HAUSTORIUM

Parasitic Plants Newsletter

Official Organ of the International Parasitic Seed Plant Research Group

February 1991 ..... Numb

● 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 Hombolo 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 sechoe shaped stigma. In the 1989/90 cropp season preliminary observations were made Sational Trials sown at the same location. Severe ***A. vogelii*** infestation was observed o Cowpea Uniform Yield Trial, with the rang from 94 to 287 A. ***vogelii*** per plant. In Ta: nia, early Cowpea Maturing Variety Trial tl range was from 20-242 ***A. vogelii*** per plant Groundnuts planted about 200m from A. ***v*** infested plots were free of the parasite. ***Alec vogelii*** has already been reported in some c tries south of the Sahara viz. Zimbabwe. Bc swana, South Africa, Burkina Faso, Mali, K and Ethiopia. The hemi-parasite has been reported to have a wide range of hosts whic include cowpeas, groundnuts, bambara grot nuts, fodder legumes, pigeon peas and mun ans.

A. M. Mbwaga, Ilonga Agricultural Research and Training Institute. Kilosa. Ta nia

● MORE MONEY PROBLEMS FOI HAUSTORIUM!

We still do not have a sponsor for our newsletter! In an era witnessing the demis donor agency projects, federal and state fin cial stringency and university budget cuts, are thankful that we can produce this ***issue*** miscellaneous residual funds. But it may be 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 impliques dans le transfert du saccharose, a l'interface hote-parasite, entra *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 cemua)* 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 chlororekpiratory 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 genesj.

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 co ductance for water in nutrient poor soil compared to more mesic areas. This ma enable the parasite to capture more of t host's nutrients).

Gauslaa. Y. and A. M. Odasz. 1990. Water relations, temperatures, and mineral nu rients in *Pedicularis dasyantha* (Scroph lariaceae) from Svalbard. Norway. Holar Ecology 13: 112-121. (The transpiratic rate of P. *dasyantha* was almost twice as high as *Dryas octopetala,* the most frequ host. Interestingly, the dense pubescenc on the inflorescence is thought to reduce transpiration and as a result that part of the plant has a much higher temperature

Gedalovich-Schedletzky, E. and J. Kuijt. 19 An ultrastructural study of the tuber strands of *Balanophora* (Balanophoracea Canadian Journal of Botany 68: 1271-1279.

Graves, J. D., A. Wylde, M. C. Press and G. Stewart. 1990. Growth and carbon alloc tion in *Pennisetum typhoides* infected wi the parasitic angiosperm *Striga hermonth ca.* 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 i naturally infested field. FABIS 25: 40-4

Khalaf, K. A. and F. I. El-Bastawesy. 1990. Some studies on the basis of resistance of *Vicia faba* cultivar 'Giza 402' to *Orobanc crenata* parasitism. FABIS 25: 5-9. (Re tance of Giza 402 apparently associated with much smaller root system).

Enepper, D. A., R. A. Creager and L. J. Muss man. 1990. Identifying dodder seed as co taminants in seed shipments. Seed Scienc and Technology 18: 731-741. *(Cuscuta,* dodder, seeds are some of the most freque contaminants of commercial seed shipmen This study describes the differences in see 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 esculentur* 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 herbicies 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 ***Cuscutu 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 thalykoids).

Mathiasen . R. L.. C. D. Edminter 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. Partism of cowpea by ***Striga gesnsrioides:*** variation in virulence and discovery of a new source of host resistance. Annals of Applied Botany 116: **305-311.** (Samples 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 haustori of the root parasite ***Olax phyllanthi*** (Olacaceae), 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. Davison. 1990. Growth resource allocation haustorial biology of the root hemiparasi ***Olax phyllanthi*** (Olacaceae). 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. Westbrook eds. 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 ieas).

Singh, B. B. and A. M. Emechcbe. 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 fur Planzenkrankheit 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. Orobanche crenata*** in Helsinki Botanical Garden. Lutukka 6: 125-126. ***(Orobanche crenata*** is seldom found as far north as Finland so it was surprising to c cover 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. Tei penoid precursors of strigol as seed germ nation stimulants of broomrape (*Orobanc ramosa*) and witchweed (***Striga asiatica***). Journal of Plant Growth Regulation 9: 77-83.

Visser. J. H., I. Dorr and R. Kollmann. 199(Compatibility of ***Alectra vogelii*** with diffe ent leguminous host species. Journal of Plant Physiology 135: 737-745. (One of the last papers of J. H. Visser. See HAUSTORUM 24).

HAUSTORIUM is edited by L. J. Musselman. Parasitic Plant Laboratory, Department of Biological Sciences, Old Dominion University, Norfolk, Virginia 23529-0266 USA, electronic mail LJM100F at ODUVM.CC.ODU.EDU, telex 823128 OLD DON NK, fax 804-683-5155 and C. Parker, C/O Long Ashton Research Station. University of Bristol, Bristol, BS18 9AF, ENGWSI fax (0272) 394007. It is published by Old Dominion University and mailed free of charge twice year, usually in January and July. Unsigned articles and literature reviews are by the editors. Send material for publication to either editor and requests for copies to L. J. Musselman.

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