



haustorium

Parasitic
Plants
Newsletter

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Official Organ of the
International Parasitic
Seed Plant Research Group

STRIGA TRAINING COURSE

An International Training Course on the control of

Striga in cereal crops is to be held at North Carolina State University, Raleigh, NC, USA, from 7-27 August 1983. The course is being organized by A.D. Worsham, of the Department of Crop Science, and sponsored by INTSORMIL (International Sorghum Millet Program). The intention is to provide training for about 12 professional workers from less developed countries, particularly in Africa, in the biology and control of Striga and in some more general principles of weed control.

STRIGA WORKSHOP

A Workshop on the Biology and Control

of Striga is to be held in Dakar, Senegal, from 14-17 November 1983. A small group of experts is being assembled by the International Council of Scientific Unions (ICSU) under the auspices of the African Biosciences Network (ABN) and the ICSU Inter-Union Commission on the Application of Science to Agriculture, Forestry and Aquaculture (CASAF). The objectives will be to examine the latest state of knowledge on Striga, to identify gaps, and to propose research strategies that will lead to effective and economic control measures.

HOSTS OF ALECTRA VOGELII IN BOTSWANA

Striga asiatica and Alectra vogelii are important root parasites on sorghum

and legumes, respectively, in southern and eastern Botswana. Cowpea and China pea (Phaseolus aureus) are the best known crop hosts for A. vogelii. Bambara groundnut (Vigna subterranea) is a well known host of A. vogelii in neighboring South Africa, but has not been parasitized in Botswana. Groundnut

3RD INTERNATIONAL SYMPOSIUM ON PARASITIC WEEDS

Plans are proceeding for the symposium to be held at ICARDA,

Aleppo, Syria starting about 7 May 1984. Enclosed with this issue of HAUSTORIUM is a copy of the First Circular giving details of the costs, time table for preparation of papers, etc., and including a RESPONSE FORM. Completed forms, or requests for further copies of the circular or any other information, should be directed to: C. Parker, Weed Research Organization, Yarnton, Oxford OX5 1PF, U.K.

(Arachis hypogea) has been previously reported as a host but is not generally attacked in Botswana.

In a field trial on infested land in the 1981/82 growing season, no Alectra was observed on groundnut. However, at harvest, six plants were found to have tiny, poorly developed subterranean parasite stems. These plants were taken from rows bordered on each side by heavily parasitized cowpea.

Tepary (Phaseolus acutifolius) a legume of minor importance. Alectra is only rarely seen on this host even in fields known to be heavily infested by the parasite. Lablab purpureus (Dolichos lablab) and Macroptilium atropurpureum, introduced fodder legumes, supported Alectra parasitism during the 1981-82 growing season.

Few wild hosts of Alectra have been reported. Three new records from diverse hosts in Botswana indicate that

lack of host specificity in the species. Indigofera daleoides (Fabaceae) and Vernonia poskeana (Asteraceae) have been **observed as** hosts, as well as the widely distributed weed Acanthospermum hispidum (Asteraceae). The latter species is dominant in traditional farming systems where weed control is poor. During the 1981-82 season, infested stands were recorded at a number of sites with up to 26 parasites per host plant. Parasite development after attachment to A. hispidum is usually limited compared to the massive haustorial halls so characteristic of the parasite on cowpeas. Successful attachments rarely emerge and flower. Infestations appear to develop late in the season and the host-parasite system is subsequently killed by frost. Work is now in progress to describe further, the beneficial "trap" effect of the otherwise noxious A. hispidum.

C.R. Riches, Agricultural Research Station
Gaborone, Botswana

Hosts of Cistanche in this region include members of the Chenopodiaceae as well as Tamarix and Zygophyllum. Both genera are well known by the local residents and are used by the Bedouin Cynomorium (Balanophoraceae) is used as a laxative and to cure stomach ailments. Cistanche species are used as an animal feed; the young plants are preferred food for camels. In fact, the young tissues, especially the underground parts, are rich in starch and are dug, cut into pieces, and fed to young camels.

Awad Fageer Farah
King Faisal University
Al-Hassa, Saudi Arabia

BIOLOGICAL CONTROL OF STRIGA

A project has recently started at Birkbeck College,

University of London, to develop a method of controlling Striga hemmonth with plant pathogens. It is hoped to develop production and usage techniques which will be both applicable and economic in those areas where Striga is a problem.

The ideal pathogen should be simple to culture and specific to Striga. Researchers are requesting that during the coming Striga season field workers finding infected Striga could collect samples and send them. Seed samples would also be appreciated. For techniques concerned with sample collection, preservation, transportation as well as details about importation licence, please contact: M.D MacQueen an6 3. Nicklin, Birkbeck College, Mallet St. London WC1E 7HX, U.K.

ORIGINATOR OF STRIGOL ANALOGUES

All who knew him will be sad to learn of the sudden

death last December of Professor Alan Johnson. He had recently retired as Professor but was still characteristically full of energy and enthusiasm and still hoping to see the strigol analogues (GR7, GR24) fully developed and available commercially. Unfortunately, the latter goal still looks elusive, and progress may be further slowed by lack of sample material. Those interested in further work should contact the patent holders IDRC (International Development Research Centre) P.O. Box 8500, Ottawa K1G 3H9, Canada.

CISTANCHE AND CYNOMORIUM IN SAUDI ARABIA

Two species of Cistanche (Orobanchaceae), C. phelypaea and C.

tubulosa, are known from Saudi Arabia. These parasites emerge, flower, and set seed within a short period of time during February and March. Observations on Cistanche were made at the King Faisal University Farm, 17 km east of Al-Hassa. The soils in this area are sandy and the vegetation consists mainly of halophytes.

IMPORTING PARASITIC WEEDS INTO THE UNITED STATES FOR RESEARCH PURPOSES

Weeds on the U.S. Federal Noxious Weed List are denied entry or interstate trans-

port into or within the United States. However, permission may be granted for entry and movement for research purposes if proper permits are issued. A permit the requesting investigator must establish security to prevent loss or dissemination of the plant in transit or under research conditions. An "on site" inspection may be required before approval by both State and Federal regulatory officials.



Anyone contemplating conducting research on any exotic live plant pest or noxious weed should contact James Lackey, Staff Specialist, Biological Assessment Support Staff, USDA, APHIS, PPQ, Hyattsville, MD 20782 USA, phone (301) 436-6805 or contact a local Federal Plant Protection Officer and ask for PPQ Form 526 - Application and Permit to Move Live Plant Pests and Noxious Weeds.

➤ R.E. Eplee
Witchweed Laboratory
Whiteville, NC, USA

LITERATURE

Bay, A.T. 1983. Biologie du parasites chez deux Scrophulariacees tropicales, Striga hermonthica and Striga gesnerioides. DSc. thesis, University of Dakar, Senegal. 139 pp + Appendix Vol. 2. *Author's abstract: "Two tropical species of Scrophulariaceae Striga hermonthica parasite of millet, corn and sorghum and Striga gesnerioides parasite of cowpea were studied.

Studies showed that morphological variations of haustoria were related to the hosts, to the nature of the host-parasite relationship, and to the ecological conditions.

Ultrastructural studies revealed the presence of phloem in the haustoria of S. gesnerioides; however, phloem was absent in the haustoria of S. hermonthica. Ultrastructure of the "hyaline tissue" of S. hermonthica, of the meristematic cells of S. gesnerioides, and of the intrusive cells were also described.

Enzymatic activities localised in the haustoria suggest that certain tissues are involved in the mechanism of the penetration of the parasites into their hosts.

Physiological studies using ¹⁴C-labelled compounds showed that carbohydrates, especially sucrose, are the main organic compounds taken up from the hosts. High transpiration rate of S. hermonthica may be the main cause of the growth reduction of millet.

Tests were performed on several varieties of cereals. All millet varieties were susceptible, especially "souana 3." Local varieties of cowpea were found to be resistant to S. gesnerioides. The results suggest the existence of geographical strains of Striga.

Methods were suggested for the control of these parasites."

Canne, J.M. 1981. Chromosome counts in Acariis and related taxa (Scrophulariaceae). Canadian Journal of Botany 59 (6): 1111-1116. *New counts are presented for several species (and other counts verify earlier counts).

Dawson, J.H. 1982. Controlling dodder. Proc. Washington State Weed Assn. 32nd Annual Weed Conference. 1982, 75-77. *A useful summary of chemical and cultural methods for controlling Cuscuta spp. in lucerne/alfalfa.

The Golden Bough - a newsletter to foster the biosystematics of Loranthaceae and Viscaceae. Obtainable from: R.M. Polhill, Herbarium, Royal Botanic Gardens, Kew, Richmond, Surrey TW9 3AB, U.K. *The first issue Contains a list of workers, an article on the relationship between birds and mistletoes in Africa, a note on epiparasitism in mistletoes, as well as requests for material and other notes.

Grazi, Von G. and Urech, K. 1981. (Morphological characteristics of the berries of Viscum album and their taxonomic importance). Beitrage zur Biologie der Pflanzen 56, 293-306. *Four host specific subspecies of Viscum album are distinguished by the shape of the hypocotyl and the presence or absence of mucilaginous threads between inner and outer layers of the mesocarp.

Jones, B.M.G. and Safa, S.B. 1982. Variation of seed-coat ornamentation in Striga hermonthica (Scrophulariaceae) Annals of Botany 50, 629-634. *Report of an SEM study showing that seed coat patterns are extremely varied within the species, but constant on seeds from individual plants.



Kuijt, J. 1982. Seedling morphology and its systematic significance in **branthaceae of the New World**, with supplementary comments on Eremolepidaceae. *Botanische Jahrbucher* **103**: 305-342. * **Seedlings are** features of taxonomic value in the mistletoes and **this monograph describes the seedlings and/or mature embryos** of 14 of the 16 genera of New World Loranthaceae as well as **some Eremolepidaceae**.

Kuijt, J. 1982. The Viscaceae in the Southeastern United States. *Journal of the Arnold Arboretum* **63**: 401-410. * This is **part** of the ongoing "Generic Flora of the Southeastern United States" and includes **excellent** illustrations and a helpful bibliography.

La Hulotte (The Wood Owl). * **Two issues of this periodical (Nos. 48 and 49) published in 1981 by Societe de Protection de la Nature, were devoted to mistletoes.** Those able to read French will **find them enormously entertaining** as well as instructive. Available from *Journal la Hulotte, Boult-aux-Bois* 08240, Buzancy, France.

Mahadevan, S. 1983. How the hormone controls the parasite. *New Scientist* **98**, 164-167. * **A short review 'on Cuscuta, illustrated 'with striking SEM photos, and referring to evidence that cytokinin can act as a trigger for coiling and haustorial initiation.**

Nassib, A.M., Ibrahim, A.A. and Khalil, S.D. 1982. Breeding for resistance to Orobanche. In: *Faba Bean Improvement*, G. Hawtin and C. Webb (eds),

ICARDA, 199-206. * **The origin and development of a resistant line, F 402, is described.**

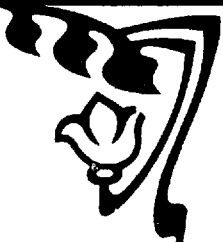
Wolswinkel, P. 1982. Is enhanced phloem unloading in plants parasitised by *Cuscuta* restricted to the site of attachment? *Annals of Botany* **56**, 868. * **A reinterpretation of old results, suggesting that phloem unloading may not be stimulated other than at or very close to, the site of attachment.**

Zahran, M.X. 1982. Weed and Orobanche control in Egypt. In: *Faba Bean Improvement*, G. Hawtin and C. Webb (eds), ICARDA, 191-197. * **Promising chemical treatments include three of glyphosate 0.086 kg a.i./ha at intervals from the beginning of flowering, and propyzamide 4.76 kg a.i./ha in 2,500 l water/ha four weeks after swing.**


HAUSTORIUM is edited by L.J. Musselman and C. Parker and typed by M.R. Wells. Material should be sent to either editor as should requests for copies. Photocopies of numbers 1-10 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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Corvallis, OR
97331 / USA



ICARDA • ALEPPO, SYRIA • MAY 1984

This third symposium, sequel to Malta 1973 and USA 1979, is being arranged with the collaboration of ICARDA (International Centre for Agricultural Research in Dry Areas) under auspices of the International Parasitic Seed Plant Research Group. The purpose: to provide a forum for the interchange of data, techniques, and research goals in all aspects of parasitic vascular plants.

● **DATES** ● Tentatively, **May 7-10, 1984, Monday through Thursday**, subject to adjustment as flight schedules become firm. Thus, meetings may start one day **earlier**.

● **TRAVEL** ● Syrian Arab Airlines offers direct flights to Aleppo from Istanbul, Rome, Munich, and Paris. Or, fly to Damascus and travel to Aleppo by surface.

○ **REGISTRATION** ● The US\$60 registration fee includes one copy of the proceedings, local transport, etc., but not accommodations. A US\$10 pre-registration fee (or sterling equivalent) must be paid to ARC Weed Research Organization before a final circular can be mailed. The US\$50 balance will be payable in Syrian Lira (SL) on arrival at ICARDA. A slight charge may be made for field trip(s).

● **PROCEEDINGS** ● These will be printed in advance by ICARDA and available to participants upon their arrival. All contributions will be considered by the editorial committee. Full instructions will be sent on request (see: RESPONSE FORM, over).

● **LANGUAGE** ● The Symposium will be conducted in English.

(continued on reverse)



(continued)

●ACCOMMODATION● Aleppo hotels cost SL 85 (estimated) per night, or SL 100 + publ lunch and dinner each cost SL 30-35 (at least one meal **must** be taken in the hotel). At present US\$1.00 = SL 5.60 at the tourist exchange rate.

●TENTATIVE PROGRAM● **Sessions** will cover major parasite groups (Striga, Orobanch Cuscuta, mistletoes) and their biology and control, as well as basic research in physiology, **Biochemistry**, structure, ecology, etc. At least one half-day field tour is planned to view Orobanche infestations and any **other** parasitic species, well as experimental work. ICAPDA facilities and Aleppo Old City can be visited

●TIMETABLE●

As soon as possible: To indicate interest in submitting a paper and/or receiving further circulars and information, **complete and return RESPONSE FORM**. Instructions to contributors will be sent immediately upon request.

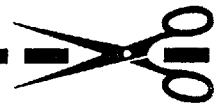
1 October 1983: Final **date** for submission of first drafts of papers.

December 1983: Second **circular** and tentative program mailed.

1 January 1984: All papers edited and returned to authors.

1 February 1984: Final date for receipt of camera-ready copies at WRO.

For further information, contact: C. Parker, Weed Research Organization, Yarnton, Oxford OX5 1PF, U.K.



RESPONSE FORM

THIRD INTERNATIONAL SYMPOSIUM ON PARASITIC WEEDS

Completed forms, expressing degree of interest, should be mailed to:
C. Parker, Weed Research Organization, Yarnton, Oxford OX5 1PF, U.K.

(Please type or print)

(please X)

I **wish** to receive further **symposium** circulars

I am almost certain to **attend** the **symposium**

I **will** possibly attend **the** **symposium**

I / we _____
(author's name)

wish to contribute a **paper** entitled: _____

Name: _____

Address: _____