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Parasitic Plants Newsletter

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Official Organ of the International Parasitic Seed Plant Research Gr

HAUSTORIUM IS FIVE YEARS OLD

With this issue we are five *years* old! The response to the newsletter is most gratifying and we now print over 400 copies per issue. Special thanks, as we begin the second half of our decade, are due IPPC who type, print, and mail HAUSTORIUM. However, we depend solely upon our readers to submit items of *interest* and would encourage even more help. We find that the literature section is especially well received and we value inclusion of items you send which are not easily retrievable elsewhere, Items, and requests to receive HAUSTORIUM, *can* be sent to either editor.

THIRD INTERNATIONAL SYMPOSIUM ON PARASITIC WEEDS

Arrangements for the symposium are progressing well. Those who have registered should have received all necessary information by this time. Further information and details of the meting are still available from C. Parker at: Weed Research Organization, Yarnton, Oxford OX5 1PF, UK. *(Also* see insert with this issue.)

COMBINED EFFECTS OF ROOT-KNOT NEMATODE & OROBANCHE SPECIES ON TOMATO & TOBACCO

Two common and important parasites of tomato in the Jordan Valley *are* broomrope, Orobanche ramosa, and the root-knot nematode, Meloidogyne incognita. Similarly on tobacco in Bangladesh, two other species, Orobanche cernua and Meloidogyne javanica were commonly associated with serious damage to the crop. Both genera are root parasites with the same ecological niche and, in an attempt to determine the relative *importance* of the parasites in relation to their control, their individual and combined effects on growth of the two crops was studied.

In glasshouse experiments, O. ram and M. incognita were inoculated separately and together into pots with sing tomato seedlings at rates of 2,000 see and 2,000 nematodes per plant respectively, and the results compared to ch plants without either of the parasites Similar treatments and inoculation rat were used for O. cernua and M. javanic on tobacco.

The results showed that, at these infestation levels, both *parasites* caus severe damage to tomato, .but M. incogni alone caused a greater reduction in gro of tomato than O. cernua alone. The nematodes reduced foliar weight of infested plants *by* a mean of 76% compared to check plants; the parasitic weed cau a reduction of 46% but the greatest mea weight reduction (81%)occurred when bo parasites were present on the same toma plants. In this combined treatment, th two parasites developed normally without *any* apparent competition for feeding or infection sites.

The severity of nematode root gall*ing* was the same in nematode treatments with and without O. ramosa. The presenc of nematodes resulted in a slight reduction in number of Orobanche heads per plant and prevented a second flush of heads after four mnths which occurred with Orobanche alone. This *can* be explained by the severity of root damage caused *by* the nematodes. Nematodes alone and combined with *O.* ramosa delayed or prevented flower formation in the tomato plants up to four mnths, but this was not the case with O. ramosa alone.

The results with O. cernua and M. javanica on tobacco were similar to the above. The number of leaves on tobacco plants was reduced by a mean of 50%or more of the leaf number on check plants

when either of the parasites was present. The combined effect of O. cernua and M. javanica was additive, causing a mean reduction of 77% in leaf number compared to check plants (3 and 13 respectively). Both parasites developed normally in all treatments and *the* amount of nematode root galling *and* the number of Orobanche heads were the same whether the other parasite was present or not.

The results clearly demonstrate that Orobanche and Meloidogyne are both major pests independent of each other; they can *occur* together on the same plants without competition or interaction for infection sites and, when this occurs, the damage to tomato and tobacco is considerably greater but purely additive.

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STRIGA WORKSHOP, DAKAR' 14-17 NOVEMBER 1983

About 30 scientists from several nations met to discuss the problem of Striga, its impact on food production, biology, and control as well as recommendations for further research. Papers covered a wide range of subjects on the parasite including taxonomy, morphology and ultrastructure, floral biology, chemical control, cultural practices, physiology, biochemistry, biological control, and germination stimulants. The papers presented at the meting will be published in a single volume to be produced by *the* meetings' sponsors The African Biosciences Network of the International Council of Scientific Unions. Details on obtaining the volume will be printed in HAUSTORIUM.

HELP REQUIRED FOR STUDY OF INSECTS ATTACKING STRIGA

Insect damage to Striga has been noticed in many areas, but studies on its cause and extent have so far only been made in South India and East Africa —work done almost 20 *years* ago. Elsewhere, only casual observations have been made with very few specimens collected for authoritative determination. However, reliable information is needed as a basis for assessing the prospects for biological control both *by* introducing species which are absent and enhancing the action of active .species.

Caterpillars and sucking will be encountered which can be reared. Of greater inherent interest are gall forming insects, especially weevils Smicronyx spp. These are not easy to rear, but *the* effort should be made as there are several species gall ing different parts of their host pl and adequate museum specimens are ke for the taxonomic studies needed to m y of them. Particular attention should also be paid to special feeding below ground which have not been adequately sought anywhere. The CIBC is prepared to assist with help from the taxonomist for the Commonwealth Institute of Entomology who are themselves hamp in their studies by the scarcity of accurately labelled specimens for stu

What is needed is good series of reared specimens together with labels giving locality, date, host plant, and crop on which it was *growing*. If possible, each sample should consist of at least 10 specimens to ensure that both sexes *are* included and so that the range of individual variation can be assessed. Specimens should be thoroughly dried if possible pinned. If this is not possible, they should be packed between layers of *soft* paper tissues in cans (not metal or plastic). Send them to D.J. Greathead, Commonwealth Institute of Bilogical Control, Silwood park, Imperial College, Ascot, Berks, SL5 UK.

D.J. Greathead, CIBC, UK

REQUEST FOR INFORMATION ON RAFFLESIA

Mr. Takashi Sato, Kawahara-CHO 2552, Mizuhashi, Toyama-Shi, Toyama 939-05, *Japan*, is studying Rafflesia in the vicinity of Ranau in Sabah, Borneo, and has collected what appears to be unique materials. He is eager to correspond with anyone who has worked on this fantastic genus to determine which species he has.

STRIGA PUBLICATIONS FROM ICRISAT

1.) Proceedings of the Second International Striga workshop, October 5-8, 1981 (Published by ICRISAT; Scientific Editors - K.V. Ramaiah and M.J. Vasudeva Rao). These proceedings summarize world-wide Striga research, describe the known Striga species, and discuss control methods such as cultural practices, use of herbicides and germination stimulants

and breeding resistant cultivars. Abstracts, summaries of discussions, and recommendations are presented in English and French.

2.) Striga Identification and Control Handbook (published by ICRISAT; Authors: K.V. Ramaiah, C. Parker, J.J. Vasudeva Rao and L.J. Musselman). * This handbook describes the most important of the 25 species of this parasitic weed occurring in the world, their biology, and symptoms of attack. It also provides concise information about the options for control. A key is presented to assist in the identification of the seven most damaging species, and the text is supported by 34 illustrations in color.

Cost Details	Prices HDCs $	LDCs S	India Rs.
Proceedings	6.30	2.10	20.60
Handbook	4.20	1.40	13.00

	Postage and handling: overseas airmail $	overseas surface $	India surface Rs.
Proceedings	3.10	1.40	4.40
Handbook	1.20	0.75	3.50

Orders may be placed with Information Services, ICRISAT Patancheru P.O., A.P., 502 324 India.

STRIGA IN SUGARCANE IN SUDAN

Striga hermonthica is one of the best known and most serious pests of sorghum and millet in Sudan. In August 1983 a heavy infestation was observed in test plots of sugarcane at Sennar Sugar Factory in the Blue Nile Province. The plots included cultivars Co527, Co1001, Co6806, Co62175, and M31/45, but Striga was found only on M31/45, a cultivar fran Mauritius.

Striga asiatica is a well known problem in sugarcane culture on Mauritius and it would be interesting to know if M31/45 exhibits any resistance to S. asiatica. The infestation at Sennar was of less magnitude on plots treated with N or P. Some of the untreated plots were completely destroyed by Striga. The infested plots were weeded when the crop was six months old. However, Striga recovered and infested the same plots. Striga was also observed on borders of treated plots of M31/45. It is worth noting that the land under sugarcane used to be under sorghum for many year Striga infestation was not observed at New Halfa Sugar Factory in Kassala Province (Eastern Sudan) where the same cultivars were grown on similar test plots.

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REVIEW OF PAPERS FOR HAUSTORIUM

● Hedberg, O., I Ericson, A. Grill-Willen, A. Hunde, : Kollsten, O. Lofgren, T. Ruuth, and O. Ryding. 1979. The yellow flowered species of Bartsia (Scrophulariaceae) in tropical Africa. Nordic Journal of Botany. (Bartsia is a small genus of hemiparasites of northern and alpine habitats.)

● Asen, P.A. and K. Blomdal. 1983. Toothwort, Lathraea squamaria, in Aust- and Vest-Agder &unties, south Norway. Blyttia 41(6)1-8. (A short paper in Norwegian but with English summary and English captions about an interesting native holoparasite.)

● Bernhardt, P. 1982, Interspecific incompatibility amongst Victorian speci of Amyema (loranthaceae). Australian Journal of Botany 80: 175-184. (Some species in the genus are self-incompatible, others self-compatible. Those species that are self-compatible would receive pollen of other species.)

● Calder, D.M. , F.G. Lennox, and P. Bernhardt. 1982. Natural hybridization between Amyema pendulum and Amyema quandand, Loranthaceae. Australian Journal of Botany 30: 625-633. (Hybri are rare in Loranthaceae and this paper documents hybridization using chromatography and morphological characters.)

● Sedgley, M. 1982. Floral anatomy and pollen tube growth in the quandong (Santalum acuminatum (R. Br.) A.DC). Australian Journal of Botany 30: 601-609. (Quandong, a close relative of the commercial sandalwood (S. album) is considered a potential crop in Australi for its edible fruit and nut. This pap investigates the anatomy of the flower in relation to a program of controlled pollination.)

● Okonkwo, S.N.C. and V. Raghavan. 1982. Studies on the germination of *seeds* of the root parasites, Alectra vogelii and Striga gesnerioides. I. Anatomical changes in the embryos; II. DNA synthesis and development of the quiescent center in the radicle. American Journal of Botany 69(10) 1636–1656. (Much emphasis in recent years has been placed on germination stimulants as possible means of control in root parasites including these two genera. However, little attention has been paid to what actually happens in the *seed* so these papers are a welcome addition to our understanding of germination. The first substantiates and elucidates the well known fact that obligate parasites put all their reserves into elongation of the radicle. The second also deals with adaptive advantages of the two genera showing Striga and Alectra have perhaps the smallest quiescent center of any plants.)

● Okonkwo, S.N.C. 1982. Nutrient factors for shoot development and *seed*-ling growth of Striga gesnerioides (Willd.) Vatke. Zeitschrift fur Pflanzenphysiologie 106(5): 381–389. (With this contribution, the three most serious Striga spp. have now been grown in culture. This work indicates differences among the three. S. hermonthica and S. gesnerioides will flower in culture; to date S. asiatica has not been reported to do so.)

LITERATURE

Americanos, P.G. 1983. Control of Orobanche in broad beans. Technical Bulletin 50. Agricultural Research Institute, Nicosia, Cyprus, pp 4. (Further confirmation of the value of glyphosate for selective control of O. crenata in Vicia faba.)

Ghosh, S.K., M. Balasundaran, and M. Ali. 1983. Possible teak mistletoe control through trunk injection of weedicide. Proceedings 10th International Congress of Plant Protection, Brighton, U.K. pp 1067. (A number of herbicides were tested for controlling Dendrophthoe falcata var pubescens by injection into the sapwood of teak. 2,4-D and copper sulphate were not selective, but metribuzin, paraquat, linuron, isoproturon, and dalapon proved selective. Metribuzin was particularly effective, using 600 ml 0.05 or 0.1% suspension per tree of 24 cm d.b.h.

Ramaiah, K.V. and C. Parker. 1982. Sorghum in the Eighties: Proceedings of the International Symposium on Sorghum. ICRISAT. pp 291–302. (A review of the biology and control of Striga.)

Puzzilli, M. 1983. Tobacco broomrapes and their control and some useful references to other parasite and host species. Revista de Agricultura Sub-tropical e Tropicale 77, (2), 209–248. (A very comprehensive and useful review of all aspects of Orobanche and its control in tobacco, With 214 references.)

Lal, J., A. Kumar, and R. Saran. 1982. New records of three species and one variety of the genus Cuscuta L. (Cuscutaceae) from Madhya Pradesh, India. Journal of Economic Taxonomical Botany 3:581–583.

Hua-Shing, K. 1983. Materials for Chinese Loranthaceae. Acta Phytotaxonomica Sinica 21(2): 170–181.

Hiepko, P. 1982. A revision of Opiliaceae II. Opilia Roxb. Willdenowia 12(2): 161–182. (The Opiliaceae is a family of woody root parasites related to the sandal-s.)

Davidar, P. 1983. Similarity between flowers and fruits in some flowerpecker pollinated mistletoes. Biotropica 15(1): 32–37.

Bernhardt, P. and R.R. Knox. 1983. The stigmatic papillae of Amyema (Loranthaceae): Developmental responses to protandry and surface adaptations for bird pollination. American Journal of Botany 70(9): 1313–1319. (Mistletoes of the Loranthaceae are bird pollinated and this work demonstrates the adaptation of the stigma to the mechanical abrasion by birds probing for nectar by the development heavily cutinized papillae of the stigma).

HAUSTORIUM is edited by C. Parker and L.J. Musselman and typed by Cindy Ray-Brown. Material should be sent to either editor as should requests for copies. Photocopies of numbers 1–11 are available from IPPC at US$1 per issue. Material from HAUSTORIUM may be reprinted provided that appropriate credit is given.

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