

HAUSTORIUM

Parasitic Plants Newsletter

Official Organ of the International Parasitic Seed Plant Research Group

January 1990 Number

● FIFTH SYMPOSIUM ON PARASITIC WEEDS

The Fifth Symposium on Parasitic Weeds is scheduled for June 1991 in Nairobi, Kenya. Current sponsors are IPSPRG and CIYMMT. If you are interested in being placed on the mailing list for future announcements, return the attached form **by 15 April 1990**. Like other IPSPRG symposia, plans are to have papers prepared from camera ready copy available at the meetings. All areas and parasites are to be included, as in past meetings, although emphasis will be on African *Striga*. A two day field trip to see parasites is planned. Registration and other information will be sent with the second circular, no later than June 1990.

● STRIGA BIBLIOGRAPHIES

1. 1957 USDA *Striga* Bibliography. This invaluable resource has been reprinted by the Parasitic Plant Laboratory. It contains summaries of 298 papers and along with several indices of *Striga* and host species. It is a model bibliography and the most exhaustive review of the literature. Single copies of the 132 page publication are free upon request. In addition, the entire bibliography is available on disk. Specify disk site and choice of WordPerfect 5.0 or ASCII formats. Production and distribution of this bibliography is made possible by grant 59-319R-9-003 from the U S Department of Agriculture, Office of International Cooperation and Development.

2. A second bibliography has been prepared by Dr Joel Ransom, CIYMMT maize agronomist. It contains more than eight hundred entries of select-

ed *Striga* literature, without summaries, through 1989. Single copies are available upon request as are disk copies.

3. Exhaustive *Striga* bibliography in progress. Under the direction of Dr Vasudeva Rao, ICRISAT has collected all known papers on *Striga*. Summaries of the more than 1400 titles are now being prepared and publication, as a joint effort between ICRISAT and the Parasitic Plant Laboratory, is planned for late 1990 or early 1991. The entire bibliography with summaries will be available on disk. Plans are also underway to determine the feasibility of optically scanning papers for computer output of papers upon demand.

● MISTLETOES ON RUBBER TREES IN NIGERIA

Severe infestations of mistletoes (Loranthaceae)--perennial, woody, parasitic plants--have been observed in rubber. *Hevea brasiliensis*, plantations in southern Nigeria. Two mistletoes have been observed as most prevalent. Although they have similar vegetative characters, they are easily recognized by their flower color. *Loranthus incanus* has yellow flowers with pink streaks while *Loranthus brunneus* has red flowers with black streaks; this latter species is mainly restricted to the tree top of abandoned rubber plantations. Amongst monoclonal plantations surveyed, the RRIM 600 and PR 107 have been found to be more susceptible to *L. incanus* infestation. Because of the distance between the crown and the ground, the presence of the parasite is hardly noticed until flowering. The mistletoes flower twice a year and shed their leaves approximately one month earlier than their hosts. The obvious

effect of this is the decrease in the rubber latex yield. Due to the excessive weight of the parasite, parasitized limbs readily break in the wind. Furthermore, the effects of the parasite on the crown, coupled with the root parasite *Thonningia sanguinea* and the white wood rot fungus (*Fomes linguus*) on the lower portion of the bole ultimately lead to tree fall. All this results in losses not yet quantified.

L. S. Gill and H. I. Onyibe, University of Benin (Nigeria)

● *STRIGA HERMONTHICA* ON BARLEY IN ETHIOPIA

Striga hermonthica is a common occurrence in sorghum and maize in many parts of Ethiopia. In 1988 it was found growing on tef (*Eragrostis tef*) in several fields in East and West Gojam and North Wello Administrative Regions. Last September *S. hermonthica* was found growing on barley (*Hordeum vulgare*) in a field where sorghum was growing the previous year. The owner of the farm said that he had not expected *Striga* to grow on barley and that he had changed from sorghum to barley in an attempt to escape the menace of *Striga*. The area, in general, has very heavy *Striga* infestation in almost every sorghum and/or tef field. But the attack on barley was observed only in one field, on several plants. During the coming (1990) cropping season, more survey in the region will be made.

Ahmed M. Sherif, Holetta Research Center

● A SEW TERMINOLOGY FOR PARASITIC PLANTS

Parasitic flowering plants have been studied for more than 150 years by scientists from different fields of research. The result has been a large number of publications (eg. Kuijt 1969). In the last 20 years in particular, there has been an explosion of papers on taxonomy, morphology, anatomy, ecology, physiology and biochemistry of parasitic plants. New aspects, phenomena or structures, described in different languages, have resulted in a chaos of terms, even in the same language. We propose the development of a uniform terminology which can be used by everyone who studies these plants by eliciting the input for all

workers. A series of definitions will be published in the next issues of HAUSTORIUM. Send your criticisms and/or alternative definitions to Hans Christian Weber, Fachbereich Biologie, Philipps University, D-3550 Marburg, West Germany or to Lvtton Musselman. After receiving all your input, we shall prepare a glossary for distribution at the Nairobi meeting. The first installment follows.

Parasitism

1. Parasitic flowering plant-A plant which penetrates a living host for nutrition.
2. Endoparasite-Plants in which the majority of the plant body is inside the host. Examples: Rafflesiaceae, some mistletoes.
3. Ectoparasite-Plants in which the majority of the plant body is outside the host. Most parasites are in this category.
4. Hyperparasitism-Plants which are obligate parasites of other parasites, as some mistletoes.

● YIELD LOSSES IN MAIZE DUE TO *STRIGA ASIATICA* IN THE CAROLINAS, 1989

A better understanding of the actual and potential yield losses associated with *Striga* is needed if sufficient resources are to be committed to its control. From a number of experiments conducted in 1989 in North and South Carolina which varied in planting date, nitrogen rate, and yield potential (2400 kg/ha to 8500kg/ha), regression equations were calculated to predict yield losses in maize using *Striga* plant count, early in the season (70- 75 days after planting), and *Striga* above ground dry weight at the time of maize harvest. The predicted loss of maize yield varied between 32 and 141 kg/ha per *Striga* plant/ m² for late counts, and 20 and 71 and 96 kg/ha per gm/ m² *Striga* dry weight. *Striga* emerging early in the season was consistently more damaging than *Striga* emerging late. Only 20 *Striga* plants/ m² late in the season were required to reduce yield by 50% in the lowest yielding trial while 43 plants/ m² were needed to produce the same effect in the highest yielding trial. Nevertheless, these data suggest that yield losses due to *Striga*, even in a well managed crop (i.e. adequately fertilized and free from other damaging pests) can be substantial.

Based on these data, 1 gm of above ground *Striga* growth represents a 4 to 15 gm reduction in maize growth (based on the assumption that the harvest index of the maize was 40% and not considering any *Striga* which attached, grew, but failed to emerge from the soil). Assuming that with a competitive effect, 1 kg of weed growth will result in the reduction of 1 kg of crop growth, then only 7 to 25% of the reduction in the growth of maize in these experiments can be attributed to competition. More information on the "toxic" effects of *Striga* is needed.

Joel K. Ransom. Maize agronomist CIMMYT, Nairobi

● LITERATURE

- Americanos, P.G. 1989. Trials for the control of *Orobanche ramosa* L. in celery. *Apium graveolens* L. Near East Working Group for Improved Weed Management Newsletter 6: 3. (Glyphosate provided good control for this problem in Cyprus).
- Anonymous. 1989. Report of the FAO/OAU Regional Workshop on *Striga* Control. FAO report AGPP/MISC/89/2. Rome: FAO 11 pages. (Proceedings of the December 1988 workshop in The Gambia).
- Anonymous. 1989. *Striga*-Improved Management in Africa. FAO Plant Protection and Production Paper 96. 205 pages. (This is the published proceedings of the All-Africa Government Consultation on *Striga* Control held in Cameroon in 1987 and sponsored by OAU/FAO).
- Anonymous. 1989. Tobacco Production Technology. Central Tobacco Research Institute. Rajahmundry, India. (*Orobanche cernua* control is discussed).
- Ba. A.T. 1988. Structure et ultrastructure de l'haustorium du *Striga hermonthica*, une scrophulariaceae parasite du mil (*Pennisetum typhoides*). Canadian Journal of Botany. 66(11): 2111-2117. (This is another paper in this worker's series of papers on haustorial structure. No phloem was evident).
- Bewick, T.A., L.K. Binning, and B. Yandall. 1988. A degree day model for predicting the emergence of swamp dodder in cranberry. Journal of the American Society for Horticultural Science 113(6): 839-841. (A model that predicts the onset of *Cuscuta groenovii* emergence using growing degree days and low temperature thresholds was developed. This dodder is a serious problem on cranberries and blueberries, both species of the genus *Vaccinium*).
- El-Hiwari. S.O. 1988. Growth inhibitors of *Sorghum vulgare* Pers. from *Striga hermonthica* (Del.) Benth. Arab Gulf Journal of Scientific Research B 6(2): 163-172. (Some of this work has been reported earlier. Extracts of infected sorghum plants inhibited non-infected sorghum).
- Foy, C.L., R. Jain and R. Jacobsohn. 1989. Recent approaches for chemical control of broomrape. Reviews of Weed Science 4: 123-152. (An extensive review of herbicide control. Helpful tabular information is included as well as more than 200 bibliographic citations).
- Hemmerly, T.E. 1989. Mistletoe parasitism in Tennessee. Journal of the Tennessee Academy of Science 64(3): 121-122. (This paper deals with *Phoradendron serotinum* and its hosts).
- Krause, D. 1989. *Striga*-Biologie, Schaden, Kontrolle. Mikrokosmos, 78(10): 289-294. (Many helpful scanning electron micrographs are included).
- Lyshede, O.B. 1989. Electron microscopy of the filiform seedling axis of *Cuscuta pedicellata*. Botanical Gazette 150(3): 230-238.
- Melero-Vara, J.M., J. Dominguez and J.M. Fernandez-Martinez. 1989. Evaluation of differential lines and a collection of sunflower parental lines for resistance to broomrape (*Orobanche cernua*) in Spain. Plant Breeding 102: 322-326. (Results confirmed the existence of several physiological races of broomrape in Spain, different than those from Eastern Europe. Good resistance was found in some lines).
- Mohlenbrock, R.H. 1989. Paint Rock. North California. Natural History. 8: 64-66. (Paint Rock is one of the famous locations of *Buckleya disticophylla* of the Santalaceae. The biology of the plant is briefly discussed).
- Orloff, S. B., R. N. Vargas, D. W. Cudney, W. M. Canevari and J. Schmiere. 1989. Dodder control in alfalfa. California Agriculture 43(4): 30-32. (Dinitroaniline herbicides applied pre-emergent provided extended control: proflam was the most persistent. Excellent colored pictures are included).

- Pepperman, A.B. and J.M. Bradow. 1988. Strigol analogs as germination regulators in weed and crop seeds. *Weed Science*, 36: 719-725. (Strigol analogs inhibited or did not affect monocot germination whereas several dicots exhibited both inhibitory and stimulatory responses).
- Parameter, J.R. and R.F. Scharpf. 1989. Dwarf mistletoe in red and white firs in California-23 to 28 years after inoculation. USDA Forest Service Research Note PSW-406: 1-5.
- Scharpf, R.F. and A.H. McCain. 1988. Avoid planting scotch pine near dwarf mistletoe-infected California pines. USDA Forest Service Research Note PSW-400: 1-2.
- Scharpf, R.F., R.S. Smith and D. Volger. 1988. Management of western dwarf mistletoe in ponderosa and jeffrey pines in forest recreation areas. USDA Forest Service General Technical Report 103: 1-11.
- Takeuchi, Y, A. D. Worsham and A. E. Awad. 1989. Effects of brassinolide on conditioning and germination of witchweed (*Striga asiatica*) seeds. Proceedings of the 12th Asian-Pacific Weed Science Conference 149-158. (Brassinolide, a steroidal derivative of a mustard, eliminated the inhibitory effect of conditioning by strigol and natural stimulants on witchweed seeds).

HAUSTORIUM is edited by L. J. Musselman, Parasitic Plant Laboratory, Department of Biological Sciences, Old Dominion University, Norfolk, Virginia 23529-0266 USA, electronic mail LJM100f at ODUVM, telex 823428 OLD DOM NK, fax 804-683-5155 and C. Parker, Long Ashton Research Station, University of Bristol, Bristol, BS18 9AF, ENGLAND, fax (0272) 394007. It is published by Old Dominion University and sent free of charge under a grant (59-319R-9-003) administered by the Office of International Cooperation and Development of the U S Department of Agriculture and mailed twice a year, usually in January and July. Unsigned articles and literature reviews are by the editors. Send material for publication to either editor and requests for copies to L. J. Musselman.

HAUSTORIUM 22 was mailed 16 October 1989

**FIFTH INTERNATIONAL SYMPOSIUM
ON PARASITIC WEEDS
NAIROBI, JUNE 1991**

FIRST CIRCULAR-JANUARY 1990

If you wish to be placed on the mailing list for further announcements of the symposium, fill out this form and return it by *April 15 1990* to:

Fifth Symposium on Parasitic Weeds
Parasitic Plant Laboratory
Old Dominion University
Norfolk, Virginia 23529-0266 USA

NAME (First, middle initial last):

TITLE:

ADDRESS (include mailing code):

TELEX:

ELECTRONIC MAIL:

Do you need an official invitation to attend?

Will you need financial assistance to participate?

TENTATIVE TITLE OF YOUR PRESENTATION:

Other information:

INDEX OF PARASITIC SEED PLANT WORKERS

Several years ago, an attempt was made to produce an index of workers and others interested in parasitic plants. Facilities and resources are now available to do this. Please TYPE your responses as they will be computer read. Send to address on reverse side.

- | | |
|--|---|
| 1. Same (first, middle initial, last): | 8a. |
| 2. Title (Dr., Prof., Ms, etc): | 8b. |
| 3. Position (Research assistant; supervisor, etc): | 8c. |
| 4. Institutional affiliation: | 9. Organisms (give genus and family of no more than four) |
| 5. Department: | 9a. (1): |
| 6. Complete mailing address: | 9h. (2): |
| | 9c. (3): |
| 7. Telecommunications: | |
| 7a. Phone: | 9d. (4): |
| 7b. Telex: | |
| 7c. Cable: | |
| 7d. Electronic mail: | |
| 8. Specific research interest (s): | 10. Publications. List three of your most recent or most important by last name, initials of first author followed by initials and last name of other authors. Date. Title. FULL NAME OF JOURNAL. REPORT. PROCEEDINGS. ETC (do not abbreviate!). Volume (number) . Pages. City and publisher (for reports and hooks). |