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HAUSTORIUM - A REPRIEVE

In the last issue (No. 8) we had to ask whether that number might not be the last. Happily it was not and we have to thank the International Plant Protection Center, Corvallis, Oregon, USA for offering to underwrite the costs of reproduction and postage, at least for a further two issues. Perhaps it will be a longer term arrangement but that cannot yet be confirmed.

The threatened loss of our newsletter has made many of us realize all the more how valuable it has been as a link between workers on parasitic plants. It also makes us appreciate the generosity of the Department of Biological Sciences, Old Dominion University, Norfolk, Virginia, USA who supported us for the first eight issues. By absorbing all costs of preparation, printing and postage they enabled us to establish the newsletter as a free service to all those requesting it. From a mailing of about 150 for the first issue the numbers increased to about 300 for No 8. Our heartiest thanks to ODU for the tremendous start they gave us.

3RD INTERNATIONAL SYMPOSIUM ON PARASITIC WEEDS

After considerable consultation and correspondence, we are pleased to make a preliminary announcement that the 3rd International Symposium on Parasitic Weeds will be held at the Headquarters of ICARDA (International Centre for Agricultural Research in Dry Areas) at Aleppo, Syria in the week beginning 7 May 1984. The Director General, Dr. Mohammed Nour, has kindly consented to the use of ICARDA facilities for the meeting and members of his staff will be involved, including Dr. S. Kukula, recently appointed weed scientist, who will be able to demonstrate problems and progress in research on locally important Orobanche species.

Further details of the programm costs etc. and a time table for the preparation of papers will be given the next issues of HAUSTORIUM. It i intended that the proceedings will b printed beforehand and available at the time of the meeting.

The programme will be on simila lines to those at Malta and Raleigh, but any suggestions relating to the format of the meeting will be welcom

-C. Park

A NEW "POLYBAG" TECHNIQUE FOR STRIGA RESEARCH

In the course of its research on the mechanisms of Striga-resistance in sorghum and millet varieties, the ODA-financ Striga research project at WRO (now extended for a further three years) has needed a technique which allowed close observation of the early stage: of attachment and development of Striga seedlings on crop roots.

We have found that seedlings of both crop and parasite develop normal ly in flattened polyethylene bags (standard 120 gauge) and can be observed repeatedly under a microscope without danger of desiccation or microbial contamination. Details of tk technique are being prepared for publication elsewhere (probably in Annal of Applied Biology) but briefly, a strip of autoclaved glassfibre filter paper 9 x 30 cm is inserted in a 15 x 30 cm bag and moistened with sterile distilled water. Sterilized Striga seeds are sprinkled onto the paper; the bag is flattened, the top few cm is folded over a piece of cane (the type used for support in potted plant and is stapled each side. The bags are suspended in a rectangular plasti bucket and incubated for 7-10 days to

allow pre-conditioning. Single pre-germinated seeds of sorghum or millet are then introduced through a slit a few cm below the cane. The bags may either be irrigated individually with nutrient, or the bottom corners cut and the bags suspended in a few cm depth of solution. After 3-4 days in darkness the seedlings are allowed to emerge through a slit at the top and the bags transferred to the light. Bags have been successfully maintained for up to three months and Striga has reached the flowering stage. up to 30 bags can be kept in a single bucket and the technique requires a minimum of elaborate materials or facilities.

The apparently adequate gas exchange through polyethylene is also allowing bags to be used instead of petri dishes for germination assays. Discs of pre-treated seeds can be moistened with appropriate stimulant solution. and simply sandwiched between two layers of plastic. This may prove simpler and much less costly than the use of disposable petri dishes.

-C. Parker and N. Dixon

BRANCHED BROOMRAPE IN TEXAS

Orobanche ramosa (branched broomrape) was discovered in Texas in 1981 (see HAUSTORIUM 8) and since then efforts have been underway to learn as much as possible about the extent and potential danger of the infestation. Through the efforts of *Mr.* Richard Gaspari, a delimiting survey was conducted and it was found that the pest is restricted almost entirely to a single county (Karnes). His theory is that the broomrape has been spread through the activity of mowers who are hired by the department of highways to mow the rights-of-way. Preliminary studies by Mr. Robert Coffin indicate that this strain of broomrape will give optimum germination at 18 C. .Percentage germination varied little with conditioning (pretreatment) temperatures at 4, 10, 18, 24 and 30°C. No seed germinated at 30°C. Thus it appears that germination rather than conditioning temperatures are critical in this strain. Hosts attacked in greenhouse studies included tomato, tobacco, coleus, eggplant, and cabbage---a host range that is not unexpected in this species. Tobacco ('Coker 319') proved to be an especially good host.

-L.J. Musselman

ANNOTATED BIBLIOGRAPHIES ON PARASITIC WEEDS

Four new bibliographies are now available from WRO.

➧ No. 144 - Selected references to the biology and control of hemiparasitic Santalaceae and Scrophulariaceae (including Striga). 1979-1981 (117 abstracts). Price £5.45.

➧ No. 145 - Selected references to the biology and control of Orobanchaceae 1979-1981 (111 abstracts). Price 615.45.

➧ No. 146 - Selected references to the biology and control of Cuscuta and related species. 1979-1982 (62 abstracts). Price £4.25.

➧ No. 148 - Selected references to the biology and control of mistletoes (Loranthaceae and Viscaceae). 1979-1982 (79 abstracts). Price £4.85.

Postage in UK is free. For airmail postage please add 10% (USA and Canada), 20% (South East Asia) or 15% (other areas). Please make remittance payable to *ARC* Weed Research Organization.

LITERATURE

Calder, D.M. 1981. Mistletoes in Victoria. Trees and Victoria's Resources 23 (4) 7-12. An interesting and informative review.

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Lamont, B.B. and Southall, K.J. 1982. Biology of the mistletoe Amyema preissii on road verges and undisturbed vegetation. Search 13, (3-4) 87-88. It is concluded that the much greater abundance of A. preissii along road verges than in adjacent denser woodland is due more to host age and bird dispersers than to greater light.

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Lamont, B.B. and Southall, K.J. 1982. Distribution of mineral nutrients between the mistletoe Amyema preissii and its host Acacia acuminata. Annals of Botany 49 (5) 721-725. Detailed study of the concentrations of eight mineral nutrients in host and parasite throw valuable light on the nature of the link between host and parasite and

emphasize the importance of routes of movement other than the xylem bridge.

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Nwoke, F.I.O. 1982. The initiation of the secondary haustorium in Alectra vogelii Benth. Annals of Botany 49 (5) 669-676. (also) Structure and development of the mature secondary haustorium in Alectra vogelii Benth. Annals of Botany 49 (5) 677-684. Detailed microscopic study has revealed close similarities in development and structure between secondary and primary haustoria.

●

Prabhakara Setty, T.K. and Hosmani, M.M. 1981. Effect of Striga infestation on sorghum. Proc. 8th Asian-Pacific Weed Science Society Conference, 287-289. Infestation of two sorghum varieties by S. asiatica increased proline and nitrate reductase activity, and decreased photosynthetic rate, leading to 40% reduction in grain weight per ear.

●

Renaudin, S. and Larker, F. 1981. The transfer of organic substances from host (Alnus glutinosa Gaertn.) to the holoparasitic plant (Lathraea clandestina L.) Z. Pflanzenphysiol. Bd. 104 S. 71-80. Results of 14 CO_2 studies showed large transfers of glutamic acid, citrulline and sucrose from host to parasite and also suggest that Lathraea may fix CO_2 by phosphoenol pyruvate carboxylase.

●

Khaled Abdel Hafeiz Attia Khalaf. 1982. Some studies on the control of Orobanche crenata parasitism of Vicia faba. PhD Thesis, Wye College, University of London. An outstanding finding among the various studies reported was the highly selective control of O. crenata achieved by foliar applications of the fungicide benomyl. While glyphosate may remain the more economic on V. faba, benomyl could be of interest on other more glyphosate-sensitive crops.

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Renaudin, S., Cheguillaume, N. and Gallant, D.J. 1981. Distribution and role of mineral compounds in the haustorium of a parasite of Galium arenarium, Thesium humifusum before flowering. Can. J. Bot. 59 (11) 1998-2002. Studies by scanning electron microscopy and other techniques support the existence of an osmotic gradient, which with transpiration pull and intense acid phosphatase activity, can explain the movement of water and minerals from host to parasite.

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Whitney, P.J. and Carsten, C. 1981. Chemtropic response of broomrape radicles to host root exudates. Annals of Botany 48 (6) 919-921. Observation of O. crenata germinating in a concentration gradient of root exudate suggests that there is a component of the exudate which is inhibitory to growth and causes curvature towards the host root.

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Zazzerini, A., Torre, G. Della and Tosi, L. 1981. L'Orobanche del tabacco: epidemiologia e lotta. Informatore Fitopatalogico, 31 (11) 15-23. Massive attacks of O. ramosa in tobacco are reported from central Italy and some O. crenata ("observed for the first time in Italy"). Diphenamid applied before planting was effective. Crop rotation is not effective even when 9-12 years long.

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Pieterse, A.H. 1981. Germination of Orobanche crenata Forsk. seeds in vitro. Weed Research 21 (6) 279-287. Rather complex interactions are described between root exudate (from flax), an artificial stimulant GR 7, calcium hypochlorite, and GA. GA and hypochlorite had some direct simulatory effect but were mainly effective in enhancing response to GR 7 and root exudate.

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Saghir, A.R. and Lange, A.H. 1982. The effect of herbicides and growth regulators on control of dodder in tomato. Research Progress Report Western Society of Weed Science 1982, 98-99. Mefluidide appeared to have some selective controlling effect on Cuscuta (species not indicated) at 0.5-2 kg/ha.

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Swarbrick, J.T. 1981. Dodder on chrysanthemums in Southern Queensland. Australian Weeds 1 (1) 34. Methyl bromide has failed to give complete control of this problem and infested areas of crop have to be killed off with glyphosate.

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Misra, A., Tosh, G.C., Moharty, D.C. and Patro, G.K. 1981. Herbicidal and

selective effect of pronamide for control of dodder in Niger. Proc. 8th Asian Pacific Weed Science Society Conference 255-257. Propyzamide applied at 1-2 kg/ha after sowing provided excellent (>90%) control of C. chinensis and increased yields of the crop (Guizotia abyssinica) by over 100%.

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Pundir, Y.P.S. 1981. A note on the biological control of Scurrula cordifolia (Wall.) G. Don by another mistletoe in Sivalik Hills (India). Weed Research 21 (5) 233-234. Viscum loranthi is reported as a hyperparasite on S. cordifolia and is apparently providing a significant level of control.

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Weber, J.Z. 1981. A taxonomic revision of Cassytha (Lauraceae) in Australia. Journal of the Adelaide Botanic Gardens 3(3) : 187-262. Cassytha bears an amazing resemblance to the much better known Cuscuta of the Temperate Region. These two genera from diverse families provide one of the most remarkable examples of parallelism in the angiosperms. Both are orange pigmented parasitic vines with very hard seeds that require scarification before germination can occur. Cassytha is much less serious a pest than dodder but can become a nuisance in some situations. It is a familiar site in southern Florida in the USA where it festoons trees in coastal areas. The same species, C. filiformis is widespread in the tropics and has been a problem on avocado in East Africa (remarkably, avocado is in the same family as Cassytha). However, it is in Australia that the genus reach, its greatest diversity where 14 species are found. This work is a monograph of the genus in that country. There is little information on parasitism per se or other aspects of the plant's biology. Each of the species is well illustrated with line drawings and there are maps of distribution in the Australian states.

HAUSTORIUM is edited by C. Parker & L.J. Musselman. The revised layout was designed by A.E. Deutsch and typed by P.A. Brown of IPPC. Material for the next issue (Number 10) should be sent to either editor as should requests for copies. Photocopies of numbers 1-8 are available from IPPC at US$2 per issue. Material from HAUSTORIUM may be reprinted provided that appropriate credit is given.

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