HAUSTORIUM

Parasitic Plants Newsletter

ISSN 1944-6969

Official Organ of the International Parasitic Plant Society

(http://www.parasiticplants.org/)

July 2011 **Number 59**

CONTENTS Page

MESSAGE FROM THE IPPS PRESIDENT

Dear IPPS Members,

It has been a good summer for IPPS. We had a very successful meeting in the 11th World Congress on Parasitic Plants that took place June 7-12, 2011 in Martina-Franca, Italy. I think all those in attendance would agree that it was an outstanding conference and I'd like to again thank Maurizio Vurro for arranging such an enchanting venue, with great facilities, entertainment, and of course memorable food and wine. Also thanks to Hanan Eizenberg for an engaging program that had both diversity and depth of scientific coverage. Finally, thanks to all attendees (especially the many students) who through their passion for parasites made the conference feel like a big family reunion. If you did not attend, you can find a detailed report of the meeting in this issue, as well as abstracts on the IPPS website (http://www.parasiticplants.org/).

Even with memories of Italy fresh in our minds, it is not too soon to start thinking about our next congress. In summer of 2013 the 12th International Congress on Parasitic Plants will take place in Sheffield, UK. Details will be provided in due time, but add this to your long-range planning. We have absolute confidence in Julie Scholes (Local Organizer) and Koichi Yoneyama (Program Chair) to produce another outstanding IPPS event. For those of you who can't wait two more years for another occasion to gather to discuss parasitic plants, IPPS is planning a joint symposium with the International Weed Science Society Congress to be held from June 17-22, 2012 in Hangzhou, China. This is a good opportunity for parasitic plant researchers from Asia and the Pacific region to engage with our society without having to travel half way around the world. Look for more details on this on our website in the coming weeks.

The result of the recent IPPS election was reported at the congress in Italy. The new Editor for IPPS is Harro Bouwmeester, and we welcome him to the team. Harro replaces Diego Rubiales who has now completed his term, and we are very grateful to Diego for his years of service and contributions to the society (including Program Chair of the Kusadai, Turkey congress). Any contributions or other ideas you have for Haustorium can now be sent to Harro as well as to Chris Parker (who continues his yeoman's work on this newsletter).

Those of you who attended the Congress in Italy may have noticed a strange image (shown here) printed on your souvenir bag and materials. This is my humble proposal for an IPPS logo. I have long thought our society needed a logo, but the subject never made it to the top of the priority list. I had occasionally made doodles of various parasitic plants bent into the shapes of I P P S letters, but always ended with a convoluted mess. Then last spring Maurizio asked me about an IPPS logo for the congress materials during a time when I was reading many articles about haustorial anatomy, and I was inspired to create this image. I'm sure it's based on an actual picture of a cross-section of a haustorium embedded in a host, but I can't seem to find the right paper again, so perhaps I exaggerated it past the point of recognition. Anyway, I'm still satisfied with it and an informal survey of some IPPS members was positive, so I'm putting it forth as our new logo. I welcome your comments and ideas.

Sincerely,

Jim Westwood, IPPS President
westwood@vt.edu

MEETINGS

The US Witchweed Eradication Effort Turns 50 - A Symposium within the 51st Annual Meeting of the Weed Science Society of America, Portland, Oregon, 7-10 February, 2011.

This one day symposium celebrated the 50-year-long programme devoted to the eradication of *Striga asiatica* from N. and S. Carolina. Several presentations were retrospective in nature, while others took the opportunity to review new developments in control of this and other parasite groups.

Chris Parker (Bristol, UK) opened with a review of the major parasite groups, emphasising the extent and seriousness of the *Striga* problem and the wide-scale losses still occurring. Other groups covered were *Orobanche* spp., *Cuscuta* spp. and mistletoes, especially *Arceuthobium* spp.

Al Tasker (USDA/APHIS, Washington DC), Symposium Chairman, then presented the paper by Randy Westbrooks *et al*. of USDA, describing the history of the witchweed eradication programme since its inception in 1960, and referring to the great contributions this programme has made to the understanding and control of *Striga* problems elsewhere. Now that the infestation has been reduced to just 5 counties, with the combined use of herbicides, ethylene gas and fumigants, there is emphasis on

continued vigilant monitoring and techniques for eradicating small patches, now made more difficult by the impending total withdrawal of methyl bromide. The following paper by Rick Iverson, representing the N. Carolina Dept. of Agriculture, now responsible for the continuing witchweed programme, described how the programme over 50 years had cost about $250 million, involving up to 250 staff at times, but now down to 6 full-time and 20-25 temporary survey workers. Although only a few hundred acres now show infestation and remain in quarantine, several thousand acres continue to be monitored every 3 weeks for re-infestation and are put back under quarantine when any specimen is found. Surveyors are rewarded $25 for any emerged plant found.

Craig Ramsey (USDA/APHIS, Fort Collins, Colorado) then described the Methods Development Programme for Parasitic Weeds which covers *Orobanche* spp. and *Cuscuta japonica* as well as *Striga* and is looking at a range of herbicide and fumigant options for all groups.

The next paper, presented by Carol Mallory-Smith (Oregon State University, Corvallis) described the occurrence of *Orobanche minor* in clover crops in Oregon. It was recognised in 15 fields in 2000 and 22 fields in 2001. It was quarantined in 2003 but since then had been down-classified to a class B noxious weed and is no longer subject to survey. It is controlled well by imazamox but in the absence of strict regulation, it has persisted and there is no prospect of eradication. Seed sold for local consumption requires special testing and cleaning.

Hanan Eizenberg (Newe Yaar Research Center, Israel) then described high-tech procedures for the monitoring and control of *Orobanche/Phelipanche aegyptiaca* in tomato. These involve sophisticated probes placed in the field with below-soil thermometers and video, recording the stage of development of the parasite in order to optimise the timing of herbicide (sulfosulfuron and imazapic) applications, resulting in savings up to 50% in herbicide use. He emphasised how the costs of such technology are falling rapidly as other costs rise.

The afternoon session began with an overview paper presented by Jim Westwood (Virginia Tech, Blacksburg) describing the progress being made in sequencing expressed genes of parasitic species under the collaborative Parasitic Plant Genome Project the results from which are publicly available (go to http://ppgp.huck.psu.edu/). Species included so far are the facultative hemi-parasite *Triphysaria versicolor*, the obligate hemiparasite *Striga hermonthica* and the holoparasite *Orobanche aegyptiaca*. 96% of genes are already accounted for, including the unexpected finding of a full range of chlorophyll synthesis genes in *O. aegyptiaca*, and also evidence that obligate parasites may produce their own strigolactones. Examples such as this suggest that alterations in gene expression have been more important in the evolution of parasitism than gene gain or loss.

Mike Timko (University of Virginia, Charlottesville) reported on the latest results from studies on the race-specific resistance of cowpea to *Striga gesnerioides*. The dominant resistance genes for each of the 7 known races of *S. gesnerioides* have been located, not all on the same chromosome, together with useful molecular markers. The anomalous behaviour of the Zakota race of *S. gesnerioides* in Benin, which is virulent on cowpea B301 suggests a very recent genetic adaptation of the parasite. The results were discussed in relation to their value in understanding the resistance processes in other *Striga* and *Orobanche* species.

Radi Aly (Newe Yaar Research Center, Israel) described a biotechnological approach to control of *Orobanche aegyptiaca* via the generation of transgenic tobacco plants expressing a cecropin peptide (*sarcotoxin IA*), under the control of the inducible *HMG2* promoter. Transgenic lines showed enhanced host resistance (causing abortion of parasite attachments) and increased host biomass. S*arcotoxin IA* had no obvious effect on the host plants. Another approach involves the silencing of genes in the parasite responsible for regulating the generation of mannose, resulting in abortion of many parasite nodules.

Joel Ransom (North Dakota State University, Fargo) reported on the latest experiences with imazapyr and pyrithiobac applied to seed of imidazolinone-resistant maize for control of *Striga* spp. in East Africa. There have been widespread trials with farmers, but some instances of poor results due to wet (or dry) conditions. A build-up of herbicide-resistance in the *Striga* is estimated to be unlikely but precautions are suggested.

Discussing *Cuscuta* spp. and their control, Tom Lanini (University of California, Davis) referred to the recent occurrences of the exotic *C. japonica* apparently being imported as an herbal remedy and escaping or being deliberately planted at a number of sites in California. Fortunately, to date no flowering or seeding has been observed. He then reviewed the range of approaches needed for control of *Cuscuta* species in a wide range of crops, including the use of biocontrol with *Alternaria destruens* on *C. gronovii* in cranberry, and the use of glyphosate on *C. campestris* in ‘Round-up Ready’ alfalfa.

Papers presented (with abstract number):

Chris Parker - Parasitic weeds - a world challenge. (218)
Randy Westbrooks *et al.* - Overview of methods development support for the USDA-Carolinas witchweed eradication program - 1959-1995. (219)
Rick Iverson - Current eradication program for the witchweed infestation in the US. (220)
Craig Ramsey - Current parasitic weed control methods development efforts in the US. (221)
Carol Mallory-Smith. - *Orobanche minor* and the 3 R's: regulation, research, and reality. (222)
Hanan Eizenberg - Technologies for precision control of *Orobanche*. (223)
Jim Westwood - The Parasitic Plant Genome Project: new tools for understanding the biology of *Orobanche* and *Striga*. (256)
Mike Timko - Race-specific host resistance to *Striga* - New insights into an old foe. (257)
Radi Aly - Biotechnological approaches to parasitic weed control. (258)
Joel Ransom *et al.* - Control of *Striga* using IR-maize: a success story – how long will it last? (259)
Tom Lanini - Current approaches to control of *Cuscuta.* (260)

Relevant posters were:

Andresen, L.C., *et al.* – The significance of sorghum root exudates on the germination of the parasitic weed, *Striga hermonthica*. (91)
Sandler, H.A. and Ghantous, K.M. – Economics of using hand-held flame cultivators for weed management in cranberry. (142)

Most of these oral presentations are being prepared for publication in Weed Science. Meanwhile full abstracts of the meeting are available on the WSSA website - http://wssaabstracts.com/public/4/proceedings.html

Chris Parker and Jim Westwood.

ELEVENTH WORLD CONGRESS ON PARASITIC PLANTS, MARTINA FRANCA, ITALY, 7-12 JUNE 2011

Strigolactones and genomics were the key words at this exceptional meeting held in the understated elegance of the Park Hotel San Michele in Martina Franca in the scenic Puglia region of Italy.

After welcomes from Dr Angelo Visconti, the head of the Institute of Sciences of Food Production and Jim Westwood, President of IPPS, the opening plenary lecture was given by Koichi Yoneyama with a helpful overview of strigolactone research reporting that all angiosperms studied produce strigolactones as well as a moss and liverwort indicating how ancient and widespread this plant hormone is. Fungal rhizoid recognition and elongation are among the effects of strigolactones. High phosphorus inhibits strigolactone production, as mentioned by several speakers.

Parasitic plant genomic research completed the remainder of the first morning of the meeting with a report on lateral gene transfer to *Striga hermonthica* from its sorghum host by Satoko Yoshida and plans to complete a full genomic sequence of *S. asiatica*. Also dealing with lateral gene transfer was the paper by Leblanc and others on movement of host mRNA to *Cuscuta*. One of three *Hydnora* papers at the congress, Julia Naumann's is the first to deal with the genome of that bizarre plant showing once again transfer of genetic material from host to parasite. Several papers from the Parasitic Plant Genome Project were reported including that by Jim Westwood who gave an overview of the project and Loren Honaas who described their work on haustorial microdissection and the transcriptome of *Triphysaria*. Claude DePamphilis continued this theme with data from the same project on studies in *Phelipanche aegyptiaca* showing that no genes for light harvesting were found while, inexplicably, genes for some aspects of chlorophyll synthesis were present. Lateral gene transfer was reported as well as genes for producing strigolactones in the parasite. Both Guangda Liu and Gunjune Kim discussed movement of genetic material between host and parasite. Liu studied *Cynomorium songaricum* and *Nitraria tangutorum* the first report of this kind in this genus. Kim reported massive movement of mRNA from tomato and *Arabidopsis* hosts to *Cuscuta pentagona*. John Yoder concluded the morning session reporting research on the genetic basis of haustorial development.

The afternoon of the first day dealt with parasitic plant biology and included information on the floral biology of *Hydnora abyssinica* by Erika Maass and colleagues, a review of the genus *Orobanche* in Turkey using seed micro-morphology by Golshan Zare showing good delineation of sections within the genus but less success in separating species, and germination studies on *Orobanche minor* and the role of gentianose and GR24 by Atsushi Ozakawa. Alastair Murdoch spoke of models of germination for *Striga hermonthica* that take into account dormancy and mortality. A detailed study of the early stages of haustorial attachment and penetration of *Orobanche crenata* on garden pea by Alejandro Pérez-de-Luque showed that penetration occurred 4 days after inoculation and that the vascular

tissue was invaded at 12 days. Mustapha Haidar showed that blue light stimulates coiling and haustorial development in *Cuscuta* and is related to the induction of Ca and a decrease in H^+ flux. A third *Cuscuta* paper, by Furuhashi and colleagues, dealt with seedling proteins of *Cuscuta japonica* attached to different hosts but there was little difference between seedlings attached to hosts and unattached. The only paper dealing with the Apodanthaceae reported on the peculiar sex ratios in *Pilostyles ulei* and *P. thurberi* in Brazil. In the same paper Ceccantini presented the first record of diclinous flowers (flowers with both sexes) in the genus. Anatomy of *Phelipanche ramosa* was the emphasis of a paper by A. Stępowska. One of the few mistletoe papers at the Congress, presented by V. Barão showed that wood of *Tipuana tipu* (Fabaceae) had increased embolisms in its vessels when parasitized by *Struthanthus vulgaris*. A second mistletoe paper by Sugwang Lee discussed the host range and host selection of *Loranthus tanakae* in South Korea with 85% of hosts being species of *Quercus*. Dan Nickrent stimulated discussion with his ideas about atavism (reversion) in the largest group of parasites, the Santalales, which he has investigated for many years, suggesting that characters once lost in evolution may reappear. One paper on hemi-parasites was given by James Fisher showing the complex interactions of *Rhinanthus minor* in an English grassland indicating that the nutrient-enriched litter of the parasite benefits the host by providing nutrients.

The first meeting of the second day returned us to the subject of Recent Advances in Strigolactone Research with a helpful plenary lecture by Hananit Koltai. She reviewed the numerous functions of these compounds in plants. In a similar vein but with much more chemistry was the review by Cristina Prandi. In yet another new function of strigolactones, Yoram Kapulnik reported that they have the ability to induce light harvesting complexes in tomato. Continuing to expand our appreciation of these virtually ubiquitous compounds, Evgenya Dor and colleagues studied the impact of strigolactones on phytopathogenic fungi suggesting that these chemicals are ancient and perhaps evolved as a defence to fungal pathogens. Carolien Ruyter-Spira discussed the role of strigolactones in the adaptation of root architecture of plants under low phosphate conditions. Reporting on ongoing research, Hidemitsu Nakamura discussed the interaction of strigolactone signaling mechanisms in parasitic plants. Closing this second session of the symposium was a talk by Kaori Yoneyama on relationships between strigolactones and other plant hormones indicating that P fertilizers inhibit strigolactone production and that auxin is required for its production.

Ecology and Population Biology was the next session with the first paper by Mohamed Kamal suggesting that topography in Ethiopia is responsible for population differentiation in *Striga hermonthica* by isolating cross pollination in this outbreeder. The third and final paper on *Hydnora* was by Lytton Musselman who reviewed recent research on the genus in southern Africa and Madagascar showing that the Malagasy endemic *Hydnora esculenta* is not dioecious but has the basic flower structure of the genus. The native *Orobanche cernua* from Spain was analyzed from several populations by Leonardo Valesco and co-workers who found high genetic diversity between populations. Mat Yunoh Siti-Munirah charmed those in attendance with her beautifully illustrated talk on *Rafflesia* in Malaysia, its diversity and efforts to conserve it. A unique approach to *Orobanche* evolution and relationships was presented by Peter Tóth who examined the volatile compounds produced by cut flowering stems of European broomrapes. Hans-Christian Weber reviewed the parasitic plants of Malta along with consideration of terms used in the descriptive morphology of parasites.

In the session Host-Parasite Communication, Radi Aly showed functional phloem tissue in the haustorium of *Phelipanche aegyptiaca* as well as gene silencing of the parasite gene M6PR by RNAi constructs expressed in the host. *P. ramosa* is a fairly recent but increasing problem on winter oilseed (*Brassica napus*) in France. Zachary Gaudin reported considerable differences between two oilseed cultivars in their responses to the parasite. Further research on the oilseed rape problem was given by Philippe Simier who reported that germination was largely stimulated by isocyothyanates rather than strigolactones. Following on a similar theme Danny Joel showed that the germination stimulant of *Orobanche cumana* is dehydrocostus lactone rather than a strigolactone. Muhammad Jamal confirmed the long standing observation that increased N and P in the soil suppresses *Striga* which can now be attributed, at least in part, to a suppressed strigolactone production.

In a special session dedicated to control of parasitic weeds, arranged by the European Weed Research Society Working Group on Parasitic Weeds, Nadjia Zermane presented preliminary results on the possible use of extracts of several Mediterranean plants as natural herbicides to control early growth stages of field dodder and broomrapes; Alistair Murdoch presented and discussed pros and cons of use of the *Desmodium* 'push-pull' strategy, developed for *Striga* control in Africa, against *Phelipanche ramosa* and *Orobanche crenata.* Alpha Kamara showed results on the use of nitrogen fertilizers and resistant varieties to reduce *Striga* infestation and damage. Sarah Hearne reviewed the numerous control methods for *Striga* adopted,

proposed and in development, at the International Institute of Tropical Agriculture (IITA), and how their scientists work with international and national scientists, agribusiness, farmers and extension agents to combine strategies in order to provide durable management solutions.

Considering that during the initial stages of parasitism the broomrapes grow underground, predicting their developmental stages is a necessity in order to properly apply control measures. Hanan Eizenberg showed how the modelling approach and suitable mathematical functions, if properly used, could be helpful for such predictions and then be important support tools for designing management strategies.

The last morning began, appropriately, with a final session on strigolactones. Binne Zwanenburg discussed the chemistry of strigolactones and the production of new analogs using ketones and keto enols and emphasized the role of stereochemistry in their activity. Yukihiro Sugimoto presented complementary data showing the importance of stereochemistry of stimulants on the germination of *Striga gesnerioides*. Shinsaku Ito showed how gibberellins inhibit strigolactone production. Another paper, by Kosuke Fukui, dealt with chemistry of the strigolactones looking for mimics that could be inexpensively produced for control of parasitic weeds. The role of strigolactone in rice plant morphology, including suppression of tillering in rice, was reported by Rodrigo Echegoyen-Nava. *Phtheirospermum japonicum* is a hemiparasite in the Orobanchaceae and is used as a model organism for parasitism studies; Julia Ishida gave a detailed account of transcriptome events in the development of the haustorium with more than 1500 genes.

Crop Resistance to Parasitic Weeds and Crop Breeding was next, continuing a theme at every parasitic plant meeting with attempts to produce crops that can ameliorate the impact of parasites. Mamadou Cissoko reviewed work in West Africa to find suitable varieties of rice against *Striga asiatica* and *S. hermonthica* and reported some encouraging results. Another paper dealing with *S. hermonthica*, this time in maize in Kenya, by Haron Karaya, discussed breeding experiments. The other papers in this session all dealt with *Orobanche* or *Phelipanche*. Joseph Hershenhorn has developed a tomato mutant, HRT-1, with promising resistance to herbicides used to control *P. aegyptiaca*. The floral biology of *Orobanche cumana* and its relationship to genetic interchange was presented by Leonardo Velasco with preliminary data suggesting some allogamy. Recently, *P. aegyptiaca* has become a problem on capsicum peppers grown in greenhouses in Israel. Yaakov Goldwasser discussed this development, reporting a wide range of susceptibility of pepper cultivars. Johann Louarn, in preliminary data, showed that roots of sunflowers with arbuscular mychorrhizal fungi reduce germination of *Orobanche cumana* compared with non-mychorrhizal roots.

As genomics has revealed so much about parasite biology and evolution, there was a presentation on using the free data available from the various genomic projects.

The final session of a congress packed with informative, well-presented papers ended with the broad topic of Interactions between Parasitic Plants and the Environment—taking us from the strigolactone molecules to the biosphere. Ahmet Uludag reviewed the data known about the potential spread of parasites with global warming and how this might affect their biology and impact. Less global was the talk by Jonne Rodenburg on a new integrated rice project in Africa involving agronomy as well as economic and cultural factors. The role of date of sowing on parasitism of carrot by *P. aegyptiaca* in Israel was shown by Amnon Cochavi to favor a late summer sowing. This species, as well as *P. ramosa*, affects tobacco production in Greece and Garafalia Economou studied the interactions of a range of edaphic factors and concluding that humidity, pH, and organic matter had the strongest correlation with broomrape infestation. Lastly, Tuvia Yacooby reported weedy species of Malvaceae as hosts of *Phelipanche aegyptiaca* in Israel.

In summary, the majority of the papers dealt with *Striga* and *Orobanche/Phelipanche* as usual at these meetings. There were some papers on *Cuscuta* and mistletoes, though limited to two genera, as well as three on *Hydnora*, and one each on Rafflesiaceae, Cynomoriaceae, and Apodanthaceae but nothing on *Cassytha* or Balanophoraceae During the meeting a plea was made for more research on mistletoes.

The amount of new information presented at this meeting and its impact upon our discipline is staggering. It is difficult to convey the interest and enthusiasm of the participants at these long and intense meetings. Particularly impressive were the presentations by students, many giving papers for the first time in a foreign language to a group of specialists. The country with the most attendees was Japan, followed by Israel. Special arrangements were made at this congress to recognize and encourage these students with the awarding of prizes for best posters and best presentations. There was a three-way tie for first place for oral presentations by Rodrigo Echegoyen-Naya (Univ. of Sheffield), Kosuke Fukui (Univ. of Tokyo)

and Gunjune Kim (Viginia Tech.). First place winner for best poster was Megan LeBlanc (Virginia Tech.) with Hadas Miryamchik (Israel) receiving honorable mention. All winners received cash prizes and a copy of the book, Integrating New Technologies for *Striga* Control: Towards Ending the Witch-hunt (G. Ejeta and J. Gressel, eds.).

Perhaps the most poignant moment at the meeting was in the final session when Klaus Wegmann asked to address the company telling us that he was terminally ill and that this would be his last parasitic congress but that, despite his obvious frailty, he wanted to attend. The response was a standing ovation from his colleagues. (Klaus Wegmann sadly died on 7th July. See Obituary below.)

The scientific content of the meetings was outstanding and it was especially encouraging to see so many young people giving papers for the first time, including an undergraduate. Program organizer Hanan Eizenberg and his committee did a great job to bring this together. The social program was no less impressive with a baroque music concert Tuesday evening in the city cathedral, an elegant dinner in a nearby town, and a visit to the spectacular Grotti di Castellana, a botanical garden tour at Monopoli, and a visit to the characteristic trulli houses in the town of Alberobello. Exceptional food three times a day punctuated with regular refreshment breaks were provided.

All in attendance would heartily agree that the efforts of Maurizio Vurro were exemplary. Every detail was attended to from meeting at the airport, maintenance of the data projector, hosting excursions, and so much more was handled by Maurizio and his staff with aplomb and alacrity.

A limited number of booklets containing all the abstracts is available on request from Maurizio Vurro (maurizio.vurro@ispa.cnr.it). Otherwise, abstracts are available on the IPPS website (http://www.parasiticplants.org/default.asp)

The presentations were:

Koichi YONEYAMA - How many strigolactones do plants produce?

Satoko YOSHIDA - Large-scale sequencing analysis of *Striga* species.

Jim WESTWOOD and Claude DEPAMPHILIS - The parasitic plant genome project: a massive EST sequencing project for the Orobanchaceae.

Julia NAUMANN - The *Hydnora* transcriptome project - first genomic insights into the 'strangest plant in the world'.

Loren HONAAS - Functional genomics of a generalist parasitic plant.

Guangda LIU - Horizontal gene transfer between the parasitic plant *Cynomorium songaricum* Rupr. and its host *Nitraria tangutorum* Bobr.

Gunjune KIM - Genomics approaches to understanding mRNA movement between hosts and parasites.

John YODER - Parasitic plant genes necessary for haustorium development.

Erika MAASS - Floral biology of *Hydnora abyssinica* – new insights from Southern Namibia.

Golshan ZARE - Micromorphological studies on seed of *Orobanche* L. (Orobanchaceae) species from Turkey, and their systematic significance.

Atsushi OZAKAWA - Sugar metabolism during germination of *Orobanche minor* as a novel target for selective control.

Alistair MURDOCH - Comparison of multiplicative and sequential models of dormancy and germination of *Striga hermonthica.*

Alejandro PÉREZ DE LUQUE - Crenate broomrape invasion of pea root: a histological time lapse study.

Mustapha HAIDAR - Histological studies on the haustorium of *Cuscuta campestris* Yuncker.

Takeshi FURUHASHI - Comparative analysis of seedling proteins of *Cuscuta japonica* attached to different hosts.

Gregorio CECCANTINI - Skewed "sex ratios" in the peculiar holoparasite *Pilostyles* (Apodanthaceae – Cucurbitales).

Anna STEPOWSKA - Morphological response of the tomato (*Lycopersicion esculentum* Mill.) to parasitic plants – *Phelipanche ramosa* L. Pomel and pathogen – *Oidium neolycopersici* L. Kiss.

Vitor BARÃO - Modifications in wood hydraulic conductivity and embolism increase in *Tipuana tipu* parasitized by *Struthanthus vulgaris*.

James FISHER - Redistributing the wealth: interactions between plant parasitism and parasite litter in semi-natural grassland communities.

Sugwang LEE - Distribution, characteristics and host specificity of *Loranthus tanakae* in South Korea.

Daniel NICKRENT - Santalales phylogeny prompts new insights into morphological character evolution.

Hinanit KOLTAI - Strigolactones' multiple roles in plant development.

Cristina PRANDI - New potent fluorescent analogues of strigolactones: synthesis and biological activity in parasitic weed germination and hyphal branching in AM fungi.

Yoram KAPULNIK - Strigolactone substances stimulate different gene expression of tomato light

harvesting complexes and hyphal growth of arbuscular mycorrhizal fungi.
Evgenya DOR - The synthetic strigolactone GR24 influences the growth pattern of phytopathogenic fungi.
Carolien RUYTER - Strigolactones: a cry for help results in fatal attraction. Is any escape possible?
Hidemitsu NAKAMURA - Screening and identification of MAX2-interacting factors for the isolation of novel strigolactone-signaling factors.
Kaori YONEYAMA - Interaction between strigolactone and other plant hormone.
Mohamed KAMAL - Genetic diversity of *Striga hermonthica* populations in Ethiopia: evaluating the role of geography and host specificity in shaping population structure.
Lytton MUSSELMAN - The genus *Hydnora* (Hydnoraceae) in Southern Africa and Madagascar.
Leonardo VELASCO - Genetic diversity of wild *Orobanche cernua* L. populations from southeastern Spain.
Mat Yunoh SITI-MUNIRAH - Distribution of *Rafflesia* populations in Upper Perak, Peninsular Malaysia.
Hans Christian WEBER - Observations on parasitic plants of Malta with remarks about the terms root, stem and leaf parasitism.
Peter TÓTH - Flower volatiles of Orobanchaceae - a useful tool for phylogeny.
Radi ALY - Interactions and translocation of molecules and macromolecules between host plant and broomrape.
Zachary GAUDIN - Nitrogen absorption, translocation and fluxes in the *Phelipanche ramosa*/*Brassica napus* interaction.
Muhammad JAMIL - Unravelling the mechanism involved in *Striga* parasitism in cereals under nutrient deficient conditions.
Bruna RODRIGUES-FERREIRA - Anatomy of the haustorium of two species of *Struthanthus* Mart. (Loranthaceae).
Philippe SIMIER - Stimulants of *Phelipanche ramosa* germination from oilseed rape roots.
Daniel JOEL - The natural germination stimulant of *Orobanche cumana* is not a strigolactone.
Nadjia ZERMANE - Management of broomrape and dodder using natural plant metabolite.
Alistair MURDOCH - Could the *Desmodium* 'push-pull' system for *Striga* control in Africa work on *Phelipanche ramosa* and *Orobanche crenata*?
Alpha KAMARA - Integrated management of Striga hermonthica in maize in the Nigerian Savannas.
Sarah HEARNE - *Striga* the bewitching weed: interdisciplinary context of control.
Hanan EIZENBERG - Are we modelling the math or the biology of parasitism dynamics?
Nuhu GWORGWOR - The use of arbuscular mycorrhizal (AM) fungi controlling *Orobanche minor* in red clover (*Trifolium pratense*).
Rodrigo ECHEGOYEN-NAVA - How does *Striga hermonthica* alter the growth and morphology of rice plants; are strigolactones involved?
Kosuke FUKUI - Target selective strigolactone analogues.
Juliane Karine ISHIDA - Transcriptome analysis of the parasitic plant *Phtheirospermum japonicum*.
Shinsaku ITO - Gibberellin regulates strigolactone biosynthesis.
Yukihiro SUGIMOTO - Promotive and inhibitory stereoisomers of strigolactones to seed germination of *Striga gesnerioides*.
Binne ZWANENBURG - New strigolactone analogues, design, synthesis and bioactivity.
Mamadou CISSOKO - Post attachment resistance of interspecific NERICA rice cultivars to the parasitic weeds *Striga hermonthica and S. asiatica*.
Haron KARAYA - Combining ability of maize inbred lines resistant to *Striga hermonthica* evaluated under artificial *Striga* infestation in Kenya.
Johann LOUARN - Can we use arbuscular mycorrhizal fungi to improve resistance to *Orobanche cumana* in sunflower?
Joseph HERSHENHORN - Characterisation of a novel tomato mutant HRT-1 resistant to acetolactate synthase inhibiting herbicides for broomrape management.
Leonardo VELASCO - Studies on plant isolation and hybridisation in sunflower broomrape (*Orobanche cumana* Wallr.).
Yaacov GOLDWASSER - Differential susceptibility of pepper (*Capsicum* spp.) to *Phelipanche aegyptiaca*.
Sebastian BÖKLE - Influence of fertilization and field history on soil properties and microbial communities and its' relation to *Striga hermonthica* (Del.) Benth. population density, in the Kati district of Mali.
Amnon CHOCHAVI - Developing a predictive model based on temperatures for *Phelipanche aegyptiaca* parasitism in carrots.
Garifalia ECONOMOU - A large scale analysis of factors affecting the infestation of tobacco (*Nicotiana tabaccum* l.) by *Phelipanche* species.
Jonne RODENBURG - Preparing African rice farmers against parasitic weeds in a changing environment – a new, integrated research project.
Ahmet ULUDAG - Understanding climate change on parasitic plants' invasions.
Tuvia YACOOBY - Malvaceae weeds as hosts for *Orobanche aegyptiaca* in Israel.

Lytton Musselman.

NEW PHYTOLOGIST RECOGNISES RECENT ADVANCES IN MYCOHETEROTROPHY RESEARCH

Mycoheterotrophic plants are defined by their reliance on carbon derived from their fungal symbionts at some point in their lifecycle (Leake 1994); this is usually at the germination life stage (initial mycoheterotrophy) where the plant produces seeds that are so small and lacking in seed reserves that they are unable to geminate in the absence of a fungal partner. Most initial mycoheterotrophs, including the majority of orchids, then form green photosynthetic shoots as adult plants, where their symbiosis with a fungal partner reverts to a mutualistic, mycorrhizal association, characterised by carbon for nutrient exchange between plant and fungal partners. A subset of these green plants however (partial mycoheterotrophs), never engage in a mutualistic association, continuing to parasitise fungi for carbon and nutrients throughout their life (Cameron and Bolin 2010; Julou *et al*. 2005; Gebauer and Meyer 2003). Finally, some mycoheterotrophs never photosynthesise and so are parasitic on their fungal partners through their life cycle (Leake 1994).

Corallorhiza trifida, Germany, 2008

The source of carbon for fungi parasitised by mycoheterotrophic plants falls into two distinct categories; firstly, mycoheterotrophs that form associations with fungi which gain their carbon saprotrophically from organic matter and secondly, from fungi that obtain their carbon through mutualistic mycorrhizal symbioses with other autotrophic plants and are thus in tripartite symbiosis with the mycoheterotroph connected to an autotrophic plant through a shared fungal network (Bidartondo *et al*. 2004). These plants are referred to as epiparasites in recognition of their indirect parasitism of other plants.

Since initial research into plants that parasitise fungi (see Kujit 1969) and the first use of the term 'mycoheterotrophy' nearly 18 years ago (Leake 1994), research into this form of plant parasitism has lagged behind allied research into the ecology and physiology of haustorial parasitical plants. This said, rapid advances have been made over the last few years, substantially expanding our understanding of the ecology, physiology and evolution of the c. 10% of plant species that are mycoheterotrophic at some point during their life.

In recognition of these recent developments, the New Phytologist commissioned a 'virtual special issue' (http://onlinelibrary.wiley.com/journal/10.1111/%28ISSN%291469-8137/homepage/virtual_special_issue_on_mycoheterotrophy.htm) edited by Marc-Andre Selosse (Montpellier, France) and Duncan Cameron (Sheffield, UK) to draw together the advances in mycoheterotrophy research previously published in the journal into an online-only edition which aimed to provide a state-of-the art in addition to signposting earlier research. This took the form of an editorial and three newly commissioned letters from experts in the field, published in print discussing 'Fungal hosts for mycoheterotrophic plants: a nonexclusive, but highly selective club' (Hynson and Bruns 2010), 'Physiological ecology of mycoheterotrophy' (Leake and Cameron 2010) and 'Evolution of mycoheterotrophy in plants: a phylogenetic perspective' (Merckx and Freudenstein 2010).

The last 20 years of research focusing on the emergent field of mycoheterotrophy has revealed it to be the most common form of plant parasitism (Leake and Cameron 2010) highlighting that full mycoheterotrophy has more than twice the number of evolutionary origins compared with haustoria-forming holoparasitic plants (Watson 2009; Merckx and Freudenstein 2010), and occurs in a much wider phylogenetic range of species, spanning from liverworts and basal ferns through dicotyledons and monocotyledons, culminating in the Orchidaceae, the largest family of flowering plants (Leake 1994). However, other aspects, especially of mycoheterotroph physiology are less well resolved. For example, whilst the metabolite fluxes into plant haustorial parasites and the mechanisms driving these fluxes are increasingly well understood (Shen *et al*. 2006), the metabolic basis of mycoheterotrophy is yet to be elucidated. While the mechanisms underpinning resource abstraction by haustorial parasites is distinct from that of mycoheterotrophs, striking, convergent morphological and physiological traits are shared by both groups of plant parasites. Morphological and physiological convergence takes the form of highly reduced root

networks and the reduction of leaves to scales or foliose bracts (e.g. the orchids *Neottia* and *Corallorhiza*), the production of minute seeds dependent on host signals for germination (e.g. most orchids and mycoheterotrophic gentians) and the production of little or no chlorophyll. Indeed, as a result of such convergence, the mycoheterotroph *Monotropa hypopitys* (Monotropaceae) was considered to be an *Orobanche* before being accurately described by Linnaeus in 1753 (Leake 1994)!

In summary, research into the fundamental biology of mycoheterotrophic plants has rapidly expanded, revealing mycoheterotrophs as powerful models for understanding the evolution of achlorophylly to be paralleled with haustorial parasitic plants that feed directly on the vascular system of other plants (Selosse and Cameron 2010). Using this comparative approach, many overlooked traits of mycoheterotrophs, including the evolution of plastid genomes or reproductive biology can now be resolved.

References:

Cameron DD, Bolin J (2010) Isotopic evidence of partial mycoheterotrophy in the Gentianaceae: *Bartonia virginica* and *Obolaria virginica* as case studies. American Journal of Botany 97:1272-1277.

Bidartondo MI, Burghardt B, Gebauer G, Bruns TD, Read DJ. 2004. Changing partners in the dark: isotopic and molecular evidence of ectomycorrhizal liaisons between forest orchids and trees. Proceedings of the Royal Society of London. Series B, Biological Sciences 271: 1799–1806.

Gebauer G, Meyer M. 2003. ^{15}N and ^{13}C natural abundance of autotrophic and mycoheterotrophic orchids provides insight into nitrogen and carbon gain from fungal association. New Phytologist 160: 209–223.

Hynson N, Bruns TD. 2010. Fungal hosts for mycoheterotrophic plants: a non-exclusive, but highly selective club. New Phytologist 185(3): 598–601.

Julou T, Burghardt B, Gebauer G, Berveiller D, Damesin C, Selosse M-A. 2005. Mixotrophy in orchids: insights from a comparative study of green individuals and nonphotosynthetic individuals of *Cephalanthera damasonium*. New Phytologist 166: 639–653.

Kuijt, J. 1969. The biology of parasitic flowering plants. Berkeley and Los Angeles: University of California Press.

Leake JR, Cameron DD. 2010. Physiological ecology of mycoheterotrophy. New Phytologist 185(3): 601–605.

Leake JR, McKendrick SL, Bidartondo MI, Read DJ. 2004. Symbiotic germination and development of the myco-heterotroph *Monotropa hypopitys* in nature and its requirement for locally distributed *Tricholoma* spp. New Phytologist 163: 405–423.

Leake JR. 1994. The biology of myco-heterotrophic ('saprophytic') plants. *New Phytologist* 127: 171–216.

Merckx V, Freudenstein J. 2010. Evolution of mycoheterotrophy in plants: a phylogenetic perspective. New Phytologist 185(3): 605–609.

Shen H, Ye W, Hong L, Huang H, Wang Z, Deng X, Yang Q, Xu Z. 2006. Progress in parasitic plant biology: host selection and nutrient transfer. Plant Biology 8: 175–185.

Watson DM. 2009. Parasitic plants as facilitators: more dryad than Dracula? Journal of Ecology 97: 1151–1159.

Duncan Cameron, Department of Animal and Plant Sciences, University of Sheffield, Sheffield, S10 2TN. d.cameron@sheffield.ac.uk

A NEW $9 MILLION *STRIGA* PROJECT IS SUPPORTED BY A $6.75 MILLION GRANT FROM THE BILL AND MELINDA GATES FOUNDATION TO IITA

The fight against *Striga* is being given a great boost as a result of new funding from the Bill and Melinda Gates Foundation. See first two Press Reports below.

PRESS RELEASES/REPORTS

Researchers and farmers begin effort to reduce crop loss from parasitic witchweed attacking Africa's staple crops.

New project to generate an additional US$8.6 million annually, 50% higher yields for farmers across Kenya and Nigeria.

Scientists based in Nigeria and Kenya have begun a major push against parasitic weeds that have spread across much of sub-Saharan Africa, causing up to US$1.2 billion in damage every year to the maize and cowpea crops of tens of millions of small farmers.

The project, coordinated by the Nigeria-based International Institute of Tropical Agriculture (IITA), will introduce proven technologies for fighting *Striga*, or witchweed, and Alectra. Known by some as the 'violet vampire' because of its bright purple color, *Striga* attaches itself to the roots of plants like maize

and cowpea and sucks out nutrients, reducing yields and destroying entire harvests. Witchweed primarily affects smallholder farmers who can't afford costly herbicides for fighting the parasitic plant. The most widespread *Striga* species is estimated to have infested up to 4 million hectares of land under maize production in sub-Saharan Africa, causing yield losses of up to 80 percent. According to researchers at IITA, this represents up to $1.2 billion in losses for farmers and affects approximately 100 million people in sub-Saharan Africa. The parasitic weeds have spread widely in Africa in recent decades; their prolific seeds germinate in response to substances released by the roots of crop plants. Because crop plants have more difficulty competing with witchweed in poor soils, intensive farming and the expansion of farming into marginal soils have encouraged their spread. Furthermore, witchweed is difficult to control because each plant produces up to half a million seeds that can remain dormant in the soil for decades. 'Africa is plagued by a plant 'vampire' that robs farmers of their harvest,' said Hartmann, IITA director general. 'Dedicated pursuit by farmers and researchers is delivering several ways to fight the parasite.' The $9.0 million *Striga* project is supported by a $6.75 million grant from the Bill & Melinda Gates Foundation to IITA. Its goal is to help 200,000 maize farmers and 50,000 cowpea farmers who work in areas with high rates of *Striga* infestation in Kenya and Nigeria. By project's end in 2014, organizers estimate that over 250,000 individual farmers will potentially see up to 50% higher maize yields and 100% higher cowpea yields.

The four-year project will focus on improving and expanding access to methods of *Striga* control, while supporting research to identify the most effective means of controlling the parasitic weed under varying conditions. The project will evaluate and implement four approaches: using *Striga*-resistant crop varieties; using a 'push-pull' technology that involves intercropping with specific forage legumes that inhibit the germination of *Striga*; using herbicide-coated seeds; and deploying biocontrol of *Striga*. After a two-year evaluation period, the project will scale up the most effective approaches.

Project partners include the International Maize and Wheat Improvement Center (www.cimmyt.org), African Agricultural Technology Foundation (www.aatf-africa.org), International Centre of Insect Physiology and Ecology (www.icipe.org), and BASF Crop Protection. Scientists expect that the integrated witchweed control interventions will generate an estimated $8.6 million worth of additional grain (maize and legumes) annually at the project locations—resulting in increased incomes, better nutrition, and reduced poverty, as well as employment opportunities from grain production to food markets.

The project will work with farmers, seed companies, community-based organizations, extension workers, policymakers, and researchers. In pilot areas, it will supply witchweed-resistant maize and legume seed and chemically treated seed to private seed companies and community-based seed producers for production and distribution. 'Most farmers in the *Striga* Project target areas are highly resource-poor. The Project aims to integrate delivery of *Striga*-resistant maize and legume seeds with best-bet agronomic technologies to fight the weed menace, while raising farmers' awareness of the technologies, and supporting community-based organizations with technical assistance,' said Prasanna Boddupalli, director of the Global Maize Program of CIMMYT, based in Nairobi, Kenya.

The project will also research new management techniques such as use of a biological control method. Biocontrol can help maintain the balance of nature, support biodiversity, and sustain complex and beneficial ecological interactions.

In addition, the project will provide lessons and strategies for scaling up in other areas of sub-Saharan Africa, where witchweed is a major problem for maize and cowpea production. The project will also generate scientific data on the biology of witchweed, including the plant's relationship with different hosts and methods for rapid screening for resistance to the weed in maize and other crops. Each of the approaches to control *Striga* holds promise, especially when two or more options are employed at the same time. For example, in West Africa, IITA and partners have tested the combined use of *Striga*-resistant maize varieties in rotation with legumes that cause witchweed seeds to germinate but fail to latch on to the host. This approach increased crop productivity by an average of 88 percent. In East Africa, ICIPE and partners have developed a novel cropping system, known as 'push-pull.' It is an environmentally-friendly, economical approach that inhibits witchweed, and attracts insect pests to trap plants (pull) while driving them away from the main crop using a repellent intercrop (push).

'Increased uncertainty about the continent's vulnerability to climate change and its spin-off effects on parasitic weeds like *Striga* have created more demand for 'push-pull.' Farmers need more weapons in the fight against these threats,' said Christian Borgemeister, director general of ICIPE. 'Our partnership is a good example of donors and researchers responding to the needs of farmers by enabling their

ability to withstand the increasingly adverse and highly-variable weather and other constraints at the farm level.' Approximately 80 percent of the population in sub-Saharan Africa depends on agriculture for food, income, and employment. However, average yields of maize and cowpea are very low. Approximately 300 million people live below the poverty line in the region, and in rural areas, roughly half the population encounters hunger and malnutrition.

IITA, Nairobi, Kenya 31 May 2011.

Jeff Haskins at +254 729 871 422 or
jhaskins@burnesscommunications.com
Jeffrey Oliver +234 806 319 0480 or
o.jeffrey@cgiar.org

Experts in drive to save farmers from weeds
(abbreviated)

Scientists in Nigeria and Kenya have started a major war against parasitic weeds that cost small scale farmers in Sub-Saharan Africa $1.2billion in harvests every year, aggravating food deficits. An initiative coordinated by the Nigeria-based International Institute of Tropical Agriculture (IITA), will introduce new methods for fighting *Striga*, or witchweed, and *Alectra*.

Kenya is among the countries expected to benefit from the $9 million *Striga* project. The Bill and Melinda Gates Foundation has given IITA $6.75 million as part of a campaign to help 200,000 maize farmers and 50,000 cow pea farmers raise yields by 50 per cent and 100 per cent, respectively. The four-year project aims to improve and expand access to methods of *Striga* control including using a 'push-pull' technology that involves intercropping with legumes that inhibit the germination of *Striga*, using herbicide-coated seeds and deploying bio-control of *Striga*.

Scientists expect that the integrated witchweed control interventions will generate an estimated $8.6 million worth of additional grain (maize and legumes) increasing incomes, improving nutrition and reducing poverty. 'The project aims to raise farmers' awareness of the technologies, and supporting community-based organisations with technical assistance,' said Prasanna Boddupalli, director of the Global Maize Programme based in Nairobi. About 80 per cent of the population in sub- Saharan Africa depends on agriculture for food, income, and employment.

Business Daily 01 June 2011.
mndurya@ke.nationmedia.com

New approaches to an old technology prepare farmers in readiness to the impacts of climate change.

Extracts from a much longer item by Henry Neondo in Africa Science News 1 April, 2011.

It is a relatively old technology whose usefulness was until recently confined to few farming households in western Kenyan districts around Lake Victoria. Now however, push-pull, a novel farming system developed by ICIPE, Rothamsted Research (UK) and national partners in East Africa, is raising interests from beyond Kenya's borders and scientists think it holds the key to unravelling challenges climate change portends to farmers in drier parts of sub-Saharan Africa. ICIPE Director General, Prof. Christian Borgemeister says stemborers, parasitic *Striga* weeds and poor soil fertility are the three main constraints to efficient production of cereals in most sub-Saharan Africa.

Since being founded in 1997, the push-pull technology has so far helped close to 40, 000 farmers. 'But time to move it to other ecological zones is now', said Prof Christian. 'In the past 17 years, farmers that have adopted the technology have seen maize yields increase between one ton to 3.5 tonnes per hectare with minimal inputs. This action has improved the food security for close to 250,000 people in the region'. 'Push-pull' simultaneously addresses the major constraints of cereal-based farming system, which include striga weeds, stemborer pests and poor soil fertility. The technology also provides high quality animal fodder. Because of its ability to expand small-farm incomes, Push-Pull is being promoted by the public sector, private sector and farmer groups across Eastern Africa through what has come to be known as Farmer Field Schools (FFS).

The Farmer Field Schools approach relies on 'learning by doing' through participatory ecological field studies that are undertaken by farmers, government extension services, researchers, NGOs and community-based organizations studying together. According to Maurice Emuria, an agricultural officer with Kenya's Ministry of Agriculture, FFS is one of the extension approaches but with a difference. 'Unlike conventional extension, FFS aims to make a farmer an expert in his or her own farm,' he says. First developed by the UN Food and Agriculture Organization in Indonesia, the FFS approach is being used to disseminate Push-Pull training through 51 intensive weekly sessions that cover two growing seasons. ICIPE expanded the Push-Pull curriculum into western Kenya's Bungoma District in March 2007. There are now 265 farmer field schools in

Bungoma County with about 8, 000 farmers being members and 18 FFS in nine other counties in western Kenya.

ICIPE now has a target to extend the benefits of 'push-pull' to over one million people by 2020. To help realize this, ICIPE Wednesday launched a project known as ADOPT – the Adaptation and Dissemination of the 'Push-Pull' Technology to Climate Change. The initiative will directly benefit 50,000 smallholder cereal-livestock farmers. It will also improve food availability for half a million people living in areas that are dry and vulnerable to climate change in Kenya, Tanzania and Ethiopia.

Uganda: regional scientists develop quick-growing, weed-resistant sorghum

Scientists from the Association for Strengthening Agricultural Research in Eastern and Central Africa (ASARECA) through a project 'Fighting *Striga*: resistance genes deployed to boost sorghum productivity' have developed a sorghum which is resistant to the *Striga* weed and can mature within two months. The breakthrough was a result of research carried out to build upon an earlier project with the aim of utilising modern biotechnology tools to identify traits for *Striga*-resistant sorghum. Dr. Charles Mugoya, who heads ASARECA's Agro-Biodiversity and Biotechnology Programme (AGROBIO), says they developed 50 sorghum lines capable of 3.6 tonnes grain yield per hectare. This was done together with partner institutions in Sudan, Kenya and Eritrea and the technical support of the International Crops Research Institute for the Semi-Arid Tropics (ICRISAT). 'There is a potential of raising sorghum production to 61.2 million tonnes on 17 million hectares of farmland that are threatened due to *Striga* infestation. The 300 million people in Africa who depend on sorghum will attain food security and lead better lives,' he said. Though the current sorghum varieties have a yield potential of 4.5 tonnes per hectare, they are highly susceptible to attack by *Striga*, which can cause yield losses of up to 100 per cent. 'The target was to breed varieties that have similar yield as the current preferred varieties. In just three years, the lines generated are close to the background parent by up to 80 per cent grain yield,' he adds.

Mr Clet Wandui Masiga, of AGROBIO, revealed that the effort was the first of its kind which has generated techniques that will be used worldwide to breed for resistance against *Striga* weed in crops. 'The success will also transform other cereal crops affected by *Striga* like maize and rice, among others, because they have similar genes,' he said.

Makerere University had been commissioned to carry out research on value addition and nutritional content of the improved sorghum. The grain can be used to produce beer, bread, breakfast cereal products, porridge, among other products.

According to Mr Robert Olupot, a research officer at Serere National Semi-Arid Resources Research Institute, which is under National Agricultural Research Organisation, said the seeds will be tested before being released to farmers. 'We test for its resistance to *Striga*, diseases, pests like stock borers, adaptability, drought and yield performance before taking it to the variety release committee,' he said.

Statistics show that about 17 million hectares of sorghum are infested with *Striga* in Africa every year with yield losses of between 6 to 7 million tonnes.

ASARECA, headquartered in Entebbe, is an organisation of the national agricultural research systems of ten countries: Burundi, D. R. Congo, Eritrea, Ethiopia, Kenya, Madagascar, Rwanda, Sudan, Tanzania and Uganda. It aims at boosting agricultural research in eastern and central Africa to facilitate economic growth, food security and export competitiveness through sustainable agriculture.

Martin Ssebuyira The Monitor 22 June 2011.

President Obama appoints Prof. Gebisa Ejeta to food board
(extract)

Gebisa Ejeta, a distinguished professor of agronomy and the 2009 World Food Prize laureate, received an appointment to the Board for International Food and Agricultural Development from President Barack Obama, the university announced Wednesday. Obama made the three-year appointment April 22. Three others were named to the board -- Brady J. Deaton, chancellor of the University of Missouri; Jo Luck, president of Heifer International; and Marty McVey, president of McVey & Co. Investments.

Ethiopian Journal 28 April 2011.

For cancer patients mistletoes have more value than a Christmas kiss

A study conducted at Rambam Medical Center in Haifa, Israel, reveals that mistletoe extract is effective in stabilizing patients suffering from advanced stages of

colon and lung cancer, adding new credit to the plant's legacy. The result of the study shows that injections of mistletoe extract can stabilize cancerous tumors and alleviate symptoms suffered by patients, whose chemotherapy no longer works.

The mistletoe plant, also known as *Viscum album*, is best known for its place in ancient mythology and folklore. It has long been the tradition during the Christmas season to hang mistletoes around the house and for men and women who stand under it to give each other a kiss.

Other ancient myths present the mistletoe plant as the fabled healer of all kinds of medical ailments including epilepsy, heart conditions, edema, and diseases of the spleen. However, with the recent research findings in Israel, its fame is growing as the most frequently prescribed alternative treatment for various kinds of cancers, namely in Germany and other European countries, according to the Mesothelomia Support Network. Herbal medicine uses the leaves and twigs of mistletoe, which is a semi-parasitic plant, but the berries are discarded.

While using the plant's extract to combat cancer is not a new practice, the recent research conducted at Rambam is adding to the mistletoe's credibility as a valid form of alternative medicine. While the plant has been used for decades to treat cancer patients, until recently there were no reliable, clinical studies supporting its effectiveness. The research conducted at Rambam Medical Center now adds to the growing number of recent studies confirming that mistletoe's medicinal capabilities may exceed its place in mythology.

'Mistletoe has unique properties,' said Dr. Maurice Orange, a United Kingdom General Practitioner who has administered mistletoe extract treatments for the past ten years. 'It has been shown in labs and with patients to both have anti-cancer properties and a powerful stimulating effect on the immune system.' According to Dr. Orange, mistletoe can counteract tumor growth, while in other instances stimulating the immune system.

The Rambam study focused on patients suffering from lung and colon cancer. Patients suffering from advanced stages of colon cancer received subcutaneous injections, the most common way of administering mistletoe treatments, of the plant's extract, three times per week. The treatment was only administered after all other conventional forms of chemotherapy were no longer having an effect on the patient. The extract, though not expected to cause shrinkage in the patients' cancerous tumors, was successful in stabilizing the disease for a period of four months and lessening symptoms in 40 percent of cases. The plant was also found to improve the quality of life of the cancer patients suffering from advanced stages of the disease and who were not benefiting from regular cancer treatment. Twenty-three patients who were previously regularly required to undergo an intrusive procedure draining fluid from their abdomen through a needle began to receive injections of mistletoe extract. After receiving the mistletoe treatment, the interval between requiring draining procedures significantly increased, therefore increasing the patients' quality of life.

This study, presented at the annual meeting of the Society for Complementary Medicine held in the London, UK this month, joined other cutting edge studies conducted internationally supporting the mistletoe's role in the fight against cancer.

Kipper Adler 03 June 2011.

CYTAVIS' Aviscumine improves survival of patients with metastatic melanoma in a Phase II trial Hamburg

CYTAVIS BioPharma GmbH, a biopharmaceutical company developing derivatives of natural compounds for the treatment of oncological and immunological diseases, today announced Phase II data demonstrating that its lead compound Aviscumine (CY503), an immune potentiator, may improve survival of patients with refractory metastatic melanoma (stage IV).

The open-label Phase II multicenter trial (NCT00658437) was designed to test the influence of subcutaneous injections of Aviscumine (CY503) on progression-free survival (PFS) and overall survival (OS) of patients with unresectable metastatic melanoma (stage IV) after antineoplastic treatment failure. The trial included 31 eligible patients and was conducted at four German sites.

The progression-free survival rate after 3 months was 32.3%, while the 1-year-survival rate was 45.0% and median overall survival time (mOS) 11 months in the full analysis set/intention to treat population (FAS/ITT). In case of the standard therapy with Dacarbazine the 1-year-survival rate is usually about 30% and the mOS between 6 and 8 months, respectively. The majority of treatment-related adverse events were not severe application site reactions and pruritus.

'The results clearly suggest that CY503 is active in patients with metastatic melanoma, and they add to our evidence that the compound has great potential as a

highly active immunotherapeutic,' said Hans Lentzen, CEO of CYTAVIS. 'We see activity in all grades of metastatic melanoma, in particular in repeatedly pretreated melanoma patients.' 'More than 70% of the patients in this trial were suffering from the most severe stage IV M1c metastatic melanoma,' said the principle investigator of the trial, Dr. Peter Mohr from the Elbe Klinikum Buxtehude, Germany. 'These patients already have developed distant metastases, e.g. in the liver, have an elevated lactate dehydrogenase level and have experienced previous treatments. The results of this trial therefore are very encouraging and require confirmation in a large randomized phase III trial. Furthermore, the subcutaneous application of the drug is of advantage for allowing an outpatient treatment and has shown a good compliance.'

Aviscumine (CY503) is a recombinant version of viscumin, a protein found in the mistletoe plant (*Viscum album*). It influences the immune system via multiple modes of action: activating antigen-presenting cells, evoking strong T-cell response, increasing the cytotoxic activity of killer cells, and inducing the release of key cytokines which mediate the anti-cancer activity of the immune system. The safe administration of Aviscumine has already been shown in three Phase I studies in patients with different solid tumors and in a Phase I/II trial in patients with superficial bladder cancer.

Contacts:
Prof. Dr. Hans Lentzen, CEO CYTAVIS BioPharma GmbH Schloßstr. 20 (Nord) D-51429 Bergisch Gladbach, Germany Tel.: +49 (2204) 402 665 Fax: +49 (2204) 427 760 hans.lentzen@cytavis.com
Dr. Ludger Weß, Managing Partner Akampion Hasenhöhe 29 D-22587 Hamburg, Germany Tel.: +49 (40) 88165964 Fax: +49 (40) 88165965 ludger@akampion.com

Hamburg/Germany, July 13, 2011.

Province invests $260,000 for forest research

The British Colombia government is providing $260,000 to further research at Thompson Rivers University into parasitic plants that attack coniferous forests in B.C. The funding award is being provided through the B.C. Knowledge Development Fund (BCKDF) and used to acquire an advanced scanning electron microscope for research dedicated to controlling dwarf mistletoes (*Arceuthobium* spp.), plant parasites that infect trees and in the case of lodgepole pine, make the trees more susceptible to pine beetle infestations. The BCKDF announcement matched funding from the Canadian Foundation for Innovation and is added to other internal and external sources at TRU for a total research infrastructure investment of $666,333 for the purchase of a state-of- the-art Scanning Electron Microscope or SEM.

Nelson Daily, 06 Feb 2011.

Get ready for kissing: National Trust urge people to plant mistletoe.

The evergreen plant, that is traditionally a sign of love, is in decline across the country. During Christmas, when mistletoe is hung up as a decoration to kiss beneath, garden centres are having to import the plant from Eastern Europe because of the shortage. The semiparasitic plant grows on apple trees and other native species and the decline has been linked with the loss of ancient orchards as fruit is also imported from Europe. Conservationists are not only worried about the loss of income for small farmers who harvest mistletoe but a dying ancient tradition and the health of wildlife, including 41 species of birds that rely on the plant. To try and address the problem, the National Trust is encouraging people to plant mistletoe themselves this spring.

Daily Telegraph, UK, 14 Feb 2011.

OBITUARIES

DR REUVEN JACOBSOHN
1934-2010

Dr. Reuven Jacobsohn passed away last December when he was 76 years old.

Reuven completed his PhD in weed science at University of Minnesota, USA in 1970, and returned to

Israel as a research scientist at the Volcani Center of the Agricultural Research Organization (ARO). From that time, Reuven was involved with many activities and research worldwide relating to applicative aspects of the biology and control of parasitic weeds. Reuven was a pioneer in developing chemical control approaches using systemic herbicides.

In 1999 Reuven retired from the ARO and went back to his farm in Beit El'aAzari to grow citrus and high quality seeds for seed companies in Israel.

His main scientific achievements included:
- the development of protocols for chemical control of *Orobanche crenata* and *Phelipanche aegyptiaca* in faba beans, pea and carrots, with the systemic herbicide glyphosate and imidazolinones applied to host foliage after broomrape attachment, but before shoot emergence:
- development of methodologies for soil disinfection including fumigants and soil solarization:
- studying host parasite relationships and how environmental conditions affect those relations:
- defining the host range of *P. aegyptiaca*, *P. ramosa*, *O. cumana*, *O. crenata* and *O. cernua* to dozens of crops under Israeli field conditions; he believed that host range of broomrape to its host should be confirmed under field conditions; therefore he performed at least 60 field studies over about 15 years to examine his hypothesis:
- development of a protocol for extracting broomrape seeds from the soil, in order to predict the potential of the damage as related to infestation level.

In 2009 Reuven was honoured by the Israeli Weed Science Society for his contribution to the Weed Science in Israel.

He was the supervisor for my master thesis, and exposed me to the marvelous world of parasitic plants. Reuven was a great man and researcher, but I think mostly he would like us to remember him as a diligent farmer. We will all remember our noble friend and colleague Dr. Reuven Jacobsohn and always appreciate his activities.

Hanan Eizenberg,
Newe Ya'ar Research Center, P.O.Box 1021, Ramat Yishay, 30095, Israel

Prof. Dr. Dr. KLAUS WEGMANN
1932- 2011

He will be missed…

It is with a heavy heart that we learned of the death of Prof. Dr. Dr. h.c. mult. Klaus Wegmann on July 12, 2011.


(Photo Diego Rubiales)

The parasitic plants research community has lost a long-standing member. Born July 27, 1932 in Germany, Klaus Wegmann married his wife Gertrude in 1957 and they had four children. After studying chemistry and biology at the Technical University Karlsruhe and the University of Tübingen (both Germany), he received a PhD (Dr. rer. nat) in plant physiology in 1967. Since 1980 he was a full professor of Biochemistry at the University of Tübingen.

His research was manifold, covering not only biochemical relations between parasitic plants of the genera *Orobanche*, *Phelipanche* and *Striga* and their host plants, but also a broad range of other themes such as plant adaptation to water stress, tobacco biochemistry, ecological plant biochemistry, plant disease resistance, and heavy metal accumulation in plants. A good portion of the research work was carried out in cooperation with colleagues from various countries, in particular from Romania, Russia, Egypt, and Brazil, and with the International Agricultural Research Centers ICARDA (Aleppo, Syria), ICRISAT (Bamako, Mali), CIMMYT (Nairobi, Kenya) and IITA (Abadan, Nigeria). Klaus Wegmann was a very active member of the COST Action 849, Parasitic Plant Management in Sustainable Agriculture, for which he helped organizing meetings and contributed to different

working groups, especially related to *Orobanche* research and control.

He was an active person in strengthening the relationship of the University of Tübingen with Universities of Eastern Europe, especially with Romania where he was awarded two honorary doctorate degrees, in 1994 from the Lucian Blaga University of Hermannstadt/Sibiu and in 2002 from the Vasile Goldis Western University of Arad. Even after his retirement from the University of Tübingen, he was still very active, among other things as associate professor and pro-rector (2004-2008) at the Vasile Goldis Western University of Arad (Romania). In June 2011, he still bravely participated in the 11th World Congress on Parasitic Plants in Martina Franca, Italy where he delivered a poignant farewell.

We will keep Klaus Wegmann in mind as a very supportive, open-minded and delightful person. May his soul rest in peace.

Joachim Sauerborn and Bettina Haussmann,
University of Hohenheim, 70593, Stuttgart, Germany

BOOK REVIEWS

A Little Book about Mistletoe by Jonatha**n** Briggs 2010. Potamogeton Press, Stonehouse, UK. 32 pp.

This is indeed a 'little' book, on the one common European mistletoe species - *Viscum album*. It is aimed primarily at the layman in UK, but is very technically sound, informative and well illustrated, by an author who has been studying it for over 25 years. There are two-page sections on a range of aspects including 'what exactly is a mistletoe?', 'where does it grow?', 'ancient traditions', 'Christmas and modern customs', 'harvesting and trading', 'mistletoe events', 'mistletoe in decorative art', 'mistletoe in medicine', 'mistletoe and wildlife', 'conserving mistletoe', 'controlling mistletoe', 'growing your own' and 'finding out more'.

Chris Parker.

Mistletoes of Southern Australia by David Watson 2011, CSIRO Publishing, Collingwood, Australia, 188 pp

Aside from scholarly works, there has never been a book treating the mistletoes of Australia, so this work fills that void. Within the 188 pages are over 130 photographs of 46 of the 91 Australian species of Loranthaceae and Viscaceae. This book, aimed at a popular audience, also features paintings of all species prepared by Robyn Hulley. The species coverage is focused upon southern Australia: Victoria, New South Wales, South Australia and the southern part of Western Australia. The species accounts serve the intended use as a field guide, and in addition the book features chapters on mistletoe biology, ecology, cultural significance, and management. I found these later chapters to be most engaging, presenting clear discussions of a number of fascinating biological aspects of mistletoe biology such as host interactions, mimicry, pollination and seed dispersal, herbivorous insect associations, etc. The chapter on cultural significance first reviews European concepts and then segways into how Australians (both European imports and indigenous people) view and utilize mistletoes. The chapter on management attempts to strike a balance between divergent viewpoints, i.e. that mistletoes are harmful weeds vs. ecologically important keystone species.

Overall my impression of the book is positive; however, I believe it would have benefited from editing by a specialist. Although the paintings are artistically pleasing, in many cases they are botanically inaccurate. The species descriptions often differ from the details depicted in the paintings (see for example the vegetative description of *Amyema plicatula*). The author chose not to include keys to the genera and species, justifying this because the targeted audience is non-specialists. I view this as a shortcoming because most taxa can be identified using macro-morphological features (not anatomical ones as stated). To identify a species using this book requires one to flip through all the pages comparing the specimen at hand with the paintings and descriptions. The terminology was possibly oversimplified, for example, 'stem' here refers to an actual stem, a petiole or a peduncle. As an ornithologist, the author carried forward the tradition of using common names. I found myself writing the scientific names in the book because nearly all the common names were unfamiliar to me. There was no list of common names alphabetized and cross-referenced to scientific names (the Table on p. 173 is ordered by scientific name). Problems inevitably crop up when common names are used: one species with two common names (*Amyema maidenii* = pale-leaved mistletoe and green mistletoe) and two species with the same common name (*A. maidenii* and *Ileostylus micranthus* both are called green mistletoe). The section on mistletoe origins and relationships (pp. 7-9) did not incorporate data from recent work on phylogenetics that clearly shows five mistletoe clades that have been named as families. Moreover, the same section discusses loranth biogeography, but this was apparently based on the work of Barlow, not the newer concepts (with time-calibrated trees) from Vidal-Russell

and Nickrent (2008). It is stated that loranths are 'largely absent from North America', curious given the diversity of this family in Mexico and Central America. It is likely that many of the above issues would be missed by the average reader, being noticed only by specialists such as myself. Thus, the book should be welcomed by anyone wishing to identify mistletoes in southern Australia.

Daniel Nickrent, Southern Illinois University, Carbondale IL USA

THESIS

Ayongwa, G.C. (PhD thesis, Wageningen University, Wageningen, The Netherlands, 2011) **Understanding the diverse roles of soil organic matter in the cereal – *Striga hermonthica* interaction.** With summaries in English, French and Dutch, 132 pp.

Abstract: The problem of the parasitic weed striga (*Striga hermonthica* (Del.) Benth.) has worsened for African farmers, in conjunction with degrading soil fertility. An analysis of the striga problem showed that scientists, policy makers and farmers conceptualise striga differently. Whether striga is viewed as a weed or a symptom of degraded soils raises two questions: Should farmers control striga, even when the impact on yields would be negligible? Or should fertility enhancement, leading to higher yields, be their focus, even when not accompanied by an immediate reduction in striga? This study seeks to understand how organic matter inputs affect nutrient dynamics, sorghum (*Sorghum bicolor* [L.] Moench) production and striga abundance.

Surveys in northern Cameroon showed that striga infestation increased over the past two decades. Increased land pressure led to reduced fallow periods and enhanced cereal (mono-) cropping. Reduced access to fertiliser and manure hampered options to improve soil fertility. Yields from farmers' fields did not correlate with striga incidence, confirming farmers' prioritisation of soil fertility, weeds, and labour as production constraints, rather than striga. The entry point to tackle low yields and the worsening of the striga situation should follow farmers' priority of alleviating low soil fertility.

Whether and how soil fertility improvement, through organic matter, enhances agricultural productivity and reduces striga, was investigated in field experiments. Organic matter amendments significantly depressed striga seed survival, with the strongest effect achieved at higher quality; presumably due to higher microbial activity. Organic matter enhanced soil water retention and soil temperature but without effects on striga seed survival. Organic matter did not affect soil ethylene concentrations. The effect of organic matter amendments was directly related to N mineralisation, both for better cereal growth and reduced striga survival. The organic matter amendments and use of fallow, as applied here, however, may not be practicable for the resource-poor farmer.

Increasing N-fertilisation increased sorghum root N mass concentration, which resulted in a lower striga seed germination. That relationship was linear up to a root N mass concentration of 19.5 mg g^{-1} where seed germination was close to but always still above 0%.

In a broader framework of the research findings, the ultimate solution for farm productivity for Africa is in sustainable farm intensification by investing in soil fertility. However, the prevailing land tenure system and limited access to fertiliser and organic matter need to be overcome. A new conceptual model is proposed, indicating how changes in both cereal yield and striga infestation over time co-vary with changes in soil fertility. The implication of this model is that recovery of soil fertility should be the priority. The challenge to agronomists remains to consider how to make farm intensification rewarding and attainable for resource-poor farmers. In areas where striga is an obstacle, an integrated scheme for the intensification of cereal cropping should start with integrated soil fertility management. Crop rotation and intercropping with selected non-host leguminous crops are essential ingredients.

FORTHCOMING MEETINGS

Joint Workshop of the EWRS Working Groups - Weed management in arid and semi-arid climate AND Weed management systems in vegetables, to be held in Huesca, Spain, 4-8 September 2011

The Workshop will take place at the Escuela Politécnica Superior de Huesca, located 7 m from the centre of Huesca. Huesca is an ancient town of 50.000 inhabitants with very interesting architecture, especially from its Romanesque period. It is one of the three capitals of the Aragón region. The city lies on the road to France about 75 km from Zaragoza. The programme will include a session on parasitic weeds.

Local Organizer S. Fernández-Cavada (Centro de Protección Vegetal, Diputación General de Aragón, Zaragoza, Spain) (sfernandez-cavada@aragon.es)

The VIth International Weed Science Congress (IWSC) will be held on June 17 to 22, 2012 at the New Century Grand Hotel, Hangzhou, China.

Sessions will include one devoted to parasitic weeds. For further information contact Per Kudsk (per.kudsk@agrsci.dk).

COMPOSITE AND ENDNOTE FILES

We apologise that there has been lack of progress with the preparation and/or up-loading of the files referred to in Haustorium 58. But we are still working on them.

Chris Parker.

GENERAL WEB SITES

For individual web-site papers and reports see LITERATURE

For information on the International Parasitic Plant Society, current issue of Haustorium, etc. see: http://www.parasiticplants.org/

For past and current issues of Haustorium see also: http://www.odu.edu/~lmusselm/haustorium/index.shtml

For the ODU parasitic plant site see: http://www.odu.edu/~lmusselm/plant/parasitic/index.php

For Dan Nickrent's 'The Parasitic Plant Connection' see: http://www.parasiticplants.siu.edu/

For the Parasitic Plant Genome Project (PPGP) see: http://ppgp.huck.psu.edu/

For information on the EU COST 849 Project (now completed) and reports of its meetings see: http://cost849.ba.cnr.it/

For information on the EWRS Working Group 'Parasitic weeds' see: http://www.ewrs.org/parasitic_weeds.asp

For a description and other information about the *Desmodium* technique for *Striga* suppression, see: http://www.push-pull.net/

For The Mistletoe Center (including a comprehensive Annotated Bibliography on mistletoes, up to 2005) see: http://www.rmrs.nau.edu/mistletoe/

For information on the 11th World Congress on Parasitic Plants in Martina Franca, Italy, June 2011, see: http://ipps2011.ba.cnr.it

For the work of Forest Products Commission (FPC) on sandalwood, see: http://www.fpc.wa.gov.au (Search *Santalum*)

For past and future issues of the Sandalwood Research Newsletter, see: http://www.jcu.edu.au/mbil/srn/index.html

For information on the work of the African Agricultural Technology Foundation (AATF) on *Striga* control in Kenya, including periodical 'Strides in *Striga* management' newsletters, see: http://www.aatf-africa.org/

LITERATURE

* indicates web-site reference only

Abbes, Z., Kharrat, M., Pouvreau, J.B., Delavault, P., Chaïbi, W. and Simier, P. 2010. The dynamics of faba bean (*Vicia faba* L.) parasitism by *Orobanche foetida*. Phytopathologia Mediterranea 49(2): 239-248. [Resistance of the Tunisian variety Najeh to *O. foetida* is associated with lower germination, reduced attachment and slower growth after attachment. Varieties Giza 429 and Baraca did not show resistance.]

Abbes, Z., Sellami, F., Amri, M. and Kharrat, M. 2010. Effect of sowing date on *Orobanche foetida* infection and seed yield of resistant and susceptible faba bean cultivars. Acta Phytopathologica et Entomologica Hungarica 45(2): 267-275. [Delaying sowing date for faba bean to December reduced attack by *O. foetida* and increased yield of the more resistant variety Najeh, but was less beneficial with the susceptible Badi.]

Abdelhamid, M.T., Shokr, M.M.B. and Bekheta, M.A. 2010. Growth, root characteristics, and leaf nutrients accumulation of four faba bean (*Vicia faba* L.) cultivars differing in their broomrape tolerance and the soil properties in relation to salinity. Communications in Soil Science and Plant Analysis 41(22): 2713-2728. [Suggesting a correlation between *Orobanche crenata*-resistance and salinity tolerance in varieties Giza 429, Giza 843 and Misr 1.]

Abouzeid, M.A. and El-Tarabily, K.A. 2010. *Fusarium* spp. suppress germination and parasitic establishment of bean and hemp broomrapes. Phytopathologia Mediterranea 49(1): 51-64.

[Identifying isolates of *Fusarium* including *F. oxysporum*, *F. equiseti* and *F. compactum*, mainly from *Orobanche crenata*, with activity against both *O.crenata* and *O. ramosa*.]

Abubakar, A.A. and Salka, M.N. 2011. Effects of methanol extract of *Ximenia americana* on sexual behaviour, testicular weight, sperm count and sperm morphology of wister rats. Annals of Biological Research 2(1): 107-113. [Recording negative effects on all parameters.]

Ahmed, U.A. and Alamun, T.M. 2010. Evaluation of different plants based products for *Striga hermonthica* control in sorghum (*Sorghum bicolor*) under Sudanese field conditions.. Journal of Weed Science Research 16(4): 443-449. [2g each of ground dried material of *Azadirachta indica*, *Lawsonia alba* and *Cissus quadrangularis* placed in the planting hole caused significant reduction of *S. hermonthica* emergence, and later mortality of *Striga* seedlings. *Ocimum basilicum* less effective. No data or observation on the health of the crop!]

Al-Jaber, H.I., Mosleh, I.M., Mallouh, A., Salim, O.M.A. and Zarga, M.H.A. 2010. Chemical constituents of *Osyris alba* and their antiparasitic activities. Journal of Asian Natural Products Research 12(9/10): 814-820. [Osyrisine, catechin, and catechin-3-*O*-α-L-rhamnopyranoside exhibited a significant level of antiparasitic activity against *Entamoeba histolytica* and *Giardia intestinalis*.]

Albert, M., Kaiser, B., van der Krol, S. and Kaldenhoff, R. 2010. Calcium signaling during the plant-plant interaction of parasitic *Cuscuta reflexa* with its hosts. Plant Signaling and Behavior 5(9): 1144-1146. [Confirming the importance of Ca^{2+} signaling between *C. reflexa* and its host, and that the substance that induces Ca^{2+} release in the host plant is closely linked to the parasite's haustoria.]

Ali, M.A., Al-Hemaid, F.M., Al-Qurainy, F., Tarroum, M. and Salim Khan. 2011. Assessment of genetic diversity among Indian populations of *Cuscuta reflexa* based on its sequences of nrDNA. Journal of Medicinal Plants Research 5(7): 1217-1223. [Showing variation associated with geographic location.]

Amico, G.C., Rodriguez-Cabal, M.A. and Aizen, M.A. 2011. Geographic variation in fruit colour is associated with contrasting seed disperser assemblages in a south-Andean mistletoe. Ecography 34(2): 318-326. [The yellow fruits of *Tristerix corymbosus* in Chilean matorral are exclusively dispersed by three bird species while green fruits in the temperate forest are exclusively dispersed by a nocturnal marsupial, the mouse opossum (**Dromiciops gliroides**) which can locate them irrespective of colour.]

Andree, K.(and at least 25 others) 2010. Permanent genetic resources added to Molecular Ecology Resources Database 1 April 2010-31 May 2010. Molecular Ecology Resources 10(6): 1098-1105. [*Striga hermonthica* among species for which microsatellite marker loci have been identified.]

Anne, A., Peter, M. and Henning, A. 2011. Angiotensin-converting enzyme inhibitory activity of *Viscum triflorum* is host plant-dependent. Pharmaceutical Biology 49(3): 302-305. [*V. triflorum* is used to treat hypertension on Réunion Island. Concluding that only *V. triflorum* growing on *Acacia heterophylla* or *Sophora denudata* had relevant inhibitory activity (also shown by those host species themselves); 8 other hosts and associated *V. triflorum* were inactive.]

Anon. 2010. (EU-ECE inventory of forest damage (IDF) in Spain. European Network for monitoring damage to forests. Level I. Sampling results, 2009.) (in Spanish) Ecología (Madrid) 23: 195-233. [Unspecified mistletoe infestations (*Viscum* spp.?) 'continue being relevant in certain areas affecting pines and juniper trees'.]

*Anon (authors and affiliation withheld on website). 2009. Effects of *Mucuna* biomass and N-fertilizer on *Striga hermonthica* Del. Benth. infestation in maize (*Zea mays* L.). Journal of Animal and Plant Sciences (JAPS) 4(2): 320-328. (http://www.biosciences.elewa.org/JAPS/2009/4.2/1blocked.pdf) [*S. hermonthica* reduced and maize yields increased by combinations of *M. cochinchinensis* and nitrogen.]

Anup Chandra, Biswas, S., Arti Kala and Vasundhara Kandpal. 2010. Heavy infestation by mistletoes on *Madhuca indica* in Chhatarpur (Madhya Pradesh). Annals of Forestry 18(2): 333-334. [The oilseed tree crop *M. indica* (= *M. longifolia*) infested by *Dendrophthoe falcata*.]

Arvind Shukla; Sharma, H.K. 2011. Bio-compost from *Jatropha curcas* L. leaves and deoiled cake. Indian Forester 137(3): 397-399. [Compost from *J. curcas* plus *Cuscuta reflexa* was inferior to *J. curcas* plus dung.]

Ayongwa, G.C. 2011. Understanding the diverse roles of soil organic matter in the cereal-*Striga hermonthica* interaction. Wageningen University, Wageningen, Netherlands, 131 pp. [see Thesis abstract above.]

Badu-Apraku, B. and Akinwale, R.O. 2011. Cultivar evaluation and trait analysis of tropical early maturing maize under *Striga*-infested and *Striga*-free environments. Field Crops Research 121(1): 186-194. [Showing correlation of 'ear aspect' with good performance under *Striga* infestaion.]

Badu-Apraku, B., Akinwale, R.O. and Fakorede, M.A.B. 2010. Selection of early maturing maize

inbred lines for hybrid production using multiple traits under Striga-infested and Striga-free environments. Maydica 55(3/4): 261-274. [Identifying inbred TZEI 3 as the best as source of *Striga* resistance genes for introgression into white-endosperm populations.]

Badu-Apraku, B., Fontem, L.A., Akinwale, R.O. and Oyekunle, M. 2011. Biplot analysis of diallel crosses of early maturing tropical yellow maize inbreds in stress and nonstress environments. Crop Science 51(1): 173-188. [Inbred TZEI 23 × TZEI 13 showed superior performance under all research conditions, including *Striga hermonthica* infestation.]

Badu-Apraku, B., Menkir, A., Ajala, S.O., Akinwale, R.O., Oyekunle, M. and Obeng-Antwi, K. 2011. Performance of tropical early-maturing maize cultivars in multiple stress environments. Canadian Journal of Plant Science 90(6): 831-852. [Estimating 65% yield loss from infestation by *Striga hermonthica.* Maize lines TZE-W DT STR C_4, EVDT-W 99 STR QPM C_0 and TZE-W DT STR $QPMC_0$ performed best under *Striga* infestation.]

Badu-Apraku, B., Oyekunle, M., Akinwale, R.O. and Lum, A.F. 2011. Combining ability of early-maturing white maize inbreds under stress and nonstress environments. Agronomy Journal 103(2): 544-557. [Concluding that additive gene action played a major role in the inheritance of the *S. hermonthica* resistance traits and that the inbreds TZEI 4 and TZEI 5 were the most promising in yield performance and stability across the test environments.]

Balasubramanian, P., Aruna, R., Anbarasu, C. and Santhoshkumar, E. 2011. Avian frugivory and seed dispersal of Indian Sandalwood *Santalum album* in Tamil Nadu, India. Journal of Threatened Taxa 3(5): 1775-1777. [The most seed dispersers of *S. album* were the red-whiskered bulbul, *Pycnonotus jocosus*, the white-headed babbler and the Asian koel *Eudynamys scolopacea*.]

Baldovini, N., Delasalle, C. and Joulain, D. 2011. Phytochemistry of the heartwood from fragrant *Santalum* species: a review. Flavour and Fragrance Journal 26(1): 7-26. [An extensive review covering the 230 constituents identified in *Santalum album*, *S. spicatum* and *S. austrocaledonicum*.]

Ballelli, S., Tardella, F.M., Orsomando, E. and Catorci, A. 2010. The vascular flora of the "Altipiani di Colfiorito" (Umbria-Marches Apennines, Central Italy). Webbia 65(2): 241-290. [Recording *Cuscuta campestris* as new to the region.]

Balzergue, C., Puech-Pagès, V., Bécard, G. and Rochange, S.F. 2011. The regulation of arbuscular mycorrhizal symbiosis by phosphate in pea involves early and systemic signalling events. Journal of Experimental Botany 62(3): 1049-1060.

Barbu, C. and Boriaud, L. 2010. The incidence and distribution of white mistletoe (*Viscum album* ssp. *abietis*) on Silver fir (*Abies alba* Mill.) stands from Eastern Carpathians. Annals of Forest Research 53(1): 27-36. [Showing a high correlation between *V. album* occurrence and death of silver fir in Romania.]

Barcelona, J.F., Fernando, E.S., Nickrent, D.L., Balete, D.S. and Pelser, P.B. 2011. An amended description of *Rafflesia leonardi* and a revised key to Philippine *Rafflesia* (Rafflesiaceae). Phytotaxa 24: 11-18. [The *Rafflesia* recently named *R. banaoana* from Luzon, Philippines is shown to be conspecific with *R. leonardi*.]

Bass, K.A., John, E.A., Ewald, N.C. and Hartley, S.E. 2010. Insect herbivore mortality is increased by competition with a hemiparasitic plant. Functional Ecology 24(6): 1228-1233. [Parasitism of a grass host by *Rhinanthus minor*, reduced the population of the spittle bug *Neophilaenus lineatus* on the same host.]

Bedlan, G. 2011. (First report of *Phelipanche ramosa* on tomatoes (*Solanum lycopersicum*) in Austria.) (in German) Journal für Kulturpflanze 63(4): 111-112. [*Orobanche/Phelipanche ramosa* found in glasshouses in 2010.]

Bhardwaj, S.K. 2011. Potential use of some plant extracts against *Pseudomonas syringae* pv. *syringae*. Journal of Medicinal and Aromatic Plant Sciences 33(1): 41-45. [Listing *Cuscuta refexa* among less effective plant sources.]

Blazics, B., Alberti, Á., Béni, S., Kursinszki, L., Tölgyesi, L. and Kéry, Á. 2011. Identification and LC-MS-MS determination of acteoside, the main antioxidant compound of *Euphrasia rostkoviana*, using the isolated target analyte as external standard. Journal of Chromatographic Science 49(3): 203-208.

Bolin, J.F., Tennakoon, K.U. and Maass, E. 2010. Mineral nutrition and heterotrophy in the water conservative holoparasite *Hydnora* Thunb. (Hydnoraceae). Flora (Jena) 205(12): 802-810. [Shows that water loss from the parasite is comparable to that from xerophytes but levels of P and K were higher in *Hydnora* relative to CAM hosts suggesting a role for these minerals in the water economy of the parasite.]

Bora, H.R., Alok Yadav, Kumud Das and Ranjeet Kumar. 2010. *Balanophora dioica* R. Br. ex Royle (Balanophoraceae) - a rare total root parasite reported from Karbi-Anglong district, Assam, India. Journal of Economic and Taxonomic Botany 34(2): 298-299. [*B. dioica* recorded for the first time in semi ever-green forest of the district.]

Borole, S. P., Oswal, R.J., Antre, R.V., Kshirsagar, S.S. and Bagul, Y.R. 2011. Evaluation of anti-epileptic activity of *Cuscuta reflexa* Roxb. Research Journal of Pharmaceutical, Biological and Chemical Sciences 2(1): 657-663. [Results suggest that *C. reflexa* extracts have anticonvulsant properties.]

Braun, U., Freire, F.das C.O. and Urtiaga, R. 2010. New species and new records of cercosporoid hyphomycetes from Brazil, New Zealand and Venezuela. Polish Botanical Journal 55(2): 281-291. [Recording *Pseudocercospora struthanthi* on a *Tripodanthus* sp. (Loranthaceae).]

Breuillin, F. and 14 others. 2010. Phosphate systemically inhibits development of arbuscular mycorrhiza in *Petunia hybrida* and represses genes involved in mycorrhizal functioning. Plant Journal 64(6): 1002-1017. [Confirming that phosphate systemically inhibits mycorrhizal symbiosis as well as the expression of genes involved in strigolactone biosynthesis.]

Briggs J. 2010. A little book about Mistletoe. Potamogeton Press, Stonehouse, UK. 32 pp. [See Book Review above.]

Caamal-Fuentes, E., Torres-Tapia, L.W., Simá-Polanco, P., Peraza-Sánchez, S.R. and Moo-Puc, R. 201. Screening of plants used in Mayan traditional medicine to treat cancer-like symptoms. Journal of Ethnopharmacology 135(3): 719-724. [Among the 21 species tested, *Phoradendron vernicosum* showed moderate cytotoxic activity but *Psittacanthus americanus* did not. Also noting that an *Orbanche* sp. is used for treatment of 'hard swelling'.]

Cardoso, C., Ruyter-Spira, C. and Bouwmeester, H.J. 2011. Strigolactones and root infestation by plant-parasitic *Striga*, *Orobanche* and *Phelipanche* spp. Plant Science 180(3): 414-420. [Reviewing strigolactones and how the increasing knowledge on the variety of their biological roles can be used to design strategies for parasitic plant control.]

Catal, Y. and Carus, S. 2011, Effect of pine mistletoe on radial growth of crimean pine (*Pinus nigra*) in Turkey. Journal of Environmental Biology 32(3): 263-270. [A careful study showed that light, medium and heavy infection of *P. nigra* by *Viscum album* ssp. *austriacum* resulted in 26, 39 and 63% reductions in average annual radial growth, respectively, over the period 1998-2005.]

Chandrashekhara; Raj, S.N., Manjunath, G., Deepak, S. and Shetty, H.S. 2010. Seed treatment with aqueous extract of *Viscum album* induces resistance to pearl millet downy mildew pathogen. Journal of Plant Interactions 5(4): 283-291. [After seed treatment with 10% *V. album* extract, *Pennisetum americanum* showed 44-70% less downy mildew, apparently by inducing resistance.]

Chen PingTing, Chen LongQing and Wen, J. 2011. The first phylogenetic analysis of *Tetrastigma* (Miq.) Planch., the host of Rafflesiaceae. Taxon 60(2): 499-512. [A phylogeny generated from four plastid markers for 53 of the 95 species of *Tetrastigma* was compared to one generated for Rafflesiaceae by Barkman et al. (2008), rejected a single origin of the host-parasite relationship using a Templeton test.]

Chen XinPing, Dai DongJue, Luo Feng and Zhou ZhongBo. 2011. (Study on characteristic of absorption and isolation of the macroporous resin for two glycosides in *Cistanche tubulosa*.) (in Chinese) Journal of Henan Agricultural Sciences 40(3): 115-118. [X-5 proving the best resin for purification of the active echinacoside and bascoside.)

Chen Ye, Luo GuangHong, Wang Jin and Zheng TianXiang. 2011. (New host plant of *Cynomorium songaricum*.) (in Chinese) Chinese Traditional and Herbal Drugs 42(5): 1007-1008. [*Zygophyllum xanthoxylum*.]

Chikoye, D., Fontem, L.A. and Menkir, A. 2011. Seed coating herbicide tolerant maize hybrids with imazapyr for *Striga hermonthica* (Del.) Benth control in the West African savanna. Journal of Food, Agriculture & Environment 9(1): 416-421. [Seed coating significantly reduced *Striga* emergence and damage to the maize plants at all locations.]

Chimera, C.G. and Drake, D.R. 2011. Could poor seed dispersal contribute to predation by introduced rodents in a Hawaiian dry forest? Biological Invasions 13(4): 1029-1042. [Noting removal of seeds from below *Santalum ellipticum*.]

Choi JinGyu, Moon MinHo, Jeong HyunUk, Kim MinCheol, Kim SunYeou and Oh MyungSook. 2011. Cistanches Herba enhances learning and memory by inducing nerve growth factor. Behavioural Brain Research 216(2): 652-658. [An extact from *Cistanche* (*deserticola*?) significantly enhanced learning and memory in mice.]

Christen-Clottu, O., Klocke, P., Burger, D., Straub, R. and Gerber, V. 2010. Treatment of clinically diagnosed equine sarcoid with a mistletoe extract (*Viscum album austriacus*). Journal of Veterinary Internal Medicine 24(6): 1483-1489. [Concluding that the *V. album* preparation 'Iscador P' represents a safe and effective treatment for CDES.]

Chung ShihWen, Hsu TianChuan and Peng ChingI. 2010. *Phacellanthus* (Orobanchaceae), a newly recorded genus in Taiwan. Botanical Studies 51(4): 531-536. [Two dozen plants of *P. tubiflorus* newly found at 1800-2000 m elevation.]

Colombo, R., Batista, A.N.de L., Bomfim, G.C.C., Burgos, R.C.R., Cavalheiro, A.J.,; Bolzani, V.da S., Silva, D.H.S. and Reimberg, M.C.H. 2010.Validated

high-performance liquid chromatographic method for the standardisation of *Ptychopetalum olacoides* Benth., Olacaceae, commercial extracts. Revista Brasileira de Farmacognosia 20(5): 781-788.

Coria Ávalos, V.M., Vázquez Collazo, I., Muñoz Flores, H.J. and Villa Castillo, J. 2010. (Diatoms ground impact over *Arceuthobium globosum* Hawksworth & Wiens subsp. *grandicaule* of *Pinus pseudostrobus* Lindl.) (in Spanish) Ciencia Forestal en Mexico 1(1): 39-46. [A 7.5% solution of the diatom preparation 'Muérdago Killer' applied in 200 L of water/ha gave equally good results to those of ethephon 2,500 ppm in causing complete abscission of *A. globosum* after 45 days, without damaging the host.]

Courty, P.E., Walder, F., Boller, T., Ineichen, K., Wiemken, A., Rousteau, A. and Selosse, M.A. 2011. Carbon and nitrogen metabolism in mycorrhizal networks and mycoheterotrophic plants of tropical forests: a stable isotope analysis. Plant Physiology 156(2): 952-961. [Isotopic enrichment is a distinguishing feature of mycoheterotrophic plants associating with higher (basidiomycete) fungi forming ectomycorrhizal networks with autotrophic plants. This study shows that mycoheterotrophs associated with AM fungi do not exhibit the same isotopic enrichment profiles as mycoheterotrophs associated with temperate higher fungi.]

Crampton, L.H. and Sedinger, J.S. 2011. Nest-habitat selection by the Phainopepla: congruence across spatial scales but not habitat types. Condor 113(1): 209-222. [Noting that the nesting of *Phainopepla nitens* was influenced by the occurrence of unspecified mistletoe species in woodland, acacia and mesquite, in the Mojave Desert..]

Crivineanu, M., Papuc, C., Crînganu, D., Durdun, C., Nicorescu, V. and Nicorescu, I. 2010. The effect of polyphenolic extracts upon some haematological and biochemical blood parameters in rats with ascitogenous hepatic tumors. University of Agronomical Sciences and Veterinary Medicine, Bucharest Series C, Veterinary Medicine 56 (3/4): 58-63. [Extracts from *Viscum album* inhibited cytolysis of hepatocytes and improved the values of total proteins and albumin/globulin ratio.]

Cui ZhanYi and Sun ShuZhi. 2010. The solid roots Tonga combination minus dodder acupuncture therapy female infertility 86 cases clinical observation. Liaoning Journal of Traditional Chinese Medicine 37(12): 2367-2368. [Apparently confirming that 'dodder solid roots tonga' involving unspecified *Cuscuta* sp., with acupuncture therapy reduced female infertility.]

Dasgupta, A. and Hammett-Stabler, C.A., 2011. Abnormal liver function tests due to hepatotoxic herbs. In: Dasgupta, A. and Hammett-Stabler, C.A. (Eds.) Herbal supplements: efficacy, toxicity, interactions with Western drugs, and effects on clinical laboratory tests. John Wiley & Sons, Inc, Hoboken, USA, pp 155-167. [Including reference to toxic effects of *Viscum album*.]

de Vega, C., Arista, M., Ortiz, P.L., Herrera, C.M. and Talavera, S. 2011. Endozoochory by beetles: a novel seed dispersal mechanism. Annals of Botany 107(4): 629-637. [Recording regular ingestion of seeds of *Cytinus hypocistis* by the tenebrionid beetle *Pimelia costata* and the full viability of the seeds after excretion.]

de Vega, C., Arista, M., Ortiz, P.L. and Talavera, S. 2011. Mycorrhizal fungi and parasitic plants: reply. American Journal of Botany 98(4): 597-601. [Responding to a critical letter from M.C. Brundrett (American Journal of Botany 98: 595-596) and strenuously defending their conclusions re a tripartite association between a *Cytinus* sp., a Cistaceae host, and a mycorrhizal fungus. See original paper in Haustorium 58.]

Devkota, M.P., Joshi, G.P. and Parajuli, P. 2010. Diversity, distribution and host range of mistletoe in protected and unprotected areas of Central Nepal Himalayas. Banko Janakari 20(2): 14-20. [Concluding that mistletoes, mainly *Scurrula* spp., were more common in protected areas, occurring on 34 tree species. Also studying factors influencing their distribution.]

Dhanya, B. and Syam Viswanath. 2010. Sandal (*Santalum album* L.) conservation in southern India: a review of policies and their impacts. Journal of Tropical Agriculture 48(1/2): 1-10. [Discussing the need for improved legislation to protect *S. album* as an endangered natural resource in India.]

Dibong, S.D., Din, N., Priso, R.J., Taffouo, V.D., Salle, G. and Akoa, A. 2010. (Germination and natural regeneration of *Phragmanthera capitata* (Loranthaceae) on fruit trees in Douala, Cameroon.) (in French) In: van der Burgt, X., van der Maesen, J. and Onana, J.M. (Eds.) Systematics and conservation of African plants. Proceedings of the 18th AETFAT Congress, Yaoundé, Cameroun, 26 February to 2 March 2007, pp 839-846. [Avocado being seriously damaged by *P. capitata*. Control by pruning whole tree branches is not beneficial.]

Dibong, S.D., Din, N., Priso, R.J., Taffouo, V.D., Salle, G. and Akoa, A. 2010. (Ecological status of the Loranthaceae of the coastal region of Cameroon.) (in French) In: van der Burgt, X., van der Maesen, J. and Onana, J.M. (Eds.) Systematics and conservation of African plants. Proceedings of the 18th AETFAT Congress, Yaoundé, Cameroun, 26 February to 2 March 2007, pp 797-803. [*Phragmanthera capitata* the most frequent of 8

mistletoe species identified in the region, on *Cola acuminata* and other hosts.]

Dibong, D.S., Taffouo, V.D., Ndiang, Z., Ngotta, B., Mony, R., Obiang, N.L.E., Din, N., Priso, J.R., Issaka, J.B. and Akoa, A. 2010. The study of sodium and potassium distribution in five host species of *Phragmanthera capitata* (Sprengel) S. Balle in the littoral region of Cameroon. Journal of Applied Biosciences 2010(30): 1839-1844. [*P. capitata* tended to reduce Na and K levels in hosts *Citrus maxima*, *Manilkara zapota*, *Persia americana*, *Psidium guajava* and *Theobroma cacao*.]

Diminic´, D., Potočic´, N., Jazbec, A. and Županic´, M. 2011. (Infestation of common mistletoe and nutrition status of silver fir in Gorski Kotar (Croatia).) (in Croatian) Croatian Journal of Forest Engineering 32(1): 223-237. [Studies on infestation of *Abies alba* by *Viscum album* ssp. *abietis* recorded up to 490 parasites weighing over 50 kg per tree. Mineral contents in host and parasite foliage were measured over a range of sites on different soils.]

Dinesh Jadhav. 2010. A note on some ethnomedicinal plants found effective in the treatment of jaundice used by Bhil tribe of Ratlam district (M.P.). Journal of Economic and Taxonomic Botany 34(4): 751-753. [Including reference to *Cuscuta reflexa*.]

do Amaral, M.M. and Ceccantini, G. 2011. The endoparasite *Pilostyles ulei* (Apodanthaceae-Cucurbitales) influences wood structure in three host species of *Mimosa*. IAWA Journal 32(1): 1-13. [Detailed description of the changes in the wood structure in the hosts *Mimosa maguirei* and *M. setosa*.]

Dong LiNa, Wortley, A.H., Wang Hong, Li DeZhu, Lu Lu, Li, D.Z., Liu, J.Q., Chen, Z.D., Wang, H., Ge, X.J., Zhou, S.L., Gao, L.M., Fu, C.X. and Chen, S.L. 2011. Efficiency of DNA barcodes for species delimitation: a case in Pterygiella Oliv. (Orobanchaceae). Journal of Systematics and Evolution 49(3): 189-202. [RbcL, matK and ITS data showed that the five described species were not monophyletic, suggesting to the authors that the current morphology-based classification is incorrect.]

Dor, E., Yoneyama, K., Wininger, S., Kapulnik, Y., Yoneyama, K., Koltai, H., Xie XiaoNan and Hershenhorn, J. 2011. Strigolactone deficiency confers resistance in tomato line *SL-ORT1* to the parasitic weeds *Phelipanche* and *Orobanche* spp. Phytopathology 101(2): 213-222. [Confirming that the resistance of the fast-neutron-mutagenized tomato mutant *SL-ORT1* is due to lack of strigolactone exudation.]

Dostálek, T. and Münzbergová, Z. 2010. Habitat requirements and host selectivity of *Thesium* species (Santalaceae). Botanical Journal of the Linnean Society 164(4): 394-408. [*T. linophyllon* showed some degree of host preference but *T. bavarum* and *T. ebracteatum* showed none and all three had extremely wide host range.]

Egbewande, O.O., Jimoh, A.A., Ibitoye, E.B. and Olorede, B.R. 2011. Utilization of African Mistletoe (*Tapinanthus bangwensis*) leaf meal by broiler chickens. Pakistan Journal of Nutrition 10(1): 19-22. [Groundnut cake could be effecitvely and safely replaced by *T. bangwensis* up to 15%.]

Eisenbraun, J., Scheer, R., Kröz, M., Schad, F. and Huber, R. 2011. Quality of life in breast cancer patients during chemotherapy and concurrent therapy with a mistletoe extract. Phytomedicine 18(2/3): 151-157. [In a study with 270 breast cancer patients, the tolerance of the standardized aqueous *Viscum album* extracts were rated good or very good for 91% of the patients and the efficacy was rated good or very good for 94%. 89% of the patients reported a good or very good benefit.]

Ekhaise, F.O., Ofoezie, V.G. and Enobakhare, D.A. 2010. Antibacterial properties and preliminary phytochemical analysis of methanolic extract of Mistletoe (*Tapinanthus bangwensis*). Bayero Journal of Pure and Applied Sciences 3(2): 65-68. [Confirming anti-bacterial activity in extracts of *T. bangwensis* in Nigeria.]

Endress, P.K. 2010. Flower structure and trends of evolution in eudicots and their major subclades. Annals of the Missouri Botanical Garden 97(4): 541-583. [A broad survey of angiosperm floral morphology with particular attention paid to ovular nucelli and how their morphology characterizes major clades.]

Estep, M.C., van Mourik, T.A., Muth, P., Guindo, D., Parzies, H.K., Koita, O.A., Weltzien, E. and Bennetzen, J.L. 2011. Genetic diversity of a parasitic weed, *Striga hermonthica*, on sorghum and pearl millet in Mali. Tropical Plant Biology 4(2): 91-98. [Detecting some differentiation of populations from Central and Southern Mali, but none between local populations on sorghum and on millet.]

Fasil Reda, Dierick, A. and Verkleij, J.A.C. 2010. Virulence study of Striga hermonthica populations from Tigray Region (Northern Ethiopia). World Journal of Agricultural Sciences 6(6): 676-682. [Nine of the 19 populations of *S. hermonthica* tested were able to attack the relatively resistant varieties SRN 39 and P-9401.]

Fernández-Aparicio, M., Yoneyama, K. and Rubiales, D. 2011. The role of strigolactones in host specificity of *Orobanche* and *Phelipanche* seed germination. Seed Science Research 21(1): 55-61. [Showing that strigolactones/germination stimulants

play a role in determining host specificity of *Orobanche* and *Phelipanche*.]

Ferraz, H.O., Silva, M.G., Carvalho, R., Suffredini, I.B., Kato, E.T.M., Arakaki, F. and Bacchi, E.M. 2011. Phytochemical study and evaluation of the antimicrobial activity and cytotoxicity of *Cuscuta racemosa*. Revista Brasileira de Farmacognosia 21(1): 41-46. [*C. racemosa* is used in Brazil as an anti-inflammatory, a diuretic, for stomach and hepatic disorders, and for treating fresh wounds.)

Florence, I.F. and Olawoye, T.L. 2011. A preliminary comparative phytochemistry of metabolites of orange (*Citrus sinensis*) and guava (*Psidium guajava*) mistletoes and their host plants. Journal of Medicinal Plants Research 5(3): 340-343. [Recording a range of compounds from orange, guava and associated (undefined) Loranthaceae, with possible relevance to their medicinal use.]

Galiano, L., Martínez-Vilalta, J. and Lloret, F. 2011. Carbon reserves and canopy defoliation determine the recovery of Scots pine 4 yr after a drought episode. New Phytologist 190(3): 750-759. [Incidentally assessing the contribution of *Viscum album* to the decline of *Pinus sylvestris* in NE Spain and concluding that infection reduced leaf nitrogen content, negatively affecting growth.]

Gatto, M.A., Ippolito, A., Linsalata, V., Cascarano, N.A., Nigro, F., Vanadia, S. and di Venere, D. 2011. Activity of extracts from wild edible herbs against postharvest fungal diseases of fruit and vegetables. Postharvest Biology and Technology 61(1): 72-82. [Extracts of *O. crenata* showed high activity against fungi and strongly reduced grey mould, brown rot, and green mould on a range of fruits. The activity was ascribed to the presence of caffeic acid derivatives and/or flavonoids.]

Gaurav Mudgal and Brajesh Mudgal. 2011. Evidence for unusual choice of host and haustoria by *Dendrophthoe falcata* (L.f) Ettingsh, a leafy mistletoe. Archives of Phytopathology and Plant Protection 44(2): 186-190. [Noting simple attachments to *A. squamosa* but a network of epicortical roots on *P. guajava.* Nearby *Mangifera indica* and *Achras sapota,* usual hosts of *D. falcata* not attacked. (Perhaps some other mistletoe species involved?)]

Gaurav Mudgal, Brajesh Mudgal, Gururani, M.A. and Venkatesh Jelli. 2011. *Pseudaulacaspis cockerelli* (Cooley) hyperparasitizing *Dendrophthoe falcata* (L.f) Ettingsh. Archives of Phytopathology and Plant Protection 44(3): 282-286. [The scale insect *P. cockerelli* (Diaspididae) infested *D. falcata* but not the host tree *Senna siamea*.]

Geetha, K.M., Gopal, P.V.V.S.B. and Murugan, V. 2010. Antiepileptic activity of aerial parts of *Viscum articulatum* (Viscaceae) in rats. Journal of Pharmacy Research 3(12): 2886-2887. [Identifying some compounds which could correlate with the use of *V. articulatum* in traditional medicine.]

González-Medina, R.E., Equihua Martínez, A., Mendoza Briseño, M.A. and Cibrián Tovar, D. 2010. Relationship between barkbeetles (Coleóptera: Scolytidae) and vitality in *Pinus hartwegii* Lindl. forests. Ciencia Forestal en Mexico 1(2): 121-133. [Unspecified mistletoes could be a factor in abundance of bark beetles in southern Mexico.]

Gramling, J.M. 2010. Potential effects of Laurel Wilt on the flora of North America. Southeastern Naturalist 9(4): 827-836. [Listing *Cassytha filiformis* among Lauraceae that could be affected by Laurel Wilt.]

Grnhaug, T.E., Ghildyal, P., Barsett, H., Michaelsen, T.E., Morris, G., Diallo, D., Inngjerdingen, M. and Paulsen, B.S. 2010. Bioactive arabinogalactans from the leaves of *Opilia celtidifolia* Endl. ex Walp. (Opiliaceae). Glycobiology 20(12): 1654-1664. [Results suggest *O. celtidifolia*, used in W. Africa for wound healing, has potential for regulating inflammatory processes.]

Guerra, T.J., Camarota, F., Castro, F.S., Schwertner, C.F. and Grazia, J. 2011. Trophobiosis between ants and *Eurystethus microlobatus* Ruckes 1966 (Hemiptera: Heteroptera: Pentatomidae) a cryptic, gregarious and subsocial stinkbug. Journal of Natural History 45(17/20): 1101-1117. [Association between ants and a stinkbug occurring only on *Psittacanthus robustus* (Loranthaceae).]

Harbaugh, D.T., Oppenheimer, H.L., Wood, K.R. and Wagner, W.L. 2010. Taxonomic revision of the endangered Hawaiian red-flowered sandalwoods (*Santalum*) and discovery of an ancient hybrid species. Systematic Botany 35(4): 827-838. [Clarifying the Hawaiian populations into *S. freycinetianum* (only on O'ahu); *S. freycinetianum* var. *lanaiense* re-classified into *S. haleakalae* as *S. haleakalae* var. *lanaiense*, comb nov, and *S. freycinetianum* var. *pyrularium* to be treated at specific rank as *S. pyrularium*. Some populations sympatric with *S. pyrularium* and *S. ellipticum* thought to be an ancient hybrid bewtten them.]

Hasegawa, T., Toriyama, T., Ohshima, N., Tajima, Y., Mimura, I., Hirota, K., Nagasaki, Y. and Yamada, H. 2011. Isolation of new constituents with a formyl group from the heartwood of *Santalum album* L. Flavour and Fragrance Journal 26(2): 98-100. [Identifying santalyl formates in hexane extracts of *S. album* with sandalwood odour and their synthesis from corresponding alcohols.]

He XiangHui, Yang WenZhi, Meng Ahui, He WenNi, Guo DeAn and Ye Min 2010. Two new lignan glycosides from the seeds of *Cuscuta chinensis*. Journal of Asian Natural Products Research 12(11/12): 934-939.

Hejcman, M., Schellberg, J. and Pavlů, V. 2011. Competitive ability of *Rhinanthus minor* L. in relation to productivity in the Rengen Grassland Experiment. Plant, Soil and Environment 57(2): 45-51. [Concluding that a viable population of *R. minor* can only be established if annual aboveground dry matter of vascular plants is below 5 t/ha. The biomass of bryophytes did not matter.]

Hemamalini, K., Srikanth, A., Sunny, G. and Praneethkumar, H. 2011. Phytochemical screening and analgesic activity of methanolic extract of *Ximenia americana*. Current Pharma Research 1(2): 153-156. [Confirming the presence of a range of components in *X. americana* which may be responsible for its antinociceptive activity.]

Hu GaoSheng. Hur YeonJae, Jia JingMing, Lee JaiHeon, Chung YoungSoo, Yi YoungByung, Yun DaeJin, Park SoonKi and Kim DohHoon. 2011. Effects of 2-aminoindan-2-phosphonic acid treatment on the accumulation of salidroside and four phenylethanoid glycosides in suspension cell culture of *Cistanche deserticola*. Plant Cell Reports 30(4): 665-674. [Demonstrating the important role of *PAL* in the biosynthesis of PheGs in the suspension cell culture of *C. deserticola*.]

Hu YanWu and Wang LiLi. 2010. Extraction and content determination of polysaccharide in *Cuscuta japonica* Choisy in Changbai mountain area. Medicinal Plant 1(2): 42-44. [Recording high polysaccharide in *C. japonica* denoting high value as a traditional medicine in this part of China.]

Hutton, R. 2009. Blood & Mistletoe. Yale University Press. 491 pp. [Strong on druids - 'the reliable Hutton has produced a vast, enthralling history of a mysterious cult'. Maybe rather little on *Viscum album*.]

Ilic´, N. 2010. (Parasitic flowering plants.) (in Serbo-Croatian) Naše Šume 9(18/19): 3-9. [Briefly reviewing the economically important *Viscum album*, *Loranthus europaeus*, and unspecified *Arceuthobium*, *Orobanche* and *Cuscuta* spp., and their control in Bosnia Herzegovina.]

Innes, J., Blackford, J. and Simmons, I. 2010. Woodland disturbance and possible land-use regimes during the Late Mesolithic in the English uplands: pollen, charcoal and non-pollen palynomorph evidence from Bluewath Beck, North York Moors, UK. Vegetation History and Archaeobotany 19(5/6): 439-452. [Noting an increase in *Melampyrum* pollen as evidence for fire as an integral part of late Mesolithic ecology.)

Irum Mukhtar, Ibatsam Khokhar and Sobia Mushtaq. 2010. First report on *Cassytha filiformis* L. (Lauraceae), a parasitic weed from Lahore, Pakistan. Pakistan Journal of Weed Science Research 16(4): 451-457. [*C. filiformis* recorded on a range of hosts including *Bougainvillea spectabilis*, *Nerium oleander* and *Ziziphus mauritiana*.]

Jäger, S., Beffert, M., Hoppe, K., Nadberezny, D., Frank, B. and Scheffler, A. 2011. Preparation of herbal tea as infusion or by maceration at room temperature using mistletoe tea as an example. Scientia Pharmaceutica 79(1): 145-155. [Maceration of *Viscum album* extracted 43% of mistletoe lectins, whereas by infusion they are inactivated by thermal degradation.]J

Jamil, M., Charnikhova, T., Cardoso, C., Jamil, T., Ueno, K., Verstappen, F., Asami, T. and Bouwmeester, H.J. 2011. Quantification of the relationship between strigolactones and *Striga hermonthica* infection in rice under varying levels of nitrogen and phosphorus. Weed Research 51(4): 373-385. [Confirming a strong negative correlation between N and particularly P levels and the exudation of strigolactones by rice, the subsequent germination of *S. hermonthica*, and infection of rice. Rice variety IAC 165 exuded 100 times as much strigolactone as variety TN 1.]

Janssen, B.J., Drummond, R.S.M., Ledger, S.E. and Snowden, K.C. 2010.A positive approach to branching. Plant Signaling and Behavior 5(4): 422-424. [Re strigolactones and branching.]

Jawadagi, R.S., Jamadar, M.M., Pattar, P.S. and Inamdar, A.M. 2011. Parasitism of Loranthus on pomegranate (*Punica granatum* L.) - a new host record from north Karnataka (India). Journal of Plant Disease Sciences 6(1): 81. [Apparently a new record for an unspecified *Dendrophthoe*.]

Jaya Arora, Shaily Goyal and Ramawat, K.G. 2010. Enhanced stilbene production in cell cultures of *Cayratia trifolia* through co-treatment with abiotic and biotic elicitors and sucrose. In Vitro Cellular & Developmental Biology – Plant 46(5): 430-436. [An extract of *Cuscuta reflexa* increased polyphenol oxidase activity and stilbene production.]

Jiofack, R.T., Dondjang, J.P. and Nkongmeneck, B.A., 2010. (The Loranthaceae of the Bafou area in Cameroon: identification, distribution, biology and eradication strategies.) (in French) In: van der Burgt, X., van der Maesen, J. and Onana, J.M. (Eds.) Systematics and conservation of African plants. Proceedings of the 18th AETFAT Congress, Yaoundé, Cameroun, 26 February to 2 March 2007, pp 229-235. [Identifying 4 mistletoes on a wide range of hosts, *Phragmanthera capitaa* being 'ubiquitous', *Agelanthus brunneus*, *Globimetula braunii* and *G. dinklagei* less common.]

Joel, D.M., Chaudhuri, S.K., Plakhine, D., Ziadna, H. and Steffens, J.C. 2011. Dehydrocostus lactone is exuded from sunflower roots and stimulates germination of the root parasite *Orobanche cumana*. Phytochemistry 72(7): 624-634. [Noting that *O.*

cumana does not germinate in response to strigolactones (though *O. cernua* does), and identifying the natural stimulant from sunflower, as the guaianolide sesquiterpene lactone, dehydrocostus lactone (DCL). In contrast to strigolactones, the production/exudation of DCL is reduced by P starvation and is not inhibited by fluridone.]

Jones, B.L., Waycott, M., Robson, H.L.A., Calladine, A. and Page, T. 2010. Isolation and characterization of microsatellite loci in *Santalum lanceolatum* and *Santalum leptocladum* (Santalaceae). American Journal of Botany 97(10): e97-e98.

Jones, C.G., Moniodis, J., Zulak, K.G., Scaffidi, A., Plummer, J.A., Ghisalberti, E.L., Barbour, E.L. and Bohlmann, J. 2011. Sandalwood fragrance biosynthesis involves sesquiterpene synthases of both the terpene synthase (TPS)-a and TPS-b subfamilies, including santalene synthases. Journal of Biological Chemistry 286(20): 17445-17454. [Comparing enzyme activities in *Santalum album*, *S. austrocaledonicum* and *S. spicatum*.]

Ju AiHua, Ao GeRiletu and Zhou Kai 2011. (Determination of echinacoside and acteoside in herbs of *Cistanche salsa* (C.A.Mey.) G.Beck of Inner Mongolia.) (in Chinese) China Journal of Traditional Chinese Medicine and Pharmacy 26(1): 178-180.

Kaitera, J. and Nuorteva, H. 2010. Effects of *Melampyrum* extracts on the growth of axenic cultures of *Cronartium flaccidum* and *Peridermium pini*. Silva Fennica 44(2): 197-202. [Variable results obtained with extracts from *Melampyrum pratense*, *M. sylvaticum* and *M. nemorosum*.)

Kapulnik, Y., Delaux, P.M., Resnick, N., Mayzlish-Gati, E., Wininger, S., Chaitali Bhattacharya, Séjalon-Delmas, N., Combier, J.P., Bécard, G., Belausov, E., Beeckman, T., Dor, E., Hershenhorn, J. and Koltai, H. 2011. Strigolactones affect lateral root formation and root-hair elongation in *Arabidopsis*. Planta 233(1): 209-216. [Strigolactones have a positive effect on root hair elongation in *Arabidopsis.* Ethylene is required for this positive effect but auxin seems to act on roothairs independently of strigolactones.]

Kapulnik, Y., Resnick, N., Mayzlish-Gati, E., Kaplan, Y., Wininger, S., Hershenhorn, J. and Koltai, H. 2011. Strigolactones interact with ethylene and auxin in regulating root-hair elongation in *Arabidopsis*. Journal of Experimental Botany 62(8): 2915-2924. [Strigolactones inhibit lateral root outgrowth.]

Karthigeyan, K., Sumathi, R., Jayanthi, J. and Diwakar, P.G. 2011. New reports to the flora of Andaman and Nicobar Islands, from Mahatma Gandhi Marine National Park, South Andaman. Indian Forester 137(5): 653-656. [Recording *Scurrula parasitica* (Loranthaceae).]

Kawamura, F., Shaharuddin, N.A., Sulaiman, O., Hashim, R. and Ohara, S. 2010. Evaluation on antioxidant activity, antifungal activity and total phenols of 11 selected commercial Malaysian timber species. JARQ, Japan Agricultural Research Quarterly 44(3): 319-324. [The heartwood of 'kulim' - *Scorodocarpus borneensis* (Olacaceae) - showed the highest antifungal activity against the white-rot fungus *Pycnoporus sanguineus*.]

Kennedy, A.H., Taylor, D.L. and Watson, L.E. 2011. Mycorrhizal specificity in the fully mycoheterotrophic *Hexalectris* Raf. (Orchidaceae: Epidendroideae). Molecular Ecology 20(6): 1303-1316.

Khan, Z.R., Midega, C.A.O., Bruce, T.J.A., Hooper, A.M. and Pickett, J.A. 2010. Exploiting phytochemicals for developing a 'push-pull' crop protection strategy for cereal farmers in Africa. Journal of Experimental Botany 61(15): 4185-4196. [Reviewing the 'push-pull' technique, including the use of *Desmodium* for control of *Striga hermonthica* in maize and claiming 30,000 farmers have taken up the technique with yields greatly increased.]

Kĭrmĭzĭbekmez, H., Atay, I., Kaĭser, M., Brun, R., Cartagena, M.M., Carballeira, N.M., Yesĭlada, E. and Tasdemĭr, D. 2011. Antiprotozoal activity of *Melampyrum arvense* and its metabolites. Phytotherapy Research 25(1): 142-146. [Identifying 12 compounds from *M. arvense* in Turkey, and showing activity of luteolin against *Trypanosoma brucei rhodesiense* and *Leishmania donovani* and of luteolin 7-*O*-β-glucopyranoside against *Plasmodium falciparum*.]

Kitahata, N., Ito, S., Kato, A., Ueno, K., Nakano, T., Yoneyama, K., Yoneyama, K. and Asami, T. 2011 Abamine as a basis for new designs of regulators of strigolactone production. Journal of Pesticide Science 36(1): 53-57. [Abamine, a known inhibitor of abscisic acid biosynthesis, is shown also to inhibit strigolactone synthesis and reduce the germination of *Orobanche minor* on tobacco roots.]

Kliejunas, J.T., Geils, B.W., Glaeser, J.M., Goheen, E.M., Hennon, P., Kim MeeSook, Kope, H., Stone, J., Sturrock, R. and Frankel, S.J. 2009. Review of literature on climate change and forest diseases of western North America. Pacific Southwest Research Station, USDA Forest Service, Berkeley, USA, General Technical Report - Pacific Southwest Research Station, USDA Forest Service, PSW-GTR-225, pp 54. (Including consideration of mistletoes, unspecified in abstract.]

Koga, C., Mwenje, E. and Garwe, D. 2011. Germination stimulation of *Striga gesnerioides* seeds from tobacco plantations by hosts and non-hosts. Journal

of Applied Biosciences 2011(37): 2453-2459. [*S. gesnerioides* from tobacco in Zimbabwe was stimulated to germinate by potential trap crops *Phaseolus vulgaris*, groundnut, pigeon pea and cowpea. Cowpea was not parasitised.]

Kohlen, W., Charnikhova, T., Liu Qing, Bours, R., Domagalska, M.A., Beguerie, S., Verstappen, F., Leyser, O., Bouwmeester, H. and Ruyter-Spira, C. 2011. Strigolactones are transported through the xylem and play a key role in shoot architectural response to phosphate deficiency in nonarbuscular mycorrhizal host *Arabidopsis*. Plant Physiology 155(2): 974-987. [Analytical proof that MAX1 in *Arabidopsis* is indeed required for strigolactone biosynthesis. First evidence that strigolactones in the host are transported through the xylem.]

Koltai, H.2011. Strigolactones are regulators of root development. New Phytologist 190(3):545-549. [Reviewing the role of strigolactones in root development and as coordinators of shoot and root development and mediators of plant responses to environmental conditions.)

Koltai, H. and Kapulnik, Y. 2011. Strigolactones as mediators of plant growth responses to environmental conditions. Plant Signaling and Behavior 6(1): 37-41. [Reviewing the effects of strigolactones on shoot and root development, and possible feedback loops between strigolactones and light and nutrient status.]

Koudouvo, K., Karou, S.D., Ilboudo, D.P., Kokou, K., Essien, K., Aklikokou, K., de Souza, C., Simpore, J. and Gbéassor, M. 2011. In vitro antiplasmodial activity of crude extracts from Togolese medicinal plants. Asian Pacific Journal of Tropical Medicine 4(4): 129-132. [*Opilia celtidifolia* among species tested but not listed among those with activity.]

Kumar, A.N.A., Srinivasa, Y B, Geeta Joshi and Seetharam, A. 2011. Variability in and relation between tree growth, heartwood and oil content in sandalwood (*Santalum album* L.). Current Science 100(6): 827-830. [Apparently concluding that maximum oil content in *S. album* comes with maximum growth rate.]

Labrousse, P., Delmail, D., Arnaud, M.C. and Thalouarn, P. 2010. Mineral nutrient concentration influences sunflower infection by broomrape (*Orobanche cumana*). Botany 88(9): 839-849. [Increased nutrient increased susceptibility of a susceptible sunflower to *O. cumana* but decreased that of a resistant variety.]

Lawrence, B.M. 2009. Progress in essential oils. Perfumer & Flavorist 34(5): 52-56. [Including tabulated data on the composition of sandalwood oils from *Santalum album* in India and Java.]

Lepší, M. and Lepší, P. 2010. (The finds of interesting and new plants in the Southern Bohemian flora XVI.) (in Czech) Sborník Jihočeského Muzea v Českých Budeďovicích, Přírodní Veďy 50: 75-96. [Including *Orobanche purpurea* ssp. *purpurea*.]

Li LinNa, Zhang HuaDong, Zhi Run and Yuan ShouJun. 2011. Down-regulation of some miRNAs by degrading their precursors contributes to anti-cancer effect of mistletoe lectin-I. British Journal of Pharmacology 162(2): 349-364. [A lectin from *Viscum album* ssp. *coloratum* down-regulates some miRNAs by degrading their precursors, contributing to its prominent anti-cancer activity.]

Li YongHua, Ruan JinLan, Chen ShiLin, Song JingYuan, Luo Kun, Lu Dong and Yao Hui 2010. Authentication of *Taxillus chinensis* using DNA barcoding technique. Journal of Medicinal Plants Research 4(24): 2706-2709. [RbcL, matK, psbA-trnH and ITS were screened against seven genera and 13 species of Loranthaceae (not loranthus as indicated) and psbA-trnH was found to be sufficiently variable to distinguish the medicinal species, *Taxillus chinensis*, from relatives.]

Liebel, H.T. and Gebauer, G. 2011.Stable isotope signatures confirm carbon and nitrogen gain through ectomycorrhizas in the ghost orchid *Epipogium aphyllum* Swartz. Plant Biology 13(2): 270-275. [Confirming that *E. aphyllum* is an epiparasitic mycoheterotrophic orchid that depends on ectomycorrhizal *Inocybe* and *Hebeloma* to obtain C and N through a tripartite system linking it through fungi with forest trees.)

Liu XiaoJin, Xu DaPing, Zhang NingNan, Xie ZhengSheng and Chen HaoFu. 2010. (Effects of pot host configuration on the growth of Indian sandalwood (*Santalum album*) seedlings in South China.) (in Chinese) Forest Research, Beijing 23(6): 924-927. [Studying optimum configuarion of the host *Brickellia rosmarinifolia*.]

.Liu XiaoJin, Xu DaPing, Zhang NingNan, Xie ZhengSheng and Chen HaoFu. 2010. Effects of gibberellins on seed germination and seedling growth of sandalwood (*Santalum album*). Seed 29(8): 71-74. [The optimal treatment was 800 mg GA_3/litre for 6 h.]

López-Ráez, J.A., Charnikhova, T., Fernández, I., Bouwmeester, H. and Pozo, M.J. 2011. Arbuscular mycorrhizal symbiosis decreases strigolactone production in tomato. Journal of Plant Physiology 168(3): 294-297. [Showing that the observed reduction of root parasitic plant infection in mycorrhizal hosts is likely the consequence of a reduced strigolactone production – also see Breuillin *et al.*]

Magani, E.I., Ibrahim, A. and Ahom, R.I. 2010. Sustainable control of *Striga hermonthica* in maize [*Zea mays* L.) by the use of *Parkia biglobosa* based products and post-emergence herbicides. Advances

in Environmental Biology 4[2): 258-264. [*S. hermonthica* was reduced and maize yields increased by 20 minute soaking of maize seeds in a fruit and seed powder suspension of *P. biglobosa* before planting, with or without post-emergence application of 2,4-D or triclopyr.]

Magani, E.I., Ibrahim, A. and Ahom, R.I. 2011. Integrated management of parasitic plant *Striga hermonthica* in maize using *Fusarium oxysporum* (mycoherbicide) and post-emergence herbicides in the Nigerian Savanna. Tropical and Subtropical Agroecosystems 14(2): 731-738. [A granular formulation of *F. oxysporum* contributed to the best results, in combination with a resistant maize variety, 'Across 97 TZL' and post emergence tricolpyr + 2,4-D.]

Mahdi, H.S.A. 2010. Participatory rural appraisal of the Tihama Plain beekeepers in Yemen. Arab Gulf Journal of Scientific Research 28(1): 56-66. [Noting the occurrence of an undefined '*Loranthus*' sp. on *Zizyphus spina* in Yemen.]

Maikai, V.A., Kobo, P.I. and Maikai, B.V.O. 2010. Antioxidant properties of *Ximenia americana*. African Journal of Biotechnology 9(45): 7744-7746. [Confirming potential antioxidant activity in *X. americana* (Olacaceae).]

Malik, H., Kohlen, W., Jamil, M., Rutjes, F.P.J.T. and Zwanenburg, B. 2011. Aromatic A-ring analogues of orobanchol, new germination stimulants for seeds of parasitic weeds. Organic & Biomolecular Chemistry 9(7): 2286-2293. [Synthetic aromatic A-ring analogues of orobanchol are active as germination stimulants, with the natural relative configuration being most active. The data also suggest that hydrogen bonding is not important for the binding of the stimulant to the receptor.]

Manikandan, R. and Srivastava, S.K. 2010. Note on parasite-host interaction of *Cassytha filiformis* L. (Lauraceae). Indian Journal of Forestry 33(4): 637-638. [A general description of *C. filiformis*, newly recorded in Jammu/Kashmir.]

Marquardt, E.S. and Pennings, S.C. 2011. Diet mixing in a parasitic plant: adaptation or constraint? Plant Ecology 212(1): 69-77. [*Cuscuta indecora* grew more strongly on *Iva frutescens* than on *Borrichia frutescens*, but was also able to thrive on the latter.]

Mathiasen, R. 2011. Susceptibility of conifers to three dwarf mistletoes in the Klamath-Siskiyou Mountains. Western Journal of Applied Forestry 26(1): 13-18. [Western white pine and mountain hemlock were principal hosts of *Arceuthobium monticola* and *A. tsugense* ssp. *mertensianae*, respectively. Brewer spruce and red fir were principal hosts of *A. abietinum* ssp. *wiensii*.]

Mathiasen, R.L. and Daugherty, C.M. 2010. Susceptibility of brewer Spruce (*Picea breweriana*) to dwarf mistletoes (*Arceuthobium* spp., Viscaceae). Northwest Science 8(3): 295-301. [A survey in NW USA concluded that *P. breweriana* acts as a primary host of both *Arceuthobium monticola* and *A. abietinum* ssp. *wiensii*, and a secondary host of *A. tsugense* ssp. *mertensianae*.]

Meena, K.L. and Yadav, B.L. 2010. Studies on ethnomedicinal plants conserved by Garasia tribes of Sirohi district, Rajasthan, India. Indian Journal of Natural Products and Resources 1(4): 500-506. [*Viscum articulatum* among 'red data' species conserved in the district.]

Mill, R.R. 2011. Revision of *Pedicularis* series *Tenuirostres* (Orobanchaceae). Edinburgh Journal of Botany 68(1): 61-109. [Correcting the name of the series from Pectinatae to Tenuirostres and describing 12 species, including one new *P. yamazakiana* from Nepal, and some changes to nomenclature of others.]

Mill, R.R. 2011. Revision of the limits of *Pedicularis* series *Megalanthae* (Prain) Bonati (Orobanchaceae). Edinburgh Journal of Botany 68(1): 111-138. [Reducing the number of species in this Himalayan series to 6 and transferring 2 species into a new series Bicornutae.]

Misiko, M., Tittonell, P., Giller, K.E. and Richards, P. 2011. Strengthening understanding and perceptions of mineral fertilizer use among smallholder farmers: evidence from collective trials in western Kenya. Agriculture and Human Values 28(1): 27-38. [Noting an interaction between P-response and *Striga hermonthica* but result not clearly presented. Incidentally noting poor results from imidazolinone-herbicide-coated maize seed.]

Mitra, P., Barman, P.C. and Chang KyuSeob. 2011. Coumarin extraction from *Cuscuta reflexa* using supercritical fluid carbon dioxide and development of an artificial neural network model to predict the coumarin yield. Food and Bioprocess Technology 4(5): 737-744. [Relating to the use of *C. reflexa* in traditional medicine for blood-thinning, anti-fungicidal and anti-tumor activities, increasing the blood flow in the veins and decreasing capillary permeability.]

Mohamed, A.H., Housley, T.L. and Ejeta, G. 2010. Inheritance of hyper sensitive response to *Striga* parasitism in sorghum [*Sorghum bicolor* (L.) Moench]. African Journal of Agricultural Research 5(19): 2720-2729. [Concluding that the strong hypersensitive response in sorghum lines CK32 and KP33 is controlled by two nuclear genes with dominant gene action.]

Moore, M.J. and 16 others. 2011. Phylogenetic analysis of the plastid inverted repeat for 244 species: insights into deeper-level angiosperm relationships from a long, slowly evolving sequence region.

Journal of Plant Sciences172(4): 541-558. [IR analyses of 246 taxa resolved Pentapetalae into three well-supported clades: (1) superasterids (comprising Santalales, Caryophyllales, Berberidopsidales, and Asteridae), (2) superrosids (comprising Vitaceae, Saxifragales, and Rosidae), and (3) Dilleniaceae. Other parasitic plants sampled were *Cuscuta* (Solanales), *Epifagus* (Lamiales), *Cynomorium* (Rosales or Fabidae)]

Morton, C.M. 2011. Newly sequenced nuclear gene (Xdh) for inferring angiosperm phylogeny. Annals of the Missouri Botanical Garden 98(1): 63-89. [Nuclear xanthine dehydrogenase was sequenced for 247 genera of seed plants, including one parasitic plant (*Osyris*, Santalaceae). Maximum likelihood tree topologies generally reflected previous unigene studies.]

Mothana, R.A.A., Kriegisch, S., Harms, M., Wende, K. and Lindequist, U. 2011. Assessment of selected Yemeni medicinal plants for their *in vitro* antimicrobial, anticancer, and antioxidant activities. Pharmaceutical Biology 49(2): 200-210. [Recording anti-bacterial and anti-oxidant activity in extracts of *Phragmanthera regularis* (Loranthaceae).]

Mounnissamy, V.M., Subramanian Kavimani, Quine, S.D. and Kuppuswamy Subramani. 2011. Phytochemical investigation of *Cansjera rheedii* J.Gmelin (Opiliaceae). Journal of Pharmacy Research 4(1): 237-340. [Identifying 5 compounds from an ethanol extract of *C. rheedii* of possible relevance to its medicinal use in India.]

Mounnissamy, V.M., Subramanian Kavimani, Vaithialingam Balu, Gnanapragasam Sankari and Quine, S.D. 2009. Anti-nociceptive activity of *Cansjera rheedii* J. Gmelin (Opiliaceae). Maejo International Journal of Science and Technology 3(3): 306-312. [The ethanolic extract of *C. rheedii* exhibits anti-nociceptive activity comparable with standard drugs.]

*Mower, J.P., Stefanovic, S., Hao, W.L., Gummow, J.S., Jain, K., Ahmed, D. and Palmer, J.D. 2010. Horizontal acquisition of multiple mitochondrial genes from a parasitic plant followed by gene conversion with host mitochondrial genes. BMC Biology 8(150): 15 pp. (http://www.biomedcentral.com/content/pdf/1741-7007-8-150.pdf) [Suggesting that multiple mitochondrial genes were transferred in a single event from *Cuscuta gronovii* to *Plantago* via a DNA intermediate.]

Muhammad, S. and Amina, L.Y. 2009.Responses of some cowpea varieties to two *Striga* stains in Nigeria. Journal of Phytology 1(5): 302-307. [Reporting variable response of a range of cowpea varieties, in pots, to 2 populations of *S. gesnerioides* from N. Nigeria but no consistent difference between the two, which were both resisted by variety B301.]

Mulaudzi, R.B., Ndhlala, A.R., Kulkarni, M.G., Finnie, J.F. and van Staden, J. 2011. Antimicrobial properties and phenolic contents of medicinal plants used by the Venda people for conditions related to venereal diseases. Journal of Ethnopharmacology 135(2): 330-337. [Extracts of *Ximenia caffra* (Olacaceae), used in traditional medicine in S. Africa, shown to have activity against HIV-type 1 reverse transcriptase factor perhaps associated with high content of flavonoids and/or condensed tannins.]

Munodawafa, T., Chagonda, L.S., Viol, I.D., Muchuweti, M., Moyo, S.R. and Chipurura, B. 2010. Total phenolic content and antioxidant activity of some Zimbabwean traditional medicinal plants. In: Singh, V.K. and Govil, J.N. (eds) Drug plants IV: Recent Progress in Medicinal Plants, 30: 215-225. [Noting high total phenolics in *Ximenia caffra* (Olacaceae) but poor correlation between total phenolics and antioxidant activity.]

Munteanu, M.F. and Vlase, L. 2011. The determination of the iridoids from the *Melampyrum* species by modern chromatographic methods. Notulae Botanicae, Horti Agrobotanici, Cluj-Napoca 39(1): 79-83.

Murage, A.W, Amudavi, D.M., Obare, G., Chianu, J., Midega, C.A.O., Pickett, J.A. and Khan, Z.R. 2011. Determining smallholder farmers' preferences for technology dissemination pathways: the case of 'push-pull' technology in the control of stemborer and *Striga* weeds in Kenya. International Journal of Pest Management 57(2): 133-145. [Less educated farmers opted for field days, farmers with small land sizes for farmer teachers, farmers belonging to groups for farmer field schools, and young educated farmers for printed materials.]

Murage, A.W., Obare, G., Chianu, J., Amudavi, D.M., Pickett, J. and Khan, Z.R. 2011. Duration analysis of technology adoption effects of dissemination pathways: a case of 'push-pull' technology for control of *Striga* weeds and stemborers in Western Kenya. Crop Protection 30(5): 531-538. [Field days and Farmer Teachers had the highest effect on the speed of uptake. Other variables that accelerated adoption were education, household size and high-income level.]

Muranaka, S., Fatokun, C. and Boukar, O. 2011. Stability of *Striga gesnerioides* resistance mechanism in cowpea under high-infestation level, low soil fertility and drought stresses. Journal of Food, Agriculture & Environment 9(2/1): 313-318. [The resistance of cowpea genotypes B301, IT97K-499-35 and IT98K-205-8 to the Nigerian *S. gesnerioides* race SG3 was maintained at very high

infestation levels and under conditions of drought stress and low soil fertility.]

Mwakaboko, A.S. and Zwanenburg, B. 2011. Strigolactone analogs derived from ketones using a working model for germination stimulants as a blueprint. Plant and Cell Physiology 52(4): 699-715. [Analogs derived from the cyclic ketones,1-indanone and 1-tetralone have activity comparable with that of GR 24, while those derived from 2-phenyl-cylohexanone, carvone and pulegone also have good activity.]

Nagaraja, T.G., Nare, R.B., Laxmikant, V. and Patil, B. 2010. In vitro screening of antimicrobial activity of *Orobanche aegyptiaca*. Journal of Biopesticides 3(3): 548-549. [An acetone extract of *O. aegyptiaca* showed some antifungal activity.]

Nagata, J.M., Jew, A.R., Kimeu, J.M., Salmen, C.R., Bukusi, E.A. and Cohen, C.R. 2011. Medical pluralism on Mfangano Island: use of medicinal plants among persons living with HIV/AIDS in Suba District, Kenya. Journal of Ethnopharmacology 135(2): 501-509 [Noting that extracts of *Ximenia americana* (Olacaeae) are commonly used in conjunction with conventional drugs in the treatment if HIV.]

Nageswara-Rao, M., Padmini, S., Ganeshaiah, K.N., Shaanker, R.U. and Soneji, J.R. 2008. Indian sandalwood crisis. Perfumer & Flavorist 33(10): 10, 38-43. [Reviewing the status of *Santalum album* in India, an important source of foreign exchange for the country.]

Nelson, D.C., Scaffidi, A., Dun, E.A., Waters, M.T., Flematti, G.R., Dixon, K.W., Beveridge, C.A., Ghisalberti, E.L. and Smith, S.M. 2011. F-box protein MAX2 has dual roles in karrikin and strigolactone signaling in *Arabidopsis thaliana*. Proceedings of the National Academy of Sciences of the United States of America 108(21): 8897-8902. [Both the response of seeds to strigolactones – the induction of germination of root parasitic plants - and the smoke-derived karrikins - that induce germination of some post-fire pioneer species – require MAX2, suggesting that a similar biological mechanism was adapted in these two groups of species to be able to respond to an exogenous germination cue.]

Nickrent, D.L. 2011. Santalales (Including Mistletoes) In: Encyclopedia of Life Science John Wiley & Sons, Ltd. Chichester. [DOI: 10.1002/9780470015902.a0003714.pub2]. [A brief but up-to-date review of the sandalwood order, with particular focus upon mistletoes.]

Nickrent, D. L., Boufford, D. E. and Kuijt, J. 2010. Proposal to conserve the name *Viscum serotinum* (*Phoradendron serotinum*) against *Viscum leucarpum* (Viscaceae). Taxon 59: 1903-1004. [The convoluted nomenclatural history of this mistletoe is reviewed and the name *P. serotinum* proposed for conservation.]

Nipun Dashora;, Vijay Sodde, Prabhu, K.S. and Lobo, R. 2011 *In vitro* cytotoxic activity of *Dendrophthoe falcata* on human breast adenocarcinoma cells-MCF-7. Journal of Cancer Research (USA) 7(1): 47-54. [Extracts from *D. falcata* showed promising activity against human breast cancer cells.]

Noubissietchiagam, J.B., Bell, J.M., Guissaibirwe, S., Gonne, S., Youmbi, E., Hamon, S., Pamfil, D. and Sestras, R. 2010. Varietal response of cowpea (*Vigna unguiculata* (L.) Walp.) to *Striga gesnerioides* (Willd.) Vatke race SG5 infestation. Notulae Botanicae, Horti Agrobotanici, Cluj-Napoca 38(2): 33-41. [Total resistance to the SG5 race of *S. gesnerioides* in N. Cameroon shown by 2 cowpea varieties, that of IT99K-573-1-1 based on two dominant genes and that of IT98K-205-8 by a single dominant gene. Yield losses in susceptible varieties varied from 25 to 40%.]

Nowak, G. 2010. Plant raw materials and natural substances influencing the immune system. Herba Polonica 56(2): 79-91. (Noting immunostimulatory activity from extracts of *Viscum album*.]

Obiang-Obounou, B.W., Kang OkHwa, Choi JangG, Keum JoonHo, Kim SungBae, Kim YongSik, Mun SuHyun, Choi MiSun, Maroufath, L. and Kwon DongYeul. 2011. Evaluation of the antimicrobial activity of seven Gabonese medicinal plants against methicillin-resistant *Staphylococcus aureus* and *Salmonella.* Natural Product Sciences 17(1) 33-37. [*Strombosiopsis tetrandra* (Olacaaceae) among species showing activity against MRSA.]

Odhiambo, J.A., Vanlauwe, B., Tabu, I.M., Kanampiu, F. and Khan, Z. 2011. Effect of intercropping maize and soybeans on *Striga hermonthica* parasitism and yield of maize. Archives of Phytopathology and Plant Protection 44(2): 158-167. [Among a range of soyabean varieties, ability to stimulate germination of *S. hermonthica* varied from 8-66%. Intercropping with certain varieties led to lower *S. hermonthica* and increased maize yield.]

Ofem, O.E., Ani, E.J., Okoi, O.C., Effiang, A.U., Eno, A.E. and Ibu, J.O. 2010. *Viscum album* (mistletoe) extract ameliorates the adverse effects of high salt load on some serum electrolytes, organ weight and cytoarchitecture in rats. Australian Journal of Basic and Applied Sciences 4(12): 6223-6232.

Ogbebor, O.N., Omorusi, I.V. and Evueh, A.G. 2007. Evaluation of nine *Hevea brasiliensis* clones for mistletoe infestation and the effect on latex yield. Natural Rubber Research 20(1/2): 87-89. [Rubber apparently affected by mistletoes in Nigeria, but no useful detail.]

Ogi, T., Higa, M.and Maruyama, S. 2011. Melanin synthesis inhibitors from *Balanophora fungosa*. Journal of Agricultural and Food Chemistry 59(4): 1109-1114. [Two compounds from *B. fungosa* prevented pigmentation of melanin in a cultured human skin model. They also inhibited the action of trypsin and tryptase.]

Oh HyunKyung, Han YunHee, and Kim DalHo 2010. Vegetation and flora in the Cheonbansan (Mt), Jinan. Journal of Korean Nature 3(2): 103-116. [Including *Cuscuta pentagona*.]

O'Hara, K.L., Youngblood, A. and Waring, K.M. 2010. Maturity selection versus improvement selection: lessons from a mid-20th century controversy in the silviculture of ponderosa pine. Journal of Forestry 108(8): 397-407. [*Arceuthobium* sp. noted as a factor influencing choice of management system.]

Olaku, O. and White, J.D. 2011. Herbal therapy use by cancer patients: a literature review on case reports. European Journal of Cancer 47(4): 508-514. [Reviewing a wide range of studies including 6 on use of mistletoe, presumably *Viscum album*. No detail in abstract.]

Oliveira, F.C.S., Barros, R.F.M. and Moita Neto, J.M. 2010. (Medicinal plants used in rural communities from Oeiras Municipality, in the semi-arid region of Piauí State (PI), Brazil.) (in Portuguese) Revista Brasileira de Plantas Medicinais 12(3): 282-301. [Including *Ximenia americana* (Olacaceae).]

Ormeño Núñez, J. 2010. (Dodder (*Cuscuta suaveolens* Syr.), mistletoe (*Tristerix corymbosus* L.) and broomrape (*Orobanche ramosa* L.): parasitic weeds of economic importance in Chile.) (in Spanish) Agro-Ciencia 26(2): 109-119. [Noting the importance of *C. suaveolens* on lucerne and sugar beet, *O. ramosa* on Solanaceae, especially tomato, and *T. corymbosa* on *Populus* and *Salix* species.]

Osadebe, P.O., Omeje, E.O., Uzor, P.F., David, E.K. and Obiorah, D.C. 2010. Seasonal variation for the antidiabetic activity of *Loranthus micranthus* methanol extract. Asian Pacific Journal of Tropical Medicine 3(3): 196-199. [Activity of '*L. micranthus*' highest at the peak of the rainy season. N.B. we are still not certain of the proper name for this species.]

Ouedraogo, M., Ruiz, M., Vardelle, E., Carreyre, H., Coustard, J.M., Potreau, D., Sawadogo, L.L., Cognard, C., Becq, F., Vandebrouck, C. and Bescond, J. 2011. From the vasodilator and hypotensive effects of an extract fraction from *Agelanthus dodoneifolius* (DC) Danser (Loranthaceae) to the active compound dodoneine. Journal of Ethnopharmacology 133(2): 345-352. [Demonstrating the hypotensive property of the dodoneine present in *A. dodoneifolius*.]

Pampi Ghosh, Debabrata Das and Manika Das 2011. Phytodiversity of parasitic hosts of *Cuscuta reflexa* Roxb. in Cooch Behar district of West Bengal. Environment and Ecology 29(2): 588-591. [Recording 58 hosts for *C. reflexa* in 31 families.]

Papayiannis, L.C., Katis, N.I., Idris, A.M. and Brown, J.K. 2011. Identification of weed hosts of *Tomato yellow leaf curl virus* in Cyprus. Plant Disease 95(2): 120-125. [TYLCV detected in at least one species of Orobanchaceae.]

Patrick-Iwuanyanwu, K.C., Onyeike, E.N. and Wegwu, M.O. 2010. Anti-inflammatory effect of crude methanolic extract and fractions of African mistletoe *Tapinanthus bangwensis* (Engl. & K. Krause) on wistar albino rats. Der Pharmacia Lettre 2(6): 76-83. [Finding some justification for the use of *T. bangwensis* as an anti-inflammatory.]

Paun, G., Rotinberg, P., Mihai, C., Neagu, E. and Radu, G.L. 2011. Cytostatic activity of *Viscum album* L. extract processed by microfiltration and ultrafiltration. Romanian Biotechnological Letters 16(2): 6000-6007. [Comparing different extraction procedures on the activity of *V. album* extracts on HeLa cancerous cells.]

Pernitsky, K.Y., Mason, Q.D., Cinel, B. and Friedman, C.M.R. 2011. Discovery and partial purification of an antibiotic from lodgepole pine dwarf mistletoe (*Arceuthobium americanum*) active against gram-positive organisms including methicillin-resistant *Staphylococcus aureus* (MRSA). Journal of Medicinal Plants Research 5(9): 1722-1727.

Petrus, A.J.A. 2011. Antioxidative constitution of the mistletoe, *Viscum capitellatum* Smith. Asian Journal of Chemistry 23(7): 3014-3020. [Confirming anti-oxidant activity in extracts of *Viscum capitellatum*, hyperparasitic on *Dendrophthoe falcata*, parasitising *Albizzia lebbeck* and identifying a range of potential active ingredients.]

Pettengill, J.B. and Neel, M.C. 2011. A sequential approach using genetic and morphological analyses to test species status: the case of United States federally endangered *Agalinis acuta* (Orobanchaceae). American Journal of Botany 98(5): 859-871. [Concluding that *A. acuta* is not a distinct species and should be synonymized under *A. decemloba*.)

Pfiz, M. and Küppers, M. 2010. Dense crowns of the hemiparasitic mistletoe *Viscum album* L. exhibit shrub-like growth and high dry matter turnover. Flora (Jena) 205(12): 787-796. [Comparing relative growth rates, leaf area densities and leaf longevity in three subspecies of *Viscum album* on their respective hosts *Betula pendula*, *Abies alba* and *Pinus sylvestris* and questioning whether photoautotrophic carbon gain of the leaves is sufficient to maintain the observed high relative growth rates.]

Pickett, J.A., Hamilton, M.L., Hooper, A.M., Khan, Z.R. and Midega, C.A.O. 2010. Companion cropping to manage parasitic plants. Annual Review of Phytopathology 2010(48): 161-177. (A general review but with emphasis on the use of *Desmodium* spp. in the control of *Striga* spp.) [A general review but with emphasis on the use of *Desmodium* spp. in the control of *Striga* spp. Including a plea for study of the mechanism by which companion crops are effective in order to further optimise this control technique.]

Piwowarczyk, R., Nobis, M. and Przemyski, A. 2009. *Orobanche bartlingii* Griseb. (Orobanchaceae) in Poland: taxonomical position, distribution and habitat requirements.Biodiversity: Research and Conservation 2009(13): 3-8. [Recording some new localities and diagnostic features that distinguish *O. bartlingii* from *O. alsatica*.]

Polesna, L., Polesny, Z., Clavo, M.Z., Hansson, A. and Kokoska, L. 2011. Ethnopharmacological inventory of plants used in Coronel Portillo Province of Ucayali Department, Peru. Pharmaceutical Biology 49(2): 125-136. [Noting the use of *Phthirusa pyrifolia* (Loranthaceae) in local medicine, but also the lack of evidence for its value.]

Prajs, B. 2010. *Orobanche purpurea* on its newly discovered site near Zaton´ Dolna (NW Poland): the problem of protection of a threatened parasitic plant species. Biodiversity: Research and Conservation 2010(17): 33-38. [Regretting the decline in a population of *O. purpurea*, associated with a decline in its host *Achillea millefolium*.]

Praveen Pothala, Majumdar, D.D. and Satyahari Dey. 2010. Phenylpropanoid profiling in the elicited sandalwood culture. Journal of Medicinal and Aromatic Plant Sciences 32(4): 432-436. [Profiling phenylpropanoids in embryogenic suspension culture of *Santalum album*.]

Prider, J.N., Facelli, J.M. and Watling, J.R. 2011. Multispecies interactions among a plant parasite, a pollinator and a seed predator affect the reproductive output of an invasive plant, *Cytisus scoparius*. Austral Ecology 36(2): 167-175. [The native *Cassytha pubescens* reduced flowering of the invasive *Cytisus scoparius* in S. Australia by 50%. There were minor interactions with the pollinator *Apis mellifera* and a seed predator, *Bruchidius villosus.*)

Priyanka Das, Manoranjan Kar and Santilata Sahoo. 2011. In vitro hormone-regulated growth and floral induction of *Cuscuta reflexa*: a parasitic angiosperm. Acta Physiologiae Plantarum 33(3): 1031-1035. [Supplementation of Murashige and Skoog medium with 2,4-D induced flowering of *C. reflexa*. Additional NAA resulted in shoot elongation followed by flowering.]

Qin MingFang, Xie JinXian, Zhou HongHai, Li AiYuan and Zhou Fang. 2010. (Experimental study of the effect of ethanol sediments from sandalwood tea on cardiovascular function and anti-fatigue.) (in Chinese) Genomics and Applied Biology 29(5): 962-968.

Qiu, Y.L., Li, L., Wang, B., Xue, J.Y., Hendry, T.A., Li, R.Q., Brown, J.W., Liu, Y., Hudson, G.T. and Chen ZhiDuan. 2010. Angiosperm phylogeny inferred from sequences of four mitochondrial genes. Journal of Systematics and Evolution 48(6): 391-425. [376 genera in 296 families were analyzed using atp1, matR, nad5 and rps3. Results were largely congruent with previous multigene analyses of angiosperms. Parasites included were: *Krameria*, Santalales].

Quan JiShu, Yin XueZhe and Xu HuiXian. 2011. *Boschniakia rossica* prevents the carbon tetrachloride-induced hepatotoxicity in rat. Experimental and Toxicologic Pathology 63(1/2): 53-59. [Demonstrating a range of activities from extracts of *B. rossica* (Orobanchaceae).]

Ramachandran Sundararaj and Raja Muthukrishnan. 2011. Population dynamics of some coccids (Coccoidea: Hemiptera) infesting sandal (*Santalum album* Linn.) in Bangalore, India. Journal of Forestry Research 22(2): 259-262. [Reporting the effects of temperature and rainfall on 4 coccid pests of *S. album.*]

Rameau, C. and Pillot, J.P. 2010. Strigolactone effect in shoot branching. In: Costa, G. (Ed.) Acta Horticulturae 884: 61-66. [Reviewing the discovery of strigolactones as a new class of plant hormones in addition to rhizosphere signalling molecules.]

Ray, B.R. and Dasgupta, M.K. 2010. Natural biocontrol agents of *Aeginetia pedunculata* (Roxb.) Wall. (Orobanchaceae), a root holoparasitic angiosperm of sugarcane. Journal of Biological Control 24(3): 288-290. [Two insects, *Spilosoma obliqua* and *Gonocephalum depressum* and two fungi, *Fusarium oxysporum* and *Erysiphe cichoracearum* reduced seeding of *A. pedunculata* by 25, 88, 80 and 51%, respectively.]

Regan, T.J., Chadès, I. and Possingham, H.P. 2011. Optimally managing under imperfect detection: a method for plant invasions. Journal of Applied Ecology 48(1): 76-85. [Using the infestation of *Orobanche ramosa* in S. Australia as a model for a management decision system.]

Rist, L., Shaanker, R.U. and Ghazoul, J. 2011. The spatial distribution of mistletoe in a Southern Indian tropical forest at multiple scales. Biotropica 43(1): 50-57. [Relating to *Taxillus tomentotus* in the fruit trees *Phyllanthus emblica* and *P. indofischeri*.]

Rodrigues, A.G., Colwell, A.E.L. and Stefanovic´, S. 2011. Molecular systematics of the parasitic genus *Conopholis* (Orobanchaceae) inferred from plastid

and nuclear sequences. American Journal of Botany 98[5): 896-908. [Concluding that there are three distinct lineages represented within the two recognised species in N. and Central America,indicating that there could be a minimum of three species within the genus.).

Rodríguez-Ojeda, M.I., Velasco, L., Alonso, L.C., Fernández-Escobar, J. and Pérez-Vich, B. 2011. Inheritance of the unpigmented plant trait in *Orobanche cumana*. Weed Research (Oxford) 51(2): 151-156. [Concluding that pigmentation in *O. cumana* is controlled by a partially dominant allele at a single locus and that the lack of pigmentation has no effect on its ability to parasitise.]

Rotar, I., Pă curar, F., Stoie, A., Gârda, N. and Dale, L. 2010. The evolution of *Arnica montana* L. grasslands depending on the performed management (Apuseni Mountains, Romania). Lucrări Ştiinţifice, Universitatea de Stiinte Agricole Şi Medicină Veterinară "Ion Ionescu de la Brad" Iaşi, Seria Agronomie 53(2): 219-223. [Noting that *Euphrasia officinalis* is favoured by mowing but not by grazing.]

Rowntree, J.K., Cameron, D.D., Preziosi, R.F., Rowntree, J.K., Shuker, D.M. and Preziosi, R.F. 2011. Genetic variation changes the interactions between the parasitic plant-ecosystem engineer *Rhinanthus* and its hosts. Philosophical Transactions of the Royal Society of London. Series B, Biological Sciences 366(1569):1380-1388. [In detailed studies the outcome of infection of the host *Hordeum vulgare* by *Rhinanthus minor* and *R. angustifolius*, depended not only on the host species, but also on the underlying genetics of both host and parasite.]

Runyon, J.B., Mescher, M.C. and de Moraes, C.M. 2010. Plant defenses against parasitic plants show similarities to those induced by herbivores and pathogens. Plant Signaling and Behavior 5(8): 929-931. [Discussing the importance of jasmonic acid and salicylic acid in the response of hosts tomato and tobacco to *Cuscuta campestris* and also the possible importance of trichomes.]

Ruyter-Spira, C., Kohlen, W., Charnikhova, T., van Zeijl, A., van Bezouwen, L., de Ruijter, N., Cardoso, C., Lopez-Raez, J.A., Matusova, R., Bours, R., Verstappen, F. and Bouwmeester, H. 2011. Physiological effects of the synthetic strigolactone analog GR24 on root system architecture in *Arabidopsis*: another belowground role for strigolactones? Plant Physiology 155(2): 721-734. [Strigolactones are also involved in the regulation of root architecture. The up-regulation of strigolactone production under phosphate starvation leads to increased lateral root formation, through its effect on auxin homeostasis.]

Sabo, M., Gradiček, S. and Banjari, I. 2010. (Pollen analysis of honey from Varaždin County.) (in Croatian) Glasnik Zaštite Bilja 33(6): 62-69. [Including traces of pollen from Loranthaceae and Olacaceae.]

Sahu, V.K., Irchhaiya Raghuveer, Shashi Alok and Gurjar Himanshu. 2010. Phytochemical investigation and chromatographic evaluation of the ethanolic extract of whole plant extract of *Dendrophthoe falcata* (L.F.) Ettingsh. International Journal of Pharmaceutical Sciences and Research (IJPSR) 1(1): 39-45. [Comparing solvent systems.]

Sakakibara, A.M. and Marques, O.M. 2010. A new species of treehopper (Hemiptera, Membracidae) collected in plants of the family Loranthaceae. Magistra 22(2): 137-139. [*Enchenopa loranthacina* described from *Struthanthus marginatus* and *Psittacanthus robustus* in Brazil.]

Salas-Araiza, M.D., Jones, R.W. and Ramírez-Malagón, R. 2011. Herbivores of *Psittacantus calyculatus* Don. (Loranthaceae) in Mexico: a parasitic plant of mesquite. Southwestern Entomologist 36(1): 107-110. [Identifying a range of insects with potential for biocontrol of *P. calyculatus*, parasitic on *Prosopis laevigata*.]

Salave, A.P., Reddy, P.G. and Diwakar, P.G. 2010. Ethnobotanical studies of Ghatsiras region in Ahmednagar district, Maharashtra (India). Annals of Pharmacy and Pharmaceutical Sciences 1(2): 63-66. [Confirming some value for *Cuscuta reflexa* in traditional medicine.]

Santanu Dey, Raju Das, Bikarrma Singh and Arup Das. 2010. *Christisonia keralensis* Erady: a new record for North-East India. Indian Journal of Forestry 33(4): 623-624. (A new record in Assam.]

Sapan Patel. 2010. Traditional use of indigenous plants in Betul district of Madhya Pradesh to cure diarrhoea and dysentery. Environment Conservation Journal 11(3): 19-22. [Including reference to *Cuscuta reflexa*.]

Sarangzai, A.M., Nasrullah Khan, Muhammad Wahab and Asmatullah Kakar. 2010. New spread of dwarf mistletoe (*Arceuthobium oxycedri*) in *Juniper* forests, Ziarat, Balochistan, Pakistan. Pakistan Journal of Botany 42(6): 3709-3714. [Noting increased occurrence of *A.oxycedri* and serious damage to *Juniperus excelsa*.]

Sarvani Manthri, Kota, C.S. and Manjula Talluri. 2011. Pharmacognostic, phytochemical and pharmacological review of *Dendrophthoe falcata*. Journal of Phytology 3(3): 18-25. [A 'limited' review of the wide-ranging traditional medicinal uses for *D. falcata* in India.]

Sawadogo, M., Ouedraogo, J.T., Gowda, B.S. and Timko, M.P. 2010. Genetic diversity of cowpea (*Vigna unguiculata* L. Walp) cultivars in Burkina Faso resistant to *Striga gesnerioides*. African Journal of Biotechnology 9(48): 8146-8153. [SSR markers were used to characterize 16 cowpea geneotypes. A minor proportion of markers were useful in distinguishing *Striga* resistant from susceptible genotypes, but overall clustering of genotypes did not fall cleanly into resistant or susceptible groups.]

Schaefer, H. and Renner, S.S. 2011. Phylogenetic relationships in the order Cucurbitales and a new classification of the gourd family (Cucurbitaceae). Taxon 60(1): 122-138. [14 DNA regions were analyzed for 664 species representing all but two of the genera in the order. Unlike their previous study (Filipowicz and Renner 2010, BMC Evol. Biol. 10: 219) where Apodanthaceae was sister to Coriariaceae and Corynocarpaceae, here Apodanthaceae was sister to the remaining families in the order.]

Schmid, R., Calvin, C.L. and Wilson, C.A. 2010. Sinker structure of *Phoradendron californicum* (Viscaceae) confounds its presumed close relationship to other acataphyllous species. Aliso 2010 (29): 13-23. [Detailed anatomical work helps clarify the systematic position of the species and its relationship to tropical species. Features studied include seedling establishment, stem anatomy, and endophyte structure.]

Sciarrone, D., Costa, R., Ragonese, C., Tranchida, P.Q., Tedone, L., Santi, L., Dugo, P., Dugo, G., Joulain, D. and Mondello, L. 2011. Application of a multidimensional gas chromatography system with simultaneous mass spectrometric and flame ionization detection to the analysis of sandalwood oil. Journal of Chromatography, A 1218(1): 137-142.

Sedlar, Z., Hršak, V. and Šegota, V. 2010. New records of vascular plants for the new part of the Krka National Park. Natura Croatica 19(2): 433-443. [Including *Orobanche purpurea*.]

Selosse, M.A., Martos, F.; Perry, B., Padamsee Maj, Roy, M. and Pailler, T. 2010. Saprotrophic fungal symbionts in tropical achlorophyllous orchids: finding treasures among the 'molecular scraps'? Plant Signaling and Behavior 5(4): 349-353. [Noting that some mycoheterotrophic plants are not fungal-specific, and that some mycoheterotrophic orchids associate with saprophytic fungi; lower specificity may be less rare than supposed in mycoheterotrophic plants. Association between mycoheterotrophic orchids and saprophytic fungi arose several times in the evolution of the two partners.]

Shahaboddin, M.E., Pouramir, M., Moghadamnia, A.A., Lakzaei, M., Mirhashemi, S.M. and Motallebi, M. 2011. Antihyperglycemic and antioxidant activity of *Viscum album* extract. African Journal of Pharmacy and Pharmacology 5(3): 432-436. [*V. album* extract reduced the blood glucose and increases the antioxidant power of alloxanized-rats.]

Shaily Goyal, Varsha Sharma and Ramawat, K.G. 2011. Marked effect of *Cuscuta* on puerarin accumulation in cell cultures of *Pueraria tuberosa* grown in shake flasks and a bioreactor. Plant Biotechnology Reports 5(2): 121-126. [An extract of *Cuscuta reflexa* elicited increased production of isoflavonoids in cell cultures of *P. tuberosum*, 'Indian Kudzu' used in India as a traditional herb to lower cholesterol.]

Shao HongXia, Yang JiuYan and Ju AiHua. 2011. (Studies on chemical constituents of Mongolian medicine *Orobanche coerulescens*.) (in Chinese) China Journal of Traditional Chinese Medicine and Pharmacy 26(1): 129-131. [Identifying a range of compounds in *O. coerulescens*.]

Sharma, P., Rai, P.K., Siddiqui, S.A. and Chauhan, J.S. 2011. First report of *Fusarium* wilt in the broomrape parasite growing on *Brassica* spp. in India. Plant Disease 95(1): 75. [*F. solani* seriously damaging *Orobanche aegyptiaca* on *Brassica* spp.]

Shekhawat, U.K.S., Ganapathi, T.R. and Srinivas, L. 2010. Expression of hepatitis B small surface antigen in *Santalum album* embryogenic cell suspension cultures. Biologia Plantarum 54(4): 720-724. [Showing enhanced anti-hepatitis activity in suspension cultures of *S. album* transformed with *Agrobacterium tumefaciens* harboring pD35SHER plant expression vector having hepatitis B small surface antigen (HBsAg) with a C-terminal ER retention signal.]

Shen Hao, Hong Lan, Chen Hua, Ye WanHui, Cao HongLin and Wang ZhangMing. 2011. The response of the invasive weed *Mikania micrantha* to infection density of the obligate parasite *Cuscuta campestris* and its implications for biological control of *M. micrantha*. Botanical Studies 52(1): 89-97. [Concluding that the optimal cost-effective number of *C. campestris* to control *M. micrantha* is 4 per host plant in the field (in China).]

Shen JiannJong, Chiang MingShan, Kuo MingLing, Leu YannLii, Hwang TsongLong, Liou ChianJiun and Huang WenChung. 2011. Partially purified extract and viscolin from *Viscum coloratum* attenuate airway inflammation and eosinophil infiltration in ovalbumin-sensitized mice. Journal of Ethnopharmacology 135(3): 646-653. [Confirming ant-asthmatic effects of extract and viscolin from *V. coloratum*.]

Shi GuangYue, Jiang Wei, Cai Li and Sui GuangJie. 2011. Molecular characteristics and antitumor

capacity of glycan extracted from *Cynomorium songaricum*. International Journal of Biological Macromolecules 48(5): 788-792. [Glycan from *C. songaricum* was less active on human liver carcinoma cell line HepG2 than flavone from ginkgo leaf.]

Shin HeonSub, Park SangYong, Yang JungEun, Kim SeYoung, Shin JiYon and Yi TaeHoo. 2010. *Cuscuta japonica* BuOH fraction stimulates hair growth in the cyclophosphamide-induced alopecia model C57BL/6 mouse. Horticulture, Environment and Biotechnology 51(6): 580-587. [Confirming the potential value of a *C. japonica* extract in treatment of hair loss.]

Shin HsienYu, Kuo YuhChi, Hsu FengLin, Mao YiWen and Lee MeiHsien. 2010. Regulation of cytokine production by treating with Chinese tonic herbs in human peripheral blood mononuclear and human acute monocytic leukemia cells. Journal of Food and Drug Analysis 18(6): 414-424. [*Cuscuta chinensis* induced both interleukin-8 and MIP-1J3 release in THP-1 cells and influenced mRNA transcription.]

Simões, A.R., Silva, H. and Silveira, P. 2011. The Convolvulaceae of Timor with special reference to East Timor. Blumea 56(1): 49-72. [*Cuscuta campestris* newly recorded in East Timor.]

Skalicky, M., Skalicka, J., Novak, J. and Harcsa, M. 2011. Land use in former military area "Mlada" (Central Bohemia, Czech Republic): succession of vegetation. Növénytermelés 60(Supplement): 439-442. [Noting *Odontites vernus* ssp. *vernus* as severely endangered in the Czech Republic.]

Soltis, D.E. (and 27 coauthors). 2011 Angiosperm phylogeny: 17 genes, 640 taxa. American Journal of Botany 98(4): 704-730. [25,260 bp from 17 chloroplast, mitochondrial and nuclear genes were analyzed. Compared to previous studies using fewer genes, greater resolution was achieved including deep-level clades such as Superrosidae and Superasteridae.]

Soni, K.K., Tiwari, C.K. and Verma, R.K. 2010. Heart rot in Indian hard wood tree species. Journal of Tropical Forestry 26(2): 15-21. [Including reference to *Santalum album* and best pruning practices.]

Soro, K., Gnahoua, G.M. and Traore, D. 2009. (Parasitism in Loranthaceae leguminous tree plantations in the forest zone of Côte d'Ivoire.) (in French) Agronomie Africaine 21: 1 page. [Exotic trees *Acacia mangium, A. auriculaeformis, Albizia guachapele* and *A. lebbeck*) more susceptible to mistletoes than the native species *Albizia adianthifolia* and *A. zygia*. Most affected is *A. lebbek* by *Tapinanthus bangwensis.*)

Souter, N.J., Cunningham, S., Little, S., Wallace, T., McCarthy, B. and Henderson, M. 2010. Evaluation of a visual assessment method for tree condition of eucalypt floodplain forests. Ecological Management & Restoration 11(3): 210-214. [Unspecified mistletoes among factors influencing the health of *Eucalyptus camaldulensis* and *E. largiflorens*.]

Stöckel, M., Meyer, C. and Gebauer, G. 2011. The degree of mycoheterotrophic carbon gain in green, variegated and vegetative albino individuals of *Cephalanthera damasonium* is related to leaf chlorophyll concentrations. New Phytologist 189(3): 790-796. [Studying the isotopic enrichment in 13C and 15N, a distinguishing feature of mycoheterotrophic plants associating with higher (basidiomycete) fungi, and confirming that the extent of chlorophyll production is negatively correlated with the extent of isotopic enrichment and hence mycoheterotrophy.]

Sui ZhiFu, Gu TingMin, Liu Biao, Peng ShaoWen, Zhao ZhiLi, Li Li, Shi DongFang and Yang RongYa. 2011. Water-soluble carbohydrate compound from the bodies of Herba Cistanches: isolation and its scavenging effect on free radical in skin. Carbohydrate Polymers 85(1): 75-79. [Polysaccharides from *Cistanche deserticola* inhibited the oxidative modification of lipids, thus protecting cells from injury in aged rats' skin.]

Sun MeiHua, Chen Qian, Song GuangQuan, Wu MeiXiu and Liu Yong. 2010. (Screening of botanical ant repellents.) (in Chinese) Chinese Journal of Vector Biology and Control 21(6): 554-557. [*Santalum album* among species with moderate ant-repellant activity.]

Sun YongHui, Ling Yong, Ren MeiRong, Zhou XueGang, Wang JiaYu and Ma YingLi. 2010. (Chemical constituents of *Viscum coloratum* f. *rubroaurantiacum*.) (in Chinese) Zhongcaoyao = Chinese Traditional and Herbal Drugs 41(9): 1418-1420. [Identifying 10 components, including one new.]

Suresh, V., Sruthi, V., Padmaja, B. and Asha, V.V. 2011. In vitro anti-inflammatory and anti-cancer activities of *Cuscuta reflexa* Roxb. Journal of Ethnopharmacology 134(3): 872-877. [Showing that *C. reflexa* extracts inhibit LPS induced inflammatory responses in RAW264.7 cells and induces apoptosis in Hep3B.]

Sutha, S., Maruthupandian, A., Mohan, V.R. and Athiperumalsami, T. 2011. Anti-inflammatory activity of leaf of *Erythropalum scandens* Bl., Bijdr against carrageenan induced paw edema. International Journal of PharmTech Research 3(1): 24-26. [Results support the traditional use of *E. scandens* (Olacaceae) as an anti-inflammatory in India.]

Tahseen Ghous, Kalsoom Akhtar, Faiz-ul-Hassan Nasim and Choudhry, M.A. 2010. Screening of

selected medicinal plants for urease inhibitory activity. Biology and Medicine 2(4): 64-69. [*Cuscuta reflexa* showed moderate anti-urease activity.]

Tamokou, J.de D., Kuiate, J.R., Gatsing, D., Efouet, A.P.N. and Njouendou, A.J. 2011. Antidermatophytic and toxicological evaluations of dichloromethane-methanol extract, fractions and compounds isolated from *Coula edulis*. Iranian Journal of Medical Sciences 36(2): 111-121. [Confirming anti-dermatophytic activity in extracts of *Coula edulis* (Olacaceae) against microorganisms *Microsporum audouinii* and *Trichophyton mentagrophytes* but also recording toxic side-effects in mice and rats.]

Tang WanXia, Harada, K., Kubo, M., Hioki, H. and Fukuyama, Y. 2011. Eight new clerodane diterpenoids from the bark of *Ptychopetalum olacoides*. Natural Product Communications 6(3): 327-332. [Studies on *P. olacoides* (Olacaceae) in Brazil.]

Tariq Hussain, Muhammad Arshad, Sarzamin Khan, Hamid Sattar and Qureshi, M.S. 2011. *In vitro* screening of methanol plant extracts for their antibacterial activity. Pakistan Journal of Botany 43(1): 531-538. [*Santalum album* showed highest ant-bacterial activity among the 10 species tested.]

Taylor, L. and Roberts, D.L. 2011. Biological Flora of the British Isles: *Epipogium aphyllum* Sw. Journal of Ecology (Oxford) 99(3): 878-890. [An in-depth review of the biology and ecology of the mycoheterotrophic *E. aphyllum* (Orchidaceae), the 'Ghost Orchid',]

Teng LiPing, Mu Long, Luo Feng and Zhou ZhongBo. 2011. Extraction of crude polysaccharides from *Cistanche tubulosa* and its effect of scavenging DPPH radicals. Guizhou Agricultural Sciences 2011(1): 66-68. [Finding ultrasound-microwave synergistic extraction method best.]

Tennakoon, K.U., Chak, W.H. and Bolin, J.F. 2011. Nutritional and isotopic relationships of selected Bornean tropical mistletoe–host associations in Brunei Darussalam. Functional Plant Biology 38: 505–513. [Parasite–host mineral nutrition profiles were estimated for *Scurrula ferruginea*, *Macrosolen cochinchinensis*, and *Dendrophthoe curvata.* $\delta^{13}C$ and $\delta^{15}N$ values were estimated for 12 tropical mistletoe–host associations. K was higher in mistletoes relative to hosts and differences between host and parasite $\delta^{13}C$ values were small, but showed significant depletion in mistletoe leaves compared with host leaves.]

Teodoro, G.S., van den Berg, E., Santos, M.de C.N. and Coelho, F.de F. 2010. How does a *Psittacanthus robustus* Mart. population structure relate to a *Vochysia thyrsoidea* Pohl. host population? Flora (Jena) 205(12): 797-801. [Recording the distribution pattern of *P. robustus* on *V. thyrsoidea* in Minas Gerais, Brazil, noting distribution by swallow-tanager *Tersina viridis viridis and* main occurrence in tree tops.]

Tercero-Bucardo, N. and Rovere, A.E. 2010. (*Misodendrum punctulatum* (Misodendraceae) seed dispersal and colonization patterns on a *Nothofagus antarctica* (Nothofagaceae) post-fire shrubland from Northwestern Patagonia.) (in Spanish) Revista Chilena de Historia Natural 83(3): 375-386. [Relating the spread of *M. punculatatum* to its seed dispersal by wind.]

Thomasson, S.A. and Thomasson, J.R. 2011. A comparison of CPD (Critical Point Drying) and HMDS (Hexamethyldisilazane) in the preparation of *Corallorhiza* spp. rhizomes and associated mycorrhizae for SEM (Scanning Electron Microscopy).Transactions of the Kansas Academy of Science 114(1/2): 129-134.

Thomson, J.A., Shepherd, D.N., Mignouna, H.D., Wesseler, J., Spielman, D.J. and Demont, M. 2010. Developments in agricultural biotechnology in sub-Saharan Africa. AgBioForum 13(4): 314-319. [Noting work on the development of maize varieties resistant to *Striga asiatica*.]

Thorogood, C. and Hiscock, S. 2010. Specific developmental pathways underlie host specificity in the parasitic plant *Orobanche*. Plant Signaling and Behavior 5(3): 275-277. [Following up on their work on *Orobanche minor* and emphasising the importance of host specificity and proposing that identifying host specific races using physiological techniques can provide a framework for delineating evolutionary relationships among cryptic host-specific parasitic plants.]

Thriveni, M.C. and Shivamurthy, G.R. 2010. Distribution, host range and mode of seed dispersal in *Dendrophthoe falcata* (L.f.) Ettingsh (Loranthaceae). Advances in Plant Sciences 23(2): 605-608. [Listing 10 new hosts of *D. falcata* and discussing mechanism of host selection, involvement of birds in seed dispersal, and need for better management practices.]

Traore, H., Yonli, D., Diallo, D. and Sereme, P. 2011. Suicidal germination of *Striga hermonthica* (Del.) Benth. by cotton, cowpea and groundnut genotypes in Burkina Faso. International Journal of Agricultural Research 6(1): 49-57. [A range of cotton varieties all caused high germination of *S. hermonthica*. Some cowpea varieties caused moderate germination, while all groundnut varieties caused low germination.]

Tupac Otero, J., Mora, M. and Costa, J.F. 2009. First host record for the root parasite *Corynaea crassa* (Balanophoraceae). Acta Biológica Colombiana

14(3): 197-202. [Finding *Bocconia frutescens* (Papaveraceae), *Verbesina* sp. (Asteraceae), *Cayaponia* sp. (Cucurbitaceae) and *Palicourea* sp. (Rubiaceae) as natural hosts of *C. crassa* in Colombia.]

Vicaș, S.I., Laslo, V., Pantea, S. anndici, G.E. 2010. Chlorophyll and carotenoids pigments from mistletoe (*Viscum album*) leaves using different solvents. Analele Universităţji din Oradea, Fascicula Biologie 17(2): 213-218. [Noting some variation in chlorophyll content of *V. album* depending on the host tree *Acer campestre*, *Malus domestica*, *Fraxinus excelsior*, *Populus nigra* or *Robinia pseudoacacia*.]

Vicaș, S.I., Rugină, D., Leopold, L., Pintea, A. and Socaciu, C. 2011. HPLC fingerprint of bioactive compounds and antioxidant activities of *Viscum album* from different host trees. Notulae Botanicae, Horti Agrobotanici, Cluj-Napoca 39(1): 48-57. [Comparing activities of aqueous v. ethanolic extracts of *V. album* from 5 different tree hosts (as in item above).]

Wang GuoPing, Shi MingHui, Li XiaoJin and Jia XinYue. 2010. Growth suitability analysis of *Cynomorium songaricum* in Xinjiang origin. Medicinal Plant 1(3): 6-8. [Concluding *C. songaricum* could be planted in 90% of Xinjiang Province.]

Wang Hui, Wang Qin and Wei Wei. 2010. (Determination of trace lead in *Cynomorium songaricum* Rupr. by atomic fluorescence spectrometry method after digested by perchloric acid-nitric acid.) (in Chinese) Chinese Journal of Information on Traditional Chinese Medicine 17(6): 52-53.

Wang LiLi and Huang YingZhong. 2010. (Survey of diseases and insect pests damage in landscape plants and their control measures in Baise City.) (in Chinese) Guangxi Agricultural Sciences 41(7): 679-682. [Problems affecting street trees included '*Cuscuta chinensis*'.]

Wang XueMin, He JiaQing, Wang Qiang, Cai Jing and Chen Qian 2011. (Influences of parasitism by *Cuscuta australis* on *Solidago canadensis*.) (in Chinese) Acta Botanica Boreali-Occidentalia Sinica 31(4): 761-767. [Results suggest potential for the use of *C. australis* to control the invasive *S. canadensis.*]

Wang YongHong and Li JiaYang. 2011. Branching in rice. Current Opinion in Plant Biology 14(1): 94-99. [Re strigolactones.]

Watson, D.M. 2011. Mistletoes of Southern Australia. CSIRO Publishing, Collingwood, Australia, 188 pp. [46 species covered. See Book Review above]

Watson, D.M., McGregor, H.W. and Spooner, P.G.. 2011. Hemiparasitic shrubs increase resource availability and multi-trophic diversity of eucalypt forest birds. Functional Ecology 25: 889–899. [The presence of *Exocarpos strictus* in forests provides resources that positively affect community diversity and composition.]

Weryszko-Chmielewska, E., Matysik-Woz´niak, A. and Sadowska, D. 2010. The structure and distribution of glandular trichomes on the stems and leaves of drug eyebright (*Euphrasia stricta* D. Wolff ex J. F. Lehm.). Acta Agrobotanica 63(2): 13-23.

White, B.L.A., Ribeiro, A.de S., White, L.A.S. and do Nascimento Júnior, J.E. 2011. (Analysis of the incidence of mistletoes in the Sergipe Federal University, São Cristóvão Campus.) (in Portuguese) Floresta 41(2): 1-8. [*Struthanthus vulgaris* or *S. polyrizus* occurred on 8% of all trees; *S. polyrizus* apparently restricted to the native *Anacardium occidentale*; four other exotic trees also affected by *S. vulgaris*.]

Whitlock, C., Briles, C.E., Fernandez, M.C. and Gage, J. 2011. Holocene vegetation, fire and climate history of the Sawtooth Range, central Idaho, USA. Quaternary Research 75(1): 114-124. [Referring to correlation between drought episodes, lodgepole pine decline and mistletoe (*Arceuthobium*?) infestation over a number of millenia.]

Williams, V.L., Wojtasik, E.M. and Witkowski, E.T.F. 2011. Ethno-ecological evidence for *Hydnora abyssinica* occurring in Johannesburg and Durban traditional medicine markets. South African Journal of Botany 77(2): 268-279. [Study of *H. abyssinica* material in markets leading to useful information on hosts and distribution.]

Wszelaki, N. and Melzig, M.F. 2011. (Eyebright: *Euphrasia officinalis* L.) (in German) Zeitschrift für Phytotherapie 32(1): 40-46. [Reviewing the wide range of traditional uses of *E. officinalis*, especially for treating eyes, but noting the need for more research to validate these uses.]

Wu JianGuo. 2010. (Potential effects of climate change on the distributions of 5 plants in China.) (in Chinese) Journal of Tropical and Subtropical Botany 18(5): 511-522. [Concluding a decline in *Boschniakia rossica* (Orobanchaceae) is likely with climate change]

Xia Bo, Tian ChengMing, Luo YouQing, Zhao FengYu, Ma JianHai, Wang GuoCang and Han FuZhong. 2010. (Flowering characteristics and chemical control of the buds of *Arceuthobium sichuanense*.) (in Chinese) Scientia Silvae Sinicae 46(4): 98-102. [*A. sichuanense* is a serious parasite of *Picea crassifolia*, *P. purpurea*, *P. likiangensis* var. *balfouriana* and *P. spinulosa* in S. China and Tibet. A 1:400 dilution of 40% ethephon killed nearly 100% of flowering buds and was harmless to the hosts.]

Xie XiaoNan, Yoneyama, K. and Yoneyama, K. 2010. The strigolactone story. Annual Review of Phytopathology 2010(48): 93-117. [A comprehensive review of the strigolactones, their discovery, structural diversity and their biological roles in plants, including the induction of germination of parasitic plant seeds.]

Yang LiJuan, Chen QianFeng, Wang Fei and Zhang GuoLin 2011. Antiosteoporotic compounds from seeds of *Cuscuta chinensis*. Journal of Ethnopharmacology 135(2): 553-560. (Validating the use of *C. chinensis* in treatment of osteoporosis, the active ingredients being kaempferol and hyperoside.]

Yonli, D., Traoré, H., Sérémé, P. and Sankara, P. 2010. Use of local plant aqueous extracts as potential bio-herbicides against *Striga hermonthica* (Del.) Benth. in Burkina Faso. Asian Journal of Crop Science 2(3): 147-154. [Extracts from a number of local species including *Thevecia nerifolia, Azadirachta indica, Jatropha gossypifolia, Parkia biglobosa, Balanites aegyptiaca, Lannaea microcarpa* and *Acacia gourmaensis* greatly reduced germination of

Yu Hua, Liu Jian, He WeiMing, Miao ShiLi and Dong Ming. 2011. *Cuscuta australis* restrains three exotic invasive plants and benefits native species. Biological Invasions 13(3): 747-756. [*C. australis* showed greater virulence on the exotic *Ipomoea cairica*, *Mikania micrantha*, and *Wedelia trilobata* than on native hosts, suggesting value for biocontrol.]

Zeraati, F., Zamani, A., Goodarzi, M.T., Hashjin, S.M.M. and Razzaghi, K. 2010. In vitro cytotoxic effects of *Cuscuta chinensis* whole extract on human acute lymphoblastic leukemia cell line. Iranian Journal of Medical Sciences (IJMS) 35(4): 310-314. [*C. chinensis* showed cytotoxic activity against Caucasian acute lymphoblastic leukemia (CCRF-CEM) and Jurkat (JM) cell lines.]

Zhang LongChong, Guo Hui, Wang ManTang and Du GuoZhen. 2011. Plasticity of reproductive traits responding to variation in light availability at the rosette stage of the first year in a strict biennial, *Pedicularis torta*, from a field on the Qinghai-Tibet Plateau, China. Plant Species Biology 26(1): 105-110.

Zhao ShuYan, He XiuYan, Jia BaoGuo, Peng QingYun and Liu Xin. 2011. Production of acteoside from *Cistanche tubulosa* by β-glucosidase. Pakistan Journal of Pharmaceutical *S. hermonthica*.) Sciences 24(2): 135-141. [Acteoside in fresh *C. tubulosa* extracts increased by microwave processing and by 2 hours exposure to *Trichoderma* sp.]

Zhou Tong, Zhang XiaoHui, Zhang ShuWei, Liu ShanShan and Xuan LiJiang 2011. New phenylpropanoids and in vitro α-glucosidase inhibitors from *Balanophora japonica*. Planta Medica 77(5): 477-481. [Identifying five new phenylpropanoids, named balajaponins A-E.]

*Zonneveld, B.J.M. 2010. New record holders for maximum genome size in eudicots and monocots. Journal of Botany 2010, Article ID 527357. (http://www.hindawi.com/journals/jb/2010/527357/) [Claiming *V. album* to have the largest genome among eudicots, of 2C = 205.8 pg, supplanting the previous claimant *V. cruciatum*.]

HAUSTORIUM 59

has been edited by Chris Parker, 5 Royal York Crescent, Bristol BS8 4JZ, UK (Email chrisparker5@compuserve.com), Lytton Musselman, Parasitic Plant Laboratory, Department of Biological Sciences, Old Dominion University, Norfolk Virginia 23529-0266, USA (fax 757 683 5283; Email lmusselm@odu.edu), Jim Westwood, Dept. of Plant Pathology, Physiology and Weed Science, Virginia Tech, Blacksburg, VA 24061-0331, USA (Email westwood@vt.edu), Harro Bouwmeester of Laboratory of Plant Physiology, Wageningen University, P.O. Box 658, 6700 AR Wageningen, the Netherlands (Email harro.bouwmeester@wur.nl): with valued assistance from Dan Nickrent, Southern Illinois University, Carbondale, USA. It is produced and distributed by Chris Parker and published by Old Dominion University (ISSN 1944-6969). Send material for publication to any of the editors.

NB. Haustorium is no longer distributed in hard-copy form. It is available by email free of charge and may also be down-loaded from the IPPS web-site (see above).

FEETNOTE

Your editor regrets not joining you all at the recent Congress in Italy. He had surgery involving both feet in April and was not quite back on them in time to travel. Plastic surgery was needed to repair damage resulting from the (then) latest up-to-date treatment for veruccas (plantar warts) in the 1940s – x-ray therapy – resulting in radiation burns and eventual ulceration and worse. Glad to report recovery at last and I look forward to seeing you at future meetings.

Chris Parker.