

HAUSTORIUM

Parasitic Plants Newsletter

Official Organ of the International Parasitic
Seed Plant Research Group

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● FIFTH SYMPOSIUM ON PARASITIC WEEDS

The Fifth Symposium on Parasitic Weeds is scheduled for June **24-30** at the Safari Park Hotel in Nairobi with a field trip to Lake Victoria and intermediate stops. The program is full and this should be the largest and one of the most interesting of any of our symposia! For further information, contact:

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The tentative program is as follows: Session 1 **taxonomy/ecology** (14 papers); Session 2 **morphology/structure** (7); Session 3 **physiology/biochemistry** (6); Session 4 **germination** (7); Session 5 **economic impact** (11); Session 6 **resistance** (17), in addition to posters and the field trip there are two invited papers and the meeting of the African *Striga* Network (PASCON). It will be a busy and informative meeting!

● NEW RECORD OF *ALECTRA VOGELII* IN TANZANIA

Alectra vogelii, a hemi-parasitic weed of leguminous crops, was observed for the first time during the 1988/89 season in national trials at Hombo Research Station. The parasite infested cowpeas. During the same season, *A. vogelii* was reported on farmers fields at Nalien-

dele in southern Tanzania. The parasite has large yellow flowers, 10-15 cm across and a seahoe shaped stigma. In the 1989/90 crop season preliminary observations were made. National Trials sown at the same location. Severe *A. vogelii* infestation was observed on Cowpea Uniform Yield Trial, with the range from 94 to 287 *A. vogelii* per plant. In Tanzania, early Cowpea Maturing Variety Trial the range was from 20-242 *A. vogelii* per plant. Groundnuts planted about 200m from *A. vogelii* infested plots were free of the parasite. *Alectra vogelii* has already been reported in some countries south of the Sahara viz. Zimbabwe, Botswana, South Africa, Burkina Faso, Mali, Kenya and Ethiopia. The hemi-parasite has been reported to have a wide range of hosts which include cowpeas, groundnuts, bambara groundnuts, fodder legumes, pigeon peas and mung beans.

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● MORE MONEY PROBLEMS FOR HAUSTORIUM!

We still do not have a sponsor for our newsletter! In an era witnessing the demise of donor agency projects, federal and state financial stringency and university budget cuts, we are thankful that we can produce this issue on miscellaneous residual funds. But it may be the last! Can any one help?

● LITERATURE

- Bharathalakshmi, C. R. Werth and L. J. Musselman. 1990. A study of genetic diversity among host specific populations of the witchweed *Striga hermonthica* (Scrophulariaceae) in Africa. *Plant Systematics and Evolution* 172: 1-12. (There was greater genetic diversity between geographically separated populations than between host specific populations as determined by allozymes).
- Bock, F. 1990. Contribution a l'etude des mecanismes impliquees dans le transfert du saccharose, a l'interface hote-parasite, entre *Pelargonium zonale* (L.) Aiton et *Cuscuta reflexa* Roxb. Doctor of Science Thesis, University of Grenoble.
- Castejon-Munoz, M., F. Romero-Munoz and L. Gajrcia-Torres. 1990. Control of broomrape (*Orobanche cernua*) in sunflower (*Helianthus annuus* L.) with glyphosate. *Crop Protection* 9: 332-336.
- Chessin, M. and Z. E. Zipf. 1990. Alarm systems in higher plants. *The Botanical Review* 56: 193-235. (Dwarf mistletoes are briefly mentioned but an alarm system is not involved because the initial insult is not challenged).
- dePamphilis, C. W. and J. D. Palmer. 1990. Loss of photosynthetic chloroplast genes from the plastid genome of a parasitic flowering plant. *Nature* 348(6299): 337-339 + cover. (The plastid genome of *Epifagus virginiana*, a common member of the Orobanchaceae of Eastern North America, has lost most, if not all, of the 30 or more chloroplast genes for photosynthesis as well as other genes. This is in remarkable contrast to the chloroplast of *Striga asiatica* which has a typical complement of genes).
- Fer, A., H. Benharrat, L. Rey and S. Renaudin. 1990. Etude de certain effets du parasitisme de *Cuscuta lupuliformis* Krock. sur *Vicia sativa* L.: repercussions sur biomasse et sur la teneur de quelque elements mineraux importants. *Comptes Rendues de l'Academie des Sciences Paris Series 3 Science de la Vie* 310: 113-120. (The strong inhibition of host growth by the parasite is due chiefly to the withdrawal of organic materials).
- Gauslaa, Y. 1990. Water relations and mineral nutrients in *Melampyrum pratense* (Scrophulariaceae) in oligo- and mesotrophic boreal forests. *Acta Oecologia* 11(4): 525-537. (The parasite had a higher conductance for water in nutrient poor soil compared to more mesic areas. This may enable the parasite to capture more of the host's nutrients).
- Gauslaa, Y. and A. M. Odasz. 1990. Water relations, temperatures, and mineral nutrients in *Pedicularis dasyantha* (Scrophulariaceae) from Svalbard, Norway. *Holarctic Ecology* 13: 112-121. (The transpiration rate of *P. dasyantha* was almost twice as high as *Dryas octopetala*, the most frequent host. Interestingly, the dense pubescence on the inflorescence is thought to reduce transpiration and as a result that part of the plant has a much higher temperature).
- Gedalogovich-Schedletzky, E. and J. Kuijt. 1990. An ultrastructural study of the tuber strands of *Balanophora* (Balanophoraceae). *Canadian Journal of Botany* 68: 1271-1279.
- Graves, J. D., A. Wylde, M. C. Press and G. Stewart. 1990. Growth and carbon allocation in *Pennisetum typhoides* infected with the parasitic angiosperm *Striga hermonthica*. *Plant, Cell, and Environment* 13(4): 367-373.
- Karamanos, A. J. and C. E. Angoulas. 1990. Plant characteristics of faba bean (*Vicia faba* L.) cultivars associated with broomrape (*Orobanche crenata* Forsk.) attack in a naturally infested field. *FABIS* 25: 40-41.
- Khalaf, K. A. and F. I. El-Bastawesy. 1990. Some studies on the basis of resistance of *Vicia faba* cultivar 'Giza 402' to *Orobanchaceae* parasitism. *FABIS* 25: 5-9. (Resistance of Giza 402 apparently associated with much smaller root system).
- Enepper, D. A., R. A. Creager and L. J. Musselman. 1990. Identifying dodder seed as contaminants in seed shipments. *Seed Science and Technology* 18: 731-741. (*Cuscuta*, dodder, seeds are some of the most frequent contaminants of commercial seed shipments. This study describes the differences in seed structure among the three subgenera. Figure 3 is mislabelled).
- Kotoula-Svka, E. and I. G. Eleftherohorinos. 1991. *Orobanche ramosa* L. (broomrape) control in tomato (*Lycopersicon esculentum* Mill.) with chlorsulfuron, glyphosate and imazaquin. *Weed Research* 31: 19-27.

- (Herbicides applied 4-5 weeks after transplanting in pots and field. None fully selective but chlorsulfuron promising at 5-10 g/ha.).
- Krause, D. 1990. Vergleichende Morphologisch/Anatomische Untersuchungen an *Striga*-Arten (Scrophulariaceae). Doctoral Dissertation. Marburg: Philipps-University.
- Krause, D. and H-C. Weber. 1990. SEM observations on seeds of *Striga* spp. and *Buchnera americana* (Scrophulariaceae). Plant Systematics and Evolution 170: 257-263. (The purpose of the research was to elucidate the relationship between *Striga* and *Buchnera*. Seven *Striga* species were examined but only one of *Buchnera*).
- Kuijt, J. 1989. Additional notes on the parasitism of New World Loranthaceae. Beitrage zur Biologie der Pflanzen 64: 115-125.
- Liu, Z. Q. and A. Fer. 1990. Effect of a parasite (*Cuscuta lupuliformis* Krock.) on the redistribution of two systemic herbicides applied on a legume *Phaseolus aureus* Roxb.). Comptes Rendues de l'Academie des Sciences. Series 3 Science de la Vie. 311: 33-339. (The parasite greatly affected distribution of herbicide applied to the shoots, moving via phloem, but not that applied to roots, moving via xylem.)
- Liu, Z. Q., A. Fer and F.M. Lecocq. 1991. L'imazaquine; un herbicide prometteur pour la lutte curative contre la cuscute (*Cuscuta* spp.) dans les culture de soja (*Glycine max*). Weed Research 31: 33-40.
- Machado, M. A. and K. Zetsche. 1990. A structural, functional and molecular analysis of plastids of the holoparasites *Cuscuta reflexa* and *C. europaea*. Planta 181: 31-96. (In this important paper, it was found that *C. reflexa* has normal chloroplast structure while the chloroplasts of *C. europaea*, a 'smaller dodder, lacked typical thylakoids).
- Mathiasen, R. L., C. D. Edmister and F. G. Hawksworth. 1990. Infection of young douglas firs by dwarf mistletoes in the Southwest. Great Basin Newsletter 50: 67-72.
- Mathiasen, R. L. and F. G. Hawksworth. 1990. Distribution of timber pine dwarf mistletoes in Nevada. Great Basin Newsletter 50: 91-92.
- Nickrent, D. L. and T. L. Butler. 1990. Allozymic relationships of *Arceuthobium campylopodum* and allies in California. Biochemical Systematics and Ecology 18: 253-263. (Using allozyme electrophoresis, it is shown that *Archeuthobium campylopodum* and *occidentale* are a single species).
- Nickrent, D. L. and A. L. Stell. 1990. Electrophoretic evidence for genetic differentiation in two host races of hemlock dwarf mistletoe (*Arceuthobium tsugense*). Biochemical Systematics and Ecology 18: 267-280.
- Parker, C. and T. I. Polniaszek. 1990. Particulate inheritance of host resistance in cowpea by *Striga gesnsrioides*: variation in virulence and discovery of a new source of host resistance. Annals of Applied Botany 116: 305-311. (Samples of cowpea from West Africa exhibited different degrees of virulence. A cowpea line from Botswana was resistant to all parasites to which it was exposed).
- Pate, J. S., J. Kuo and N. J. Davidson. 1990. Morphology and anatomy of the haustorial interface of the root parasite *Oxalaphyllanthi* (Oxalaceae), with special reference to the haustorial interface. Annals of Botany 65: 425-436. (This is one of the most detailed descriptions of the haustorial interface).
- Pate, J. S., S. R. Pate, J. Kuo and J. J. Davidson. 1990. Growth resource allocation and haustorial biology of the root hemiparasite *Oxalaphyllanthi* (Oxalaceae). Annals of Botany 65: 437-449.
- Ransom, J. K., R. E. Eplee. 31. A. Langston and R. S. Norris. 1990. Methodology for establishing witchweed (*Striga asiatica*) in research plots. Weed Technology 4: 581-584.
- Sand, P. F., R. E. Eplee and R. G. Westbrooks. 1990. Witchweed Research and Control in the United States. Champaign, IL: Weed Science Society of America.
- Schneider, M. J. and F. R. Stermitz. 1990. Uptake of host plant alkaloids by root parasitic *Pedicularis* species. Phytochemistry 29(6): 1811-1814. (Concludes that alkaloid uptake by *Pedicularis* species is widespread. This is significant in light of the use of several *Pedicularis* species as herbal teas).
- Singh, B. B. and A. M. Emechbe. 1990. Inheritance of *Striga* resistance in cowpea genotype B.301. Crop Science 30: 879-881. (Concludes that resistance is due to a single dominant gene.)



- Stermitz, F. R. 1990. Discovery of new alkaloids by analysis of parasitic Scrophulariaceae. *Rev. Latinoamer. Quim.* 21: 83-85.
- Stewart, G. R. and M. C. Press. 1990. The physiology and biochemistry of parasitic angiosperms. *Annual Review of Plant Physiology and Plant Molecular Biology* 41: 127-151.
- Sprich, H., J. Sauerborn and W. Koch. 1990. (The solarizing effect of sprayable films.) *Zeitschrift für Pflanzenkrankheit und Pflanzenschutz* 12: 455-461. (None of 12 films tested were as effective as polyethylene. Eight significantly reduced *O. crenata*, only one reduced *S. asiatica*).
- Uotila, P. 1990. *Orobancha crenata* in Helsinki Botanical Garden. *Lutukka* 6: 125-126. (*Orobancha crenata* is seldom found as far north as Finland so it was surprising to discover it in September on broadbeans, apparently introduced with its host).
- Vail, S. L., O. D. Dailey, E. J. Blanchard, A. Pepperman and J. L. Riopel. 1990. Terpenoid precursors of strigol as seed germination stimulants of broomrape (*Orobancha ramosa*) and witchweed (*Striga asiatica*). *Journal of Plant Growth Regulation* 9: 77-83.
- Visser, J. H., I. Dorr and R. Kollmann. 1990. Compatibility of *Alectra vogelii* with different leguminous host species. *Journal of Plant Physiology* 135: 737-745. (One of the last papers of J. H. Visser. See HAUSTORIUM 24).

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