vulgaris</i> L. (8, 12, 22, 34)	-	-
		Fabaceae	<i>Vigna mungo</i> (L.) Hepper (12)	-	-
		Fabaceae	<i>Vigna</i> sp. (34, 37)	-	-
		Fabaceae	<i>Vigna umbellata</i> (Thunb.) Ohwi & H. Ohashi (12)	-	-
		Fabaceae	<i>Vigna unguiculata</i> (L.) Walp. (12, 34)	-	-
<i>spuriosa</i> Spencer 1960	South Africa (3, 7, 32)	-	-	-	-
<i>strigalis</i> Spencer 1963	Kenya (3, 7, 11, 31, 32, 34, 37), Tanzania (7, 11, 32, 34, 37), Uganda (7, 11, 34, 37)	Scrophulariaceae	<i>Alectra asperrima</i> Benth (11)	Eucoilidae <i>Eucoilidea</i> sp.	Kenya (12), Uganda (11, 12, 34)
		Scrophulariaceae	<i>Cynium tubulosum</i> Engl. N.E. Br. (11)	-	-
		Scrophulariaceae	<i>Striga asiatica</i> (L.) Kuntze (11)	-	-



Agromyzid species	Agromyzid distribution	Host plant family	Host plant species	Parasitoids	Parasitoid distribution
		Scrophulariaceae	<i>Striga hermonthica</i> (Delile) Benth. (12, 31, 34, 37)	<i>Opius</i> sp.	Tanzania (12), Uganda (11)
<i>verdalis</i> Spencer 1959	Cape Verde Is. (3, 7, 23, 33), Ethiopia (3, 7), South Africa (24)	Lamiaceae	<i>Coleus</i> sp. (32)	-	-
<i>visenda</i> Spencer 1965	South Africa (3, 7, 33)	-	-	-	-
<i>Penetagromyza</i> Spencer 1959				-	-
<i>aloes</i> Spencer 1959	South Africa (3, 7, 23, 37)	Asphodelaceae	<i>Aloe petricola</i> Pole-Evans (23, 37)	-	-
<i>similans</i> Spencer 1961	South Africa (3, 7)	-	-	-	-
<i>Phytobia</i> Lioy 1864					
<i>brincki</i> Spencer 1965	South Africa (3, 7, 33)	-	-	-	-
<i>flavosquamata</i> (Spencer 1959)	Nigeria (3, 7, 23, 33), South Africa (3, 7)	-	-	-	-
<i>humeralis</i> Spencer (von Roser, 1840)	Ethiopia (32), South Africa (15, 24)	Asteraceae Asteraceae	<i>Conyza bonariensis</i> (L.) Cronquist (15) <i>Dichrocephala chrysanthemifolia</i> (Blume) DC. (32)	-	-
<i>nigeriensis</i> Spencer 1977	Nigeria (3, 7)	-	-	-	-
<i>nigrita</i> (Malloch 1914)	Tanzania (3, 7, 27)	-	-	-	-
<i>ruandensis</i> (Spencer 1959)	Rwanda (3, 7, 23, 33)	-	-	-	-
<i>setariae</i> Spencer & Sasakawa 1961	South Africa (23)	Poaceae	<i>Setaria</i> sp. (23)	-	-
<i>shizukoae</i> Spencer 1965	South Africa (3, 7, 33)			-	-
<i>Phytoliriomyza</i> Hendel 1931					
<i>asiatica</i> Spencer 1985	Kenya (37)	-	-	-	-
<i>gilleti</i> Spencer 1985	Kenya (37)	-	-	-	-
<i>immoderata</i> Spencer 1963	South Africa (3, 7, 31)	-	-	-	-
<i>intermedia</i> Spencer 1985	Kenya (3, 36, 37)	-	-	-	-
<i>jacarandae</i> Steyskal & Spencer 1978	South Africa (17)	-	-	Eulophidae <i>Cirrospilus ?ambiguus</i> <i>Diglyphus</i> sp.	South Africa (17) South Africa (17)



Agromyzid species	Agromyzid distribution	Host plant family	Host plant species	Parasitoids	Parasitoid distribution
<i>clematidella</i> Spencer 1959	Kenya (3, 7, 23, 36, 37)	Ranunculaceae	<i>Clematis</i> sp. (23, 36, 37)	-	-
<i>clematinsi</i> Spencer 1964	Kenya (37), Ethiopia (7, 32, 37)	Ranunculaceae	<i>Clematis simensis</i> Fresen. (32, 37)	-	-
<i>eximia</i> Spencer 1964	South Africa (7, 32)	-	-	-	-
<i>horticola</i> Goureau 1851	Cameroon (3, 7, 34, 37), Cape Verde Is. (3, 7, 37), Ethiopia (3, 7, 37), Kenya (3, 7, 34, 37), Madagascar (3, 7, 21, 23, 34, 37), South Africa (3, 7, 34, 37)	Alliaceae Asteraceae Brassicaceae Solanaceae	<i>Allium cepa</i> L. (37) <i>Bidens pilosa</i> L. (21) <i>Brassica oleracea</i> L. (37) <i>Solanum lycopersicum</i> L. (37)	-	-
<i>knowltoniae</i> Hering 1957	South Africa (3, 7, 15, 23, 31, 32, 37)	Loasaceae Ranunculaceae	<i>Kissenia capensis</i> Endl. (23, 31, 37) <i>Knowltonia capensis</i> (L.) Huth. (15, 31)	-	-
<i>multifidi</i> Spencer 1985	Kenya (3, 36)	Ranunculaceae	<i>Ranunculus multifidus</i> Forssk. (36)	-	-
<i>natalensis</i> Spencer 1985	Kenya (36, 37), South Africa (3, 7, 32, 36, 37)	Ranunculaceae	<i>Ranunculus multifidus</i> Forssk. (31, 36)	-	-
<i>orobanchia</i> Kaltenbach 1864	Ethiopia (3, 7, 37)	Orobanchaceae	<i>Orobanche</i> sp. (37)	-	-
<i>philoclematidis</i> Hering 1957	Kenya (3, 37), South Africa (7, 15, 23, 31, 33, 36, 37)	Ranunculaceae Ranunculaceae	<i>Clematis brachiata</i> Thunb. (15, 23, 31, 36) <i>Clematis simensis</i> Fresen. (37)	-	-
<i>ranunculina</i> Spencer 1963	Ethiopia (3, 7, 31, 32, 36, 37), South Africa (7, 32, 36, 37)	Ranunculaceae	<i>Ranunculus multifidus</i> Forssk. (31, 32, 37)	-	-
<i>renovata</i> Spencer 1960	Kenya (3, 36), South Africa (3, 7, 31, 32, 36)	-	-	-	-
<i>seneciovora</i> Spencer 1959	Cameroon (3, 7, 23), Ethiopia (3, 7), Tanzania (3, 7)	Asteraceae	<i>Senecio mannii</i> (Hook.f.) (23, 28)	-	-
<i>varii</i> Spencer 1964	South Africa (3, 7, 32, 37)	Ranunculaceae	<i>Clematis brachiata</i> Thunb. (32, 37)	-	-
<i>vitalbae</i> Kaltenbach 1872	South Africa (3, 7, 15, 23, 36)	Ranunculaceae	<i>Clematis brachiata</i> Thunb. (15, 23, 36)	-	-
<i>vitalbella</i> Hering 1957	Ethiopia (3, 7, 32, 36, 37), South Africa (3, 7, 15, 23, 32, 37)	Ranunculaceae Ranunculaceae	<i>Clematis brachiata</i> Thunb. (15, 23, 36) <i>Clematis simensis</i> Fresen. (36)	-	-
<i>Pseudoliriomyza</i> Spencer 1966					
<i>cordiae</i> (Spencer 1959)	Tanzania (3, 7, 23, 37)	Boraginaceae	<i>Cordia ovalis</i> R.Br. ex DC. (23, 37)	-	-



Agromyzid species	Agromyzid distribution	Host plant family	Host plant species	Parasitoids	Parasitoid distribution
<i>Pseudonapomyza</i> Hendel 1920					
<i>acanthacearum</i> (Spencer 1959)	Cameroon (3, 7, 23, 37), Kenya (3), South Africa (3, 7, 33), Sudan (3, 7), Tanzania (3, 7)	Acanthaceae Acanthaceae	<i>Acanthaceae</i> sp. (23) <i>Justicia diclipterooides</i> Lindau. (23, 37)	-	-
<i>afrospicata</i> Zlobin 2002	Gambia (3)	-	-	-	-
<i>alternantherae</i> (Séguy 1951)	Cameroon (3, 7, 28, 29, 30), Ethiopia (3), Madagascar (3, 7, 21, 23, 28, 29, 30, 37), South Africa (3, 7, 28, 29, 36)	Amaranthaceae Amaranthaceae	<i>Achyranthes aspera</i> L. (30, 37) <i>Alternanthera sessilis</i> (L.) R. Br. ex DC. (23, 30, 37)	-	-
<i>asiatica</i> Spencer 1961	Cape Verde Is. (3, 7, 34, 36, 37), Ethiopia (3, 7, 34, 36, 37), Kenya (3, 36, 37), South Africa (3, 7, 28, 29, 34, 36, 37), Tanzania (36)	Poaceae Poaceae Poaceae Poaceae	<i>Cynodon dactylon</i> L. (Pers.) (34, 37) <i>Eragrotis</i> sp. (34) <i>Oryza sativa</i> L. (37) <i>Zea mays</i> L. (29, 34, 37)	-	-
<i>asystasiae</i> Spencer 1965	Cape Verde Is. (3), Kenya (3, 37), South Africa (3, 7, 33, 37), Zimbabwe (3, 33, 37)	Acanthaceae	<i>Asystasia gangetica</i> L. (T. Anderson) (33, 37)	-	-
<i>atra</i> (Meigen 1830)	Cape Verde Is. (7), Ethiopia (23)	-	-	-	-
<i>confusa</i> Zlobin 1993	Cape Verde Is. (3, 39)	-	-	-	-
<i>diminua</i> (Spencer 1961)	Madagascar (7, 27, 30), Tanzania (7, 27)	-	-	-	-
<i>embuensis</i> Spencer 1985	Kenya (3, 36)	-	-	-	-
<i>embui</i> Spencer 1985	Kenya (3, 36)	-	-	-	-
<i>gambia</i> Zlobin 2002	Gambia (3)	-	-	-	-
<i>gilletti</i> Spencer 1985	Kenya (3, 36)	-	-	-	-
<i>grandiosa</i> (Spencer 1961)	Madagascar (3, 7, 30)	-	-	-	-
<i>hispanica</i> Spencer 1973	Ethiopia (37), Kenya (36, 37), Tanzania (36, 37)	Poaceae	<i>Sorghum bicolor</i> (L.) Moench (34, 37)	-	-
<i>hohmanni</i> Spencer 1965	Namibia (3, 7, 33), South Africa (3, 7, 33)	-	-	-	-
<i>hypoestis</i> Hering 1957	DRC (3, 7, 23), Ethiopia (3, 7), South Africa (3, 7, 15, 23, 28, 29, 33, 37)	Acanthaceae Acanthaceae	<i>Hypoestis aristata</i> Soland ex Roem. & Schult. (15, 23, 28, 37) <i>Hypoestis ?verticillaris</i> (Linn. F. Soland. (33)	-	-



Agromyzid species	Agromyzid distribution	Host plant family	Host plant species	Parasitoids	Parasitoid distribution
<i>hypoestivora</i> (Séguy 1951)	Madagascar (7, 21, 23, 28, 29, 30, 37), Zimbabwe (7, 33)	Acanthaceae	<i>Hypoestes betsiliensis</i> S. Moore. (21, 23, 30, 37)	-	-
<i>insularis</i> Zlobin 1993	Cape Verde Is. (3, 39)	Acanthaceae	<i>Hypoestis</i> sp. (33)	-	-
<i>justiciae</i> Spencer 1990	Kenya (3, 37)	Acanthaceae	<i>Hypoestes aristata</i> Soland ex Roem. & Schult. (37)	-	-
<i>lucentis</i> Spencer 1959	Cape Verde Is. (3, 7, 23)	-	-	-	-
<i>matopi</i> Spencer 1965	Zimbabwe (3, 7, 33, 34, 37)	Acanthaceae	<i>Dicliptera monroi</i> S. Moore (33, 34, 37)	-	-
<i>media</i> (Spencer 1961)	Madagascar (3, 7, 30)	-	-	-	-
<i>nigralis</i> Spencer 1961	Ethiopia (3, 7)	-	-	-	-
<i>ovalis</i> Zlobin 2002	Tanzania (3)	-	-	-	-
<i>perspicua</i> Spencer 1963	South Africa (3, 7, 31)	-	-	-	-
<i>ruiruensis</i> Spencer 1985	Kenya (3, 36)	-	-	-	-
<i>similis</i> Spencer 1985	Kenya (3, 36), Tanzania (3, 27, 36)	-	-	-	-
<i>spinosa</i> Spencer 1973	Cape Verde Is. (39), Kenya (36), Lesotho (7, 34), Nigeria (7, 34, 39), South Africa (3, 7, 34, 36, 37, 39), Tanzania (36)	Poaceae	<i>Hordeum vulgare</i> L. (34, 36, 37)	-	-
		Poaceae	<i>Triticum aestivum</i> L. (34, 36, 37)	-	-
		Poaceae	<i>Zea mays</i> L. (34, 37)	-	-
<i>subspinosa</i> Spencer 1985	Kenya (3, 36)	-	-	-	-
<i>urundensis</i> (Spencer 1959)	Burundi (3, 7, 23), DRC (3, 23, 37), Ethiopia (3, 7, 32, 33, 37), South Africa (3, 7, 37), Zimbabwe (3, 7, 33)	Acanthaceae	<i>Hypoestes aristata</i> Soland ex Roem & Schult. (37)	-	-
		Acanthaceae	<i>Hypoestes triflora</i> Roem. Schult. (32, 33, 37)	-	-
<i>vernoniae</i> (Séguy 1951)	Madagascar (3, 7, 21, 23, 37)	Asteraceae	<i>Vernonia appendiculata</i> Less. (21, 23, 37)	-	-
<i>zeae</i> Spencer 1973	Ghana (3, 7, 34, 37)	Poaceae	<i>Zea mays</i> L. (34, 37)	-	-
<i>Ptochomyza</i> Hering 1942					



Agromyzid species	Agromyzid distribution	Host plant family	Host plant species	Parasitoids	Parasitoid distribution
<i>asparagivora</i> Spencer 1964	Ethiopia (3, 7, 32, 36, 37), Kenya (3, 36, 37), South Africa (3, 37)	Asparagaceae Asparagaceae Asparagaceae Asparagaceae Asparagaceae	<i>Asparagus acutifolius</i> L. (36, 37) <i>Asparagus africanus</i> Lam. (32, 36, 37) <i>Asparagus densiflorus</i> (Kunth) Jessop (37) <i>Asparagus falcatus</i> L. (36, 37) <i>Asparagus stipularis</i> Forssk. (36, 37)	-	-
<i>Tropicomyia</i> Spencer 1973					
<i>capeneri</i> (Hering 1957)	Senegal (3, 7, 15, 34, 37), South Africa (3, 7, 15, 23, 34, 36, 37)	Fabaceae	<i>Vigna unguiculata</i> (L.) Walp. (34, 37)	-	-
<i>cassinis</i> (Hering 1957)	South Africa (3, 7, 15, 23, 34, 36, 37)	Celastraceae	<i>Mystroxydon aetiopicum</i> (Thunb.) Loes (15, 23, 34, 37)	-	-
<i>ceratiosicyi</i> (Hering 1957)	South Africa (3, 7, 15, 23, 34, 37)	Achariaceae	<i>Ceratiosicyos ecklonii</i> Nees (15, 23, 34, 37)	-	-
<i>clutiae</i> (Spencer 1963)	Ethiopia (3, 7, 31), South Africa (3, 7, 31, 34, 36)	Euphorbiaceae Fabaceae	<i>Clutia pulchella</i> L. var. <i>pulchella</i> (31, 34, 37) <i>Crotalaria capensis</i> Jacq. (31)	-	-
<i>crotalariae</i> (Hering 1957)	Ethiopia (37), South Africa (3, 15, 23, 31, 36, 37), Uganda (37)	Fabaceae Fabaceae	<i>Crotalaria ?juncea</i> L. (23) <i>Crotalaria capensis</i> Jacq. (31, 37)	-	-
<i>crotonella</i> (Spencer 1964)	Ethiopia (3, 7, 32, 34, 36, 37), Kenya (3, 36, 37)	Euphorbiaceae	<i>Croton</i> sp. (36, 37)	-	-
<i>dicksoni</i> (Hering 1957)	South Africa (3, 7, 15, 23, 34, 36)	-	-	-	-
<i>eulophiae</i> Spencer 1990	Kenya (3, 37)	Orchidaceae	<i>Eulophia porphyroglossa</i> (Rchb. f.) Bolus (37)	-	-

Agromyzid species	Agromyzid distribution	Host plant family	Host plant species	Parasitoids	Parasitoid distribution
<i>flacourtiæ</i> (Séguy 1951)	Cameroon (3, 7, 23, 34, 37), Ethiopia (3, 7, 34, 37), Kenya (3, 34, 36, 37), Madagascar (3, 7, 21, 23, 30, 34, 36, 37), Nigeria (3, 7, 23, 34, 37), Sierra Leone (3, 7, 23, 34, 37), South Africa (3, 7, 15, 23, 34, 37), Tanzania (3, 7, 34, 37)	Apocynaceae	<i>Cryptostegia madagascariensis</i> Bojer ex Decne. (21, 23, 34, 37)	Eulophidae <i>Chrysonotomyia purpurissata</i> Kerrich 1970	Kenya(34), Tanzania (34)
		Apocynaceae	<i>Mascarenhasia arborescens</i> A. DC. (21, 23, 37)		
		Apocynaceae	<i>Pachypodium rutenbergianum</i> Vatke (37)		
		Apocynaceae	<i>Thevetia peruviana</i> (Pers.) K. Schum. (36)		
		Crassulaceae	<i>Kalanchoe ? pubescens</i> Baker (23)		
		Crassulaceae	<i>Kalanchoe pubescens</i> Baker (37)		
		Dioscoreaceae	<i>Dioscorea</i> sp. (21, 23, 30, 34, 37)		
		Fabaceae	<i>Clitoria</i> sp. (23)		
		Fabaceae	<i>Crotalaria</i> sp. (23, 27)		
		Fabaceae	<i>Senna occidentalis</i> (L.) Link (23, 37)		
		Fabaceae	<i>Senna septemtrionalis</i> (Viv.) H. S. Irwin & Barneby (21, 23, 37)		
		Maesaceae	<i>Maesa emirnensis</i> A. DC. (21, 23, 37)		
		Malvaceae	<i>Gossypium</i> spp. (23, 34, 37)		
		Nyctaginaceae	<i>Bougainvillea</i> sp. (21, 23, 34, 36)		
		Orchidaceae	<i>Eulophia porphyroglossa</i> (Rchb. f.) Bolus (36)		
		Passifloraceae	<i>Passiflora caerulea</i> L. (15, 23, 37)		
		Passifloraceae	<i>Passiflora edulis</i> Sims. (21, 23, 36)		
		Passifloraceae	<i>Passiflora ? foetida</i> L. (23)		
		Passifloraceae	<i>Passiflora</i> sp. (23)		
		Pittosporaceae	<i>Pittosporum stenopetalum</i> Baker (21, 23, 37)		
Rosaceae	<i>Crataegus laevigata</i> (Poir.) DC. (37)				
Rubiaceae	<i>Coffea arabica</i> L. (23, 34, 36)				
Rubiaceae	<i>Coffea</i> sp. (21, 23)				
Rubiaceae	<i>Mussaenda arcuata</i> Lam. ex Poir. (21, 23, 37)				
Rutaceae	<i>Citrus</i> sp. (23, 34, 37)				



Agromyzid species	Agromyzid distribution	Host plant family	Host plant species	Parasitoids	Parasitoid distribution
<i>gloriosae</i> Spencer 1990 <i>gymnosporiae</i> Hering (1957)	Kenya (3, 37) Ethiopia (3, 7, 32), South Africa (3, 7, 15, 23, 24, 31, 34, 37)	Salicaceae	<i>Flacourtia indica</i> (Burm. f.) Merr. (21, 23, 30, 37)		
		Solanaceae	<i>Solanum giganteum</i> Jacq. (21, 23, 37)		
		Solanaceae	<i>Solanum lasiocarpum</i> Dunal (23)		
		Thiaceae	<i>Camellia sinensis</i> (L.) Kuntze var. <i>sinensis</i> (21, 23, 34, 37)		
		Verbenaceae	<i>Duranta erecta</i> L. (23, 37)		
		Colchicaceae	<i>Gloriosa superba</i> L. (37)	-	-
		Asteraceae	<i>Crassocephalum rubens</i> (Juss. Ex Jacq.) S. Moore (23)	-	-
		Celastraceae	<i>Celastrus</i> sp. (24, 37)		
		Celastraceae	<i>Gymnosporia buxifolia</i> (L.) Szyszyl. (15, 23, 31, 34, 37)		
		Celastraceae	<i>Gymnosporia</i> sp. (31)		
<i>haemanthi</i> (Spencer 1963)	Ethiopia (3), South Africa (3, 7, 31, 34, 37)	Rhamnaceae	? <i>Rhamnus prinoides</i> L'Hér. (31)		
		Amaryllidaceae	<i>Scadoxus puniceus</i> (L) Friis & Nordal (31, 34, 37)	-	-
<i>kalanchoes</i> Spencer 1985 <i>laburnifoliae</i> (Spencer 1964)	Kenya (3, 36, 37) Ethiopia (3, 7, 31, 32, 34, 37)	Crassulaceae	<i>Kalanchoe densiflora</i> Rolfe (36, 37)	-	-
		Fabaceae	<i>Crotalaria laburnifolia</i> L. (32, 34, 37)	-	-
<i>nigriclava</i> (Bezzi and Lamb 1926)	Mauritius (3, 7, 23), Rodriguez (3, 7, 23, 34)	-	-	-	-
<i>philocroton</i> (Hering 1957)	South Africa (3, 7, 15, 34, 36, 37)	Euphorbiaceae	<i>Croton gratissimus</i> Prain (15, 34)	-	-
		Euphorbiaceae	<i>Croton macrostachyus</i> Hochst. ex Delile (23)		
<i>thunbergivora</i> (Spencer 1963)	Ethiopia (3, 7, 32), South Africa (3, 7, 31, 34, 37)	Euphorbiaceae	<i>Croton</i> sp. (37)		
		Acanthaceae	<i>Thunbergia natalensis</i> Hook (31, 34, 37)	-	-
<i>vigneae</i> (Séguy 1951)	Cape Verde Is. (3, 7, 34, 37), Ethiopia (3, 7, 32), Madagascar (3, 7, 21, 23, 30, 31, 34), Senegal (7, 23, 30, 31, 32), South Africa (7, 32, 37), Sudan	Cucurbitaceae	<i>Cucurbita pepo</i> L. (32, 37)		
		Cucurbitaceae	<i>Melothria tomentosa</i> Cogn. (32)		
		Asparagaceae	<i>Asparagus densiflorus</i> (Kunth) Jessop (37)	-	-
		Fabaceae	<i>Crotalaria incana</i> L. (23, 30)		
		Fabaceae	<i>Dipogon lignosus</i> (L.) Verdc. (37)		

Agromyzid species	Agromyzid distribution	Host plant family	Host plant species	Parasitoids	Parasitoid distribution
	(7, 34)	Fabaceae	<i>Lablab purpureus</i> (L.) Sweet (34)		
		Fabaceae	<i>Pueraria montana</i> (Lour.) Merr. (32, 37)		
		Fabaceae	<i>Senna bicapsularis</i> (L.) Robx (23)		
		Fabaceae	<i>Senna occidentalis</i> (L.) Link (21, 23, 30)		
		Fabaceae	<i>Vigna angivensis</i> Baker (21, 23, 30)		
		Fabaceae	<i>Vigna mungo</i> (L.) Hepper (21, 23, 30)		
		Fabaceae	<i>Vigna unguiculata</i> (L.) Walp (30 31, 32, 34)		
		Xanthorrhoeaceae	<i>Kniphofia nr galpinii</i> (37)		

Abate (1991)¹, Baars & Heystek (2003)², Bisby et al. (2008)³, Bottenberg et al. (1998)⁴, Bouček (1988)⁵, Chabi et al. (2008)⁶, Cogan (1980)⁷, Davies (1998)⁸, Deeming & Mann (1999)⁹, EPPO (2006)¹⁰, Greathead & Milner (1971)¹¹, Greathead (1969)¹², Greathead (1971)¹³, Hasson & LaSalle (1996)¹⁴, Hering (1957)¹⁵, Musundire (2002)¹⁶, NCI (2009)¹⁷, Neuenschwander et al. (1987)¹⁸, Noyes (1998)¹⁹, Noyes (2003)²⁰, Séguy (1951)²¹, Songa & Ampofo (1999)²², Spencer (1959)²³, Spencer (1960a)²⁴, Spencer (1960b)²⁵, Spencer (1961a)²⁶, Spencer (1961b)²⁷, Spencer (1961c)²⁸, Spencer (1961d)²⁹, Spencer (1960e)³⁰, Spencer (1963)³¹, Spencer (1964)³², Spencer (1965)³³, Spencer (1973)³⁴, Spencer (1977)³⁵, Spencer (1985)³⁶, Spencer (1990)³⁷, Stegmaier (1967)³⁸, Zlobin (1993)³⁹, Zlobin (2001)⁴⁰

Numbers in parentheses represent the reference where the record has been made.

Reference for plant names: USDA, ARS, National Genetic Resources Program. Germplasm Resources Information Network - (GRIN) [Online Database].

National Germplasm Resources Laboratory, Beltsville, Maryland. URL: http://www.ars-grin.gov/cgi-bin/npgs/html/tax_search.pl (01 February 2009)

Additional references for parasitoids were made from “The Chalcidoidea Specimen Database of the Biosystematics Division, ARC-Plant Protection Research Institute, Pretoria, South Africa” (NCI)