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3RD INTERNATIONAL PARASITIC SYMPOSIUM WEEDS

Arrangements are continuing for the symposium to be held at the headquarters of ICARDA (International Center for Agricultural Research in Dry Areas) at Aleppo, Syria in the week beginning 7 May 1984. Details of costs, accommodations, etc. and timetable for preparation of papers will be sent out with the next issue of HAUSTORIUM in May or June 1983. NOTE: it is intended that the proceedings will be printed beforehand and available at *the* time of the symposium. This means the final date for submission of papers may be as early as AUGUST 1983. Therefore, titles with brief synopses will be required *by* JULY 1983. Detailed instructions for authors will be available in June. Papers will be welcome on any aspect of the biology of parasitic higher plants and on the control of weedy Species, preferably in English but French and German can also be considered. For further information contact Chris Parker, Weed Research Organization, Yarnton, Oxford, OX5 1PF, UK.

CUSCUTA CAMPESTRIS IN SUDAN

A heavy infestation of Cuscuta was found on a test plot of lucerne (Medicago sativa) at the university of Khartoum, Faculty of Agriculture, Shambat. It had previously determined as Cuscuta hyalina Heyne ex Roth but a careful examination showed it to be Cuscuta campestris Yuncker, *This species* is not included in Andrew's "The Flowering Plants of the Anglo- Egyptian Sudan". It is native to the United States, but has been widely spread throughout the world probably by *contamination* of legume *seed.*

Species of Cuscuta are not *easy* to determine. The monograph *by* T.G. Yuncker (Memoirs of the Torrey Botanical Club 18 (2):113-331) is most helpful although it was published in 1932. Flowers and capsules are necessary for proper identification. Taxonomic characters include: distinct or united styles, circumscissile or non-circumscissile capsules, degree of fusion of the sepals, and acute or obtuse petal tips. A distinct feature of many species in the genus is the presence of infrastaminal scales apposite the stamens. The margins of these scales may be fringed. Cuscuta campestris has infrastaminal scales; C. hyalina which lacks them is frequent in the Khartoum and Wad Medani regions of Sudan where it usually parasitises Tribulus terrestris although it is not restricted to this host.

Workers should be aware of the features of C. campestris for comparison with similar appearing native species.

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CONNECTION BETWEEN THE VASCULAR TISSUE OF STRIGA HERMONTHICA *AND* ITS HOST

The vascular tissues in the region of Striga hermonthica and its host, sorghum, were studied using fluorescence microscopy. Haustoria were fixed in formalin- acetic-alcohol (1:1:8) and cleared and softened in 1N NaOH for one hour in a water bath at 60°C; stained in a 0.1% aqueous soh-

K_3PO_4. The haustoria were gently squashed and examined through a fluorescent microscope, using blue light (incident) for exciting the dye.

Xylem elements in the roots of S. hermonthica and sorghum fluoresced reddish-yellow, due to *their* lignified cell walls, while the phloem fluoresced greenish-yellow, characteristic for callose-containing tissues. In the haustoria both types of fluorescence were observed and it was possible to follow the xylem and phloem of the parasite in the haustorium and to see *their* direct attachment to the xylem and phloem of the host root respectively.

The separate link between xylems and of phloems in the haustorial region supports Roger's and Nelson (1959) view of separate pathways for the translocation of organic matter and for the passage of water from host to parasite. It does not support Okonkwo's (1964) evidence in favor of a dual function of the xylem in S. hermonthica.

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EFFECT OF BURIAL ON SEED VIABILITY IN STRIGA HERMONTHICA

Seeds were placed in "nitrex" cloth bags and suspended in perforated metal pipes at soil depths of 0, 5, 10, 20, 40 and 80 cm. Two "strains" of *seeds* were used, Shambat and Abu Naama. The experiment will run for two *years* with seeds removed and tested at 0, 1, 3, 6, 12, 18 and 24 mnths. Early results indicate that germination is normal in seeds removed after one mnth fran all *depths* except 80 cm where no *seeds* germinated. However, if the *seeds* franthe 80 cm depth which had remained in the soil for one mnth were stored at room temperature for four months, normal germination ensued. Seeds that had been buried for three mnths at 80 cm have given no germination even after five months. Hopefully these findings may be of *sane* applied value in establishing maximum ploughing depths for Striga infested fields.

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ALBINO STRIGA HERMONTHICA

Albinism, the total l of chlorophyll (not t be confused with the presence of white flowers on plants which normally have non-white flower: is well known in many angiosperms. is, of *course,* lethal in non-parasit plants. This phenomenon has not pre viously been reported in the genus Striga where albinism would have special significance due to the obligat parasitism of this species. Mr. Ham Tag El Sir found some albino Striga plants in the test plot at Shambat. These were observed carefully but failed to flower. *After* two weeks, they withered and died. However, wh examining a field near Sennar in the Blue Nile Province, *Mr.* El Sir found flowering albino plant. This has be used to make crosses with normal Str in the hopes of preserving the albin for further experimentation. An alb strain of Striga could be of consider able value to researchers as all foo stuffs in the albino must of necessi have been transferred from the host plant.

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POLLINATORS OF HYDNORA ABYSSINICA

The genus Hydnor (Hydnoraceae) is one of the most bizarre of all genera of flowering pla due to its cryptic subterranean para sitic nature and tropical distributi Hydnoraceae contains only two genera Hydnora and Prosopanche. Prosopanch is *New* World while Hydnora is palaeo tropical and reaches its greatest di versity in Africa. The family has be monographed by Harms (1935) and is i cluded in Kuijt's treatment of sitic flowering plants (1969). Recen ly, Visser (1981) has included Hydno africana in his volume on South Afric parasitic seed plants. Information the biology and parasitism of Hydnor is, however, sorely lacking. We pre sent here our observations on Hydnor abyssinica near Wad Medani in Central Sudan during September 1982. The sit was along the Blue Nile in an area dominated by Acacia —— and + seyal. The parasite was abundant in fine river silt soil beneath these trees.

The flowers emerge fran the soil as a cone-like bud approximately 10 cm long and 2 cm Wide. The perianth consists of four (rarely five) parts. In the bud stage the perianth parts begin separating at the level of the soil; opening proceeds acropetally. Unlike H. africana, Hydnora abyssinica perianth parts are separate at maturity and lay on the ground. The inner surface of the perianth tips are light orange and smooth, the lower part of the lobes as well as the inside of the tube is hairy. The outside of the flower is a rusty-brown color.

The flowers have a pronounced strongly fetid odor. We estimate that the flowers last for two days. After this, the fleshy perianth parts rapidly decay.

Pollination is apparently by beetles as we observed numerous pollen laden beetles in many flowers. The flower is so designed that beetles enter the tube, crawl to the very large anthers and then proceed to the floor of the flower which is the stigmatic surface.

About three different types of beetles were recovered from the flowers and are being identified. Insects, perhaps including these beetles, deposit eggs in the flower. These mature and the larvae feed on the decaying flowers.

Hydnora abyssinica is a plant well known to the residents of the Gezira Province where it is called by its Arabic name, tartouss. Dried, it is used as charcoal for fires and is considered to be superior to *regular charcoal.* It is also used medicinally for stomach ailments; portions of the rhizomes are boiled and the decoction drunk. This use is not surprising considering the astringent flavor of the fresh rhizome, perhaps attributable to a concentration of polyphenols.

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GOLDEN BOUGH

The 'Golden Bough' emulates HAUSTORIUM as a newsletter about parasitic plants, but aims to provide a broader forum for the interchange of ideas and information relating just to the mistletoes - Loranthaceae, Viscaceae and near relatives. The first number was issued in November 1982 and has been sent to *subscribers* of HAUSTORIUM known to have a special interest in these families, but anyone else would like a copy write Dr. Roger Polhill, Herbarium, Royal Botanic Gardens, Kew, Richmond, Surrey, TW9 3AB, UK.

LITERATURE

Dell, B., Kuo, J. and Burbridge, A.H. 1982. Anatomy of Pilostyles hamiltonii C.A. *Gardner* (Rafflesiaceae) in stems of Daviesia. Aust. J. Bot. 30:1-9. The Rafflesiaceae is a remarkable family of obligate parasites representing the ultimate in vegetative reduction. The flowers of Rafflesia *are* the largest known, those *of* Pilostyles are minute. Despite *the* intriguing nature of these plants, little is known about them *so* that *this* short paper, including the first EM study of Pilostyles, is a welcome addition. The work reported here largely corroborates the study *by* Rutherford on North American Pilostyles. In the vegetative state, Pilostyles occurs as thin strands of parenchyma cells in the *secondary* phloem of the host. At flower initiation Pilostyles forms "pegs" that connect with the host xylem although the pegs themselves contain no xylem.

Pesch, C. and Pieterse, A.H. 1982. Inhibition of germination in Striga *by* means of urea. Experientia 38, 559-560.0 In vitro, urea at 200 and 400 mg/l caused severe inhibition of radicle growth in S. hemnthica. nium sulphate had a moderate effect only at 800 mg/l and sodium nitrate had none.

Babiker, A.G.T. and Hamdoun, A.M. 1982. Factors affecting the activity of GR7 in stimulating gexnination of Striga hermonthica (Del.) Benth. Weed %-search 22 (2) 111-115.0 The strigol analogue GR7 was shown to last less than 24 hours in the local alkaline (pH 8.5-9.5) soil when mist. It was also confirmed that the presence of GR7 during

pre-conditioning, reduced responsiveness to a later application of stimulant.

Stangle, CM and Musselman, L.J. 1981. Some growth aspects of Seymeria cassioides. Research Note SO 276 USDA Forest Service, Southern Forest Experiment Station, pp 3. S. cassioides seedlings grow long roots before attachment to host but the shoots only elongate after attachment. Shading the parasite (leaving the host in the light) results in death, suggesting it relies on its *cwn* photosynthesis for its carbon nutrition.

Magnus, V., Simaga, S., Iskric, S. and Koeder, S. 1982. Metabolism of tryptophan, indole-3-acetic acid, and related compounds in parasitic plants from the genus Orobanche. Plant Physiol. 69, 853-858. Studies *on* three Orobanche spp including O. ramosa *confirm* that they have their own mechanisms for synthesis of IAA fran tryptophan. Metabolic systems may even be more complex than in autotrophic plants.

Mesa-Garcia, J. and Garcia-Torres, L. 1982. Effects of bean (Vicia faba L.) planting dates on broomrape (Orobanche crenata Forsk.) phenology and competition. Proceedings 1982 British Crop Protection Conference - Weeds, 757-764. *Also:* Broomrape (Orobanche crenata Forsk.) control in bean (Vicia faba L.) with glyphosate as affected *by* infection intensity: ibid 765-770. Beans planted in mid-November in S. Spain were more severely attacked by O. crenata than beans planted in mid-December or mid-January but still yielded better. Early planting gav long spread of emergence of the wee requiring more than two glyphosate plications for control.

Burrill, L.C. 1982. Weed problems of citrus in Belize. International Pl Protection *center,* doc. 43-A-82, pp Mistletoes Struthanthus orbicularis and S. Cassythoides continue to cau problems though a severe hurricane 1978 provided some useful control. Other control methods involve seven manual pruning and spot application of paraquat.

Charles, D.J., Singh, M. and Sanwall, 1982. Biochemical changes during ge mination and seedling growth in Cusc campestris. Physiol. Plant. 56, 211 216. Changes in starch protein, DNA RNA, phosphorous and *sane* enzymes ar described.

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