



HAUSTORIUM

PARASITIC PLANTS NEWSLETTER

OLD DOMINION UNIVERSITY

Number 6. Official Organ of the International Parasitic Seed Plant Research Group. December 1980.

Striga and Alectra on cowpeas

In a pot experiment at Weed Research Organization six varieties cowpea (Vigna unguiculata) were grown in soil infested with strains of Striga gesnerioides (from cowpea and Indigofera hosts) and three strains of Alectra vogelii (from cow groundnut/peanut and bambara nut, Voandzeia subterranea). Final emergence of parasites per pot was as follows:

cowpea var.	<u>S. gesnerioides</u> from		<u>Alectra vogelii</u> from		
	cowpea	indigo	cowpea	peanut	bambara
blackeye	24	0	13	19	65
rhenoster	12	0	24	11	84
var. 88-63	17	0	11	16	76
local (Nigeria)	21	0	11	9	49
Ife brown	12	0	19	14	78
TVV4557	2	0	8	5	46

No variety showed resistance to either species. The lower numbers TVV 4557- were perhaps associated with lower vigor of this h

variety. The lack of strict host specificity of the Alectra strain: is in contrast to that shown by S. gesnerioides. The Indigofera strain from the USA is unable to attack cowpea and conversely the cowpea strain has not been shown to attack other hosts even within legume family. Other strains have been found to be specific to tobacco, Jacquemontia tamnifolia (Convolvulaceae) and Tephrosia pedicellata respectively.

C Parker, N H Dixon and K Chadwick

Thesium humile on onion

Thesium humile (Santalaceae) is a common parasite of barley in the Mediterranean region. Recently, it was found parasitizing onion in Jordan.

Abu-Imaileh

Striga in the Gambia

Two troublesome species of Striga occur in the Gambia, S. aspera as a parasite of a local crop known as findo (Digitaria exilis (Kippist) Stapf.) and S. hermonthica on sorghum, bulrush millet and maize. A survey was carried out in 1979 to ascertain the distribution and frequency of Striga in relation to crops, planting dates and fertilizer use.

Striga was present through the country but it tended to be more serious in the slightly drier north. Damage to all cereals varied from insignificant to severe but there was a tendency for late sown crops to suffer most. Early sown crops, especially early millet, tended to support high densities of Striga but they were not usually evident until the crop was at or near maturity. It was common to see dense stands of Striga growing in fields of harvested millet where no efforts had been made to cultivate the land and prevent seed production. Striga densities were markedly less in cereals inter-planted with groundnuts. This can probably be explained in terms of planting dates, better maintenance of the cash crops than occurs with a pure cereal stand and perhaps fertilizer use. There was a trend towards lower Striga densities where cattle dung or nitrogenous fertilizer had been applied.

Current recommendations to Gambian farmers for reducing Striga infestations are to plant early, rotate crops, apply dung or nitrogenous fertilizer and to destroy the weed before it produces seed. The Gambia is participating in the ICRISAT program to screen varieties of sorghum and millet for this resistance or tolerance of Striga.

P J Terry

- Parasitic Weeds. Bulletin 307. Royal Tropical Institute, Amsterdam. This beautifully illustrated booklet first appeared in Dutch (review in earlier issue of HAUSTORIUM). However, this English edition has the benefit of several corrections and additions. There are a few minor spelling errors especially of scientific and place names. The colored photographs are very helpful. I have found the booklet to be well received by students in a class in parasitic weeds. The cost, however, is very high even by today's standards—over US\$7.00 for a 100 page booklet!
- Furuya, T. T., Koyama, I., Takabayashi, M. 1980. Studies on ecology and control of field dodder (Cuscuta pentagona Engelmann) Ecological characteristics and the control. Bulletin of the Saitama Horticultural Experiment Station 9: 33-41. (in Japanese but with an English abstract.) Crops apparently attacked by this species include onion, chrysanthemum and eggplant. Methyl bromide did not effect control although steam killed 100% of the seeds in the soil.
- Armstrong, W. P. 1980. Sand food: A strange plant of the Algodoro dunes. Fremontia. A journal of the California Native Plant Society. This interesting article deals with Ammobroma sonorae a peculiar holoparasite of the Lennoaceae which grows in very arid regions of the deserts of the western United States. HAUSTORIUM readers will not be surprised to learn that this parasite exhibits a broad host range (considering the few hosts that are available?) The author deals with the natural history and ecology of the plant as well as its use by Indians. In the next issue of the same journal, the author answers the query as to the perennation of the plant and clearly shows that it is a perennial.
- Musser, R. I. 1979. The Fagus-Epifagus parasitic Relationship: Field Studies and Modeling of Beech Seedling and Parasite Carbon Dioxide Exchange. 209 pages. Ph.D. Dissertation, Duke University. Epifagus virginiana is one of the most common and yet most intriguing members of the Orobanchaceae in the eastern United States. However, the main emphasis of this work is on the host rather than the parasite as the author (like so many of us!) found that he could not germinate the seeds even with strigol and related compounds. In general, he found that the effect of the parasite upon the host was of little importance in seedling survival of the beech.
- Attawi, F. A. J., Weber H.-C. 1980. Zum parasitismus und zur morphologisch-anatomischen struktur der sekundarhaustorien von Orobanche-arten (Orobanchaceae). Flora 169: 55-83. One of the features of the genus Orobanche is the production of a primary haustorium from the tip of the radicle. Haustoria that are formed laterally on the root are termed secondary haustoria and are the subject of this paper which describes the morphology and anatomy of Orobanche species of central and southern Europe. One item that will need further study is the statement that secondary haustoria cause damage to their hosts.

MEETINGS/SYMPOSIA

Second International Striga Workshop, October 1981

In 1978 a Striga workshop was held in Khartoum, Sudan to discuss recent advances in Striga research, especially in the countries of the African sahel where S. hermonthica is such a serious problem. The second meeting is now planned to be held in Ouagadougou, Upper Volta in October 1981 sponsored by ICRISAT. For further information, please contact : Dr. K. V. Ramaiah, Programme des Nations UNIES pour le Developpement-ICRISAT, B. P. 1165 Ouagadougou, Haute-Volta.

Symposium on Haustoria, International Botanical Congress,
Sydney, August 1981

Plans are underway for a special session at the congress dealing with the haustoria of parasitic angiosperms. In addition, it is hoped to arrange a post-congress gathering including a field trip, Melbourne. This might take the form of paper and demonstration sessions on aspects of the biology and life history of parasitic shrubby angiosperms. For further information contact: Professor Malcolm Calder, School of Botany, University of Melbourne, Parkville, Victoria, Australia 3052.

Please send material for the next (June 1981) issue and requests for copies to either:

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L J Musselman
Biological Sciences
Old Dominion University
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Number 2. *Journal of the International Parasitic and Plant Research Group*, December 1961.

RESULTS AND DISCUSSION ON COWPEA

In a pot experiment at the research organization six varieties of cowpea (*Vigna unguiculata*) were grown in soil infested with two strains of *Stizoidia gasteroides* (from cowpea and *Indigofera hirsuta* hosts) and three strains of *Alectra vogelii* (from cowpea, groundnut/peanut and bambara nut, *Vouglia surferiana*). Final mean emergence of parasites per pot was as follows:

cowpea var.	<i>S. gasteroides</i>		<i>Alectra vogelii</i>	
	from cowpea	from indigo	from cowpea	from peanut bambara
blackeye	24	0	10	19
rhenoster	11	0	24	11
var.88-63	17	0	11	16
local(Nigeria)	21	0	11	9
Ifebrown	12	0	19	14
TVW4557	2	0	9	5

No variety showed resistance to either species. The lower numbers on TVW 4557 were perhaps associated with lower vigor of this host variety. The lack of strict host specificity of the *Alectra* strains is in contrast to that shown by *S. gasteroides*. The *Indigofera* strain from the USA is unable to attack cowpea and conversely the cowpea strain has not been shown to attack other hosts even within legume family. Other strains have been found to be specific to tobacco, *Jacquemontia tamnifolia* (Convolvulaceae) and *Tephrosia pedicellata* respectively.

C Parker, V H Dixon and S Chadwick

RESULTS AND DISCUSSION ON ONION

Thesium humile (Dentalaceae) is a common parasite of barley in the Mediterranean region. Recently, it was found parasitizing onion in Jordan.

Abu-irmailen

Stizoidia in the Gambia

Two troublesome species of *Stizoidia* occur in the Gambia, *S. gastera* as a parasite of a local crop known as findo (*Digitaria exilis* (Vibist) Stapf.) and *S. hermannifera* on sorghum, bulrush millet and maize. A survey was carried out in 1978 to ascertain the distribution and frequency of *Stizoidia* in relation to crops, planting dates and fertilizer use.

Stizoidia was present through the country but it tended to be more

serious in the slightly drier north. Damage to all cereals varied from insignificant to severe but there was a tendency for late sown crops to suffer most. Early sown crops, especially early millet, tended to support high densities of Striga but they were not usually evident until the crop was at or near maturity. It was common to see dense stands of Striga growing in fields or harvested millet where no efforts had been made to cultivate the land and prevent seed production. Striga densities were markedly less in cereals inter-planted with groundnuts. This can probably be explained in terms of planting dates, better maintenance of the cash crops than occurs with a pure cereal stand and perhaps fertilizer use. There was a trend towards lower Striga densities where cattle dung or nitrogenous fertilizer had been applied.

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P J Terry

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LITERATURE

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- F. A. J. Attali, paper 6.-7. 1980. Zum Parasitismus und zur morphologisch-anatomischen Struktur der Sekundärhaustorien von *Brodiaeaceae*-arten (*Brodiaeaceae*). Flora 169: 85-93. One of the features of the genus *Brodiaea* is the production of a primary haustorium from the tip of the radicle. Haustoria that are formed laterally on the root are termed secondary haustoria and are the subject of this paper which describes the morphology and anatomy of *Brodiaea* species of central and southern Europe. One item that will need further study is the statement that secondary haustoria cause no damage to their hosts.

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HAPPY WISHLIST SEASON from the editors! Please send material for the next (June 1981) issue to either:

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THIRD INTERNATIONAL SYMPOSIUM ON PARASITIC WEEDS

SECOND
CIRCULAR

Arrangements are proceeding well for the Symposium to be held on the dates previously proposed, i.e., Monday, May 7 to Thursday, May 10, 1984, at the Headquarters of ICARDA, near Aleppo, Syria. On current schedules, Syrian Arab Airlines (SAA) fly into Aleppo from Paris, Munich, and Rome on Fridays and from Istanbul on Sundays (see schedule). There does not appear to be any possibility of reduced fares on the direct flights, but SAA may be able to offer a reduction for a group travelling on the flight to Damascus arriving 1925 on Sunday, May 6 from London, Paris and Munich. A minibus would be provided for immediate travel (4.5 hours) to Aleppo. We would not have to return as a group. Please let me know as soon as possible if you are interested in taking advantage of this arrangement.

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IPPC, OSU
Corvallis, OR
97331 / USA



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Details of accommodation, etc., will be provided in a third circular sent only to those completing the pre-registration form below, and sending the pre-registration fee of US \$10 payable to Third Parasitic Weed Symposium (not WRO) to Chris Parker at WRO.

The balance of the full registration fee, i.e., a further US \$50, will be payable on arrival in Aleppo. If sufficient numbers attend, it may prove possible to reduce this fee. Funds are available to support a very limited number of delegates attending. Anyone wishing to apply for such help should write to Dr. M. C. Saxena at ICARDA, PO Box 5466, Aleppo, Syria.

More than 40 papers have been offered and the Editorial Board is hard at work. Subject matter includes the physiology, biochemistry, host specificity, and control by various means of Striga, Orobanche and Cuscuta species, also the ecology of various Loranthaceae and Scrophulariaceae. The programme will include field trips to view local infestations of parasitic species and experimentation on Orobanche by ICARDA.



THIRD INTERNATIONAL SYMPOSIUM ON PARASITIC WEEDS

MAY 1984

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DOMESTIC SERVICES

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