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INTSORMIL REPORT

STRIGA SURVEY IN KADUGLI AREA,

SOUTH KORDOFAN, SUDAN

BY

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A STRIGA SURVEY IN THE VICINITY OF KADUGLI, SOUTH KORDOFAN

0. Summary.

0.1. Striga hermonthica damages maize.

0.2. Striga asiatica, a serious problem on grains in other parts of Africa, is common in native grasslands.

0.3. A white flowered Striga, tentatively determined as a distinct strain of S. asiatica, is a common weed.

0.4. Striga aspera is infrequent in native grasslands.

0.5. Butterfly larvae feed on native strigas.

0.6. Striga gesnerioides can attack legumes.

1. Striga asiatica. This species is known from earlier collections in South Kordofan. Although a serious problem on grains in several parts of the world including parts of east and southern Africa. This species has never been implicated in any loss in Sudan. Two distinct morphotypes were found in the Kadugli area-one with white flowers, one with scarlet-red flowers.

1.1.1. Morphology. This is a much branched plant with leafy floral bracts extending laterally beyond the flowers giving the appearance of leaves. Leaves are very fleshy and brittle with only very poorly developed excrescences on the margins of the leaves. Flowers are a light cream-white and typical in size and shape for the species. The corolla type is puberulent. Only two flowers per node are open at one time. The flowers appear to be autogamous. This morphotype resembles Striga densiflora and further work is necessary to determine the taxonomic status of this plant. Striga densiflora has not previously been reported from Africa.

1.1.2. Ecology. Weedy roadsides appear to be the preferred habitat of this plant, especially on somewhat poorly drained ligther (non-clay) soils. It was seen along most of the roads in the Kadugli. A list of associated species is being prepared.

1.1.3. Phenology. Plants were at their peak of flowering on 16 August with some capsules already darkening but few plants with open capsules.

1.1.4. Hosts and agronomic significance. Tentative identification of hosts includes Sporobulus, Brachiaria, Ctenium and Dactyloctenium. No plants of this strain were found on any crops. This may be due either to the earlier germination of this strain or host specificity. Germination tests are being conducted at Shambat to ascertain which crop species will germinate and/or support parasitism.

1.1.5. Floral vistors. A yellow pierid butterfly was observed to selectively visit this strain.

1.2. Red flowered strain of Striga asiatica.

1.2.1. Morphology. The sparsely branched plants of this strain are similar to Striga asiatica found in West Africa. The pubescence and flower color are also the same-dense, hispid hairs and a scarlet red corolla with a yellowish ventral surface.

1.2.2. Ecology. The niche of this strain appears to be much different than that of the white flowered strain although both were found in close proximity. This strain prefers drier sites. The population densities are always low, just a few plants per hectare.

1.2.3. Phenology. This appears to be similar to the white flowered strain.

1.2.4. Hosts and agronomic significance. Unfortunately, none of the hosts were fertile.

1.2.5. Floral visitors. No floral visitors were observed.

2. Striga aspera.

2.1. Morphology. Superficially, this species resembles S. hermonthica with which it is often confused. Overall, S. aspera is a more delicate plant with smaller leaves and flowers. There is a difference between the two species in the length of the corolla tube relative to the position of the corolla lobes. The tube is longer in S. aspera and is densely puberulent. Another difference is in the morphology of the bracts. In S. aspera these are usually shorter than the calyx and lack prominent hairs on the margins while those in S. hermonthica are longer than the calyx and have very well developed hairs on the margins.

2.2. Ecology. Striga aspera appears to favor later stages of succession than any of the other species and was found in native grasslands that had been fallow for many years. It occurs in small populations of 5-8 plants scattered through the grassland.

2.3. Hosts and agronomic importance. No mature hosts of S. aspera were found. This species is known to attack grains but has never been reported as a serious pest.

2.4. Phenology. As of 18 August, S. aspera had just started to flower. Some stems were just beginning to emerge. Thus, it appears that this species is temporally isolated from S. hermonthica.

2.5. Floral visitors. One butterfly (being determined) visited S. aspera at the Wadi Shiear site.

3. Striga hermonthica. This is a ubiquitous weed in sorghum in the Nuba Mountain region. The largest plants found were about 25 cm tall with numerous stems just emerging. Near Balanya, south of Kadugli, we found abundant S. hermonthica on maize in a terrace garden. The maize is planted before the sorghum and matures early ensuring a crop in the critical period before the sorghum harvest. This maize (variety unknown) had been planted on 15 June. Some ears were almost ready to harvest. It also occurs on maize in the vicinity of the Saref and one farmer told us it was a serious problem on that crop. This is apparently the first report of S. hermonthica on maize in Sudan.

4. Striga gesnerioides. This is a very common parasite on Meremia emarginata (Convolvulaceae), an often abundant weed in sorghum fields especially late in the growing season.

4.1. Morphology. This is similar to those plants which emerge later in the season except that the earlier plants are somewhat less branched and very light green in color.

4.2. Ecology. Occasional plants were found on rocky slopes in shallow soil, or very rarely, in lighter soils in grasslands.

4.3. Phenology. Plants were at about the peak of flowering on 20 August. The fact that all four species of flowering at the same time suggests that germination requirements are similar. It also allows for the possibility of genetic exchange but no hybrids have ever been reported in the genus. On the other hand, S. hermonthica emerges and flowers much later.

4.4. Hosts and agronomic significance. On rocky slopes, Jacquemontia tamnifolia was the sole host. This is a member of the Convolvulaceae. One plant in a grassland was parasitizing an undetermined legume. This is significant as it may mean that the Convolvulaceae strain may be able to attack legumes.

4.5. Floral visitors. Thrips were common in corollas.

5. Predators and parasites. Larvae of Junonia orithyia, a well documented feeder on strigas, were found feeding on the white flowered strain. Two other lepidopteran larvae were feeding on this strain. These are being determined. These native species (i.e., non-weedy) may play an important role in the population dynamics of the butterfly by providing food before the mass emergence of S. hermonthica. From field observations it appears that Junonia was in its second generation the second week of August. Heavy rain first fell in late June-early July. No Smicronyx weevils, so abundant late in the season, were found. Several plants of S. hermonthica and S. aspera supported a fungus but only on the very lowest leaves and only in very shaded and moist places.

5. Recommendations.
   5.1. The impact of S. hermonthica on maize need to be evaluated. Is this a host specific strain?
   5.2. Host susceptibility of S. asiatica needs to be researched.