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PRESIDENT'S MESSAGE

Dear IPPS members,

We had another excellent meeting at the 12th World Congress on Parasitic Plants that was held from July 15 to 19 in Sheffield, UK. More than 100 participants from around the world really enjoyed the science, social activities, food and drink, in magnificent green surroundings.. I would like to thank Julie Scholes and Duncan Cameron for their perfect preparation, arrangements, and warm hospitality; they even provided good weather for the meeting! Also thanks to session organizers for their efforts in preparation and management of sessions. All of the keynote lectures were very informative and helped us to understand recent advances in various research areas related to parasitic plants. In addition, oral and poster presentations were all of good quality and, in particular, those selected for student awards were excellent. Each student awardee received a copy of 'Parasitic Orobanchaceae – Parasitic Mechanisms and Control Strategies' edited by Danny Joel, Jonathan Gressel and Lytton Musselman, just published and its first copy arrived on the second day of the meeting. I am confident that these young scientists will offer breakthroughs in parasitic plant research in the future. Finally, I would like to thank all attendees for their active participations and discussions. Details of the meeting will be found below.

The IPPS executive committee proposed Jim Westwood unanimously as an IPPS Honorary Fellow awardee, and Jim received this award, a silver plate and a bottle of Scotch whisky, at the conference dinner. We all acknowledge his great contributions to both parasitic plant science, in particular genomics area, and to IPPS.

Although it is only one month after the 12th WCPP in Sheffield, it is time to start thinking about our next Congress. So far, I have already received three official offers for the next venue; Ouro Preto in Brazil, Kunming in China, and Asilomar in USA. If you would like to invite our next congress to your country, please send me an e-mail notice. In addition, I welcome any suggestions and comments for possible congress venues as we would like to select a venue that is most convenient to many IPPS members.

Sincerely,
Koichi Yoneyama, IPPS President
yoneyama@cc.utsunomiya-u.ac.jp

THE 12TH WORLD CONGRESS ON PARASITIC PLANTS

The Congress, held in Sheffield University UK, was attended by just over 100 delegates from at least 26 countries. There were 54 oral presentations and 25 posters arranged under 8 subject-headings, as below. A striking feature of many of the contributions was the degree of cooperation exhibited. There was regular acknowledgement of collaboration between institutions and across countries and continents. This degree of involvement surely contributes to the warm atmosphere of the meeting and to more rapid progress in mutual objectives.

Strigolactones – structure and function. Binne Zwanenburg gave a masterly summary of the chemistry of the strigolactones (SLs) (based on his recent review – see Literature), pointing out the difficulties that have occurred in defining some of the structures, emphasising the importance of stereochemistry, describing some of the available synthetic pathways, re-visiting the question of stability in relation to soil pH and their uses for control. He and others especially Yoram Kapulnik provided insight into the structure of SLs in relation to their three main functions noting that the structures required for parasite germination were not always the same as those needed for stimulating branching in AM fungi or suppressing tillering. Salim Al Babili and others clarified what is now known of the biosynthetic pathways for the SLs and the activity of the intermediate carlactone; also the role of N and P in reducing synthesis if SLs. Others referred to the families of stimulant derived respectively from 5-deoxystrigol and *ent*-2'-*epi*-5-deoxystrigol; to the activity of debranones as SL mimics; and the

relationship between SLs and karrikins. Evgenia Dor described the successful use of ethyl methane sufonate mutagenesis to create tomato varieties which fail to synthesise SLs and hence are free of *Phelipanche aegyptiaca* infestation. These show additional branching and greater numbers of inflorescences and smaller fruit but several lines are proving successful commercially for juice production.

Genomics. Important progress was reported on the genomes of a range of parasitic species including *Striga asiatica* (Ken Shirasu), *Triphysaria versicolor, Striga hermonthica* and *Phelipanche aegyptiaca* (Claude dePamphilis and Loren Honaas). Steven Runo described the *Agrobacterium rhizogenes* transformation of maize, a further useful step in the study of gene function in that host. John Yoder described steps towards the use of RNAi as means of control, using transformed *Medicago truncatula* loaded with constructs designed to inhibit ACCase genes in *Triphysaria versicolor* and demonstrating substantial reduction in parasite growth. It is hoped the technique may be transferable to other parasite species. Jim Westwood reported on the ready transfer of mRNAs from hosts tomato and *Arabidopsis* into *Cuscuta pentagona* (this transfer does not generally occur into other classes of parasite) and concluding that there are at least two major routes involved in the transfer. Posters included one reporting successful *Agrobacterium rhizogenes*-mediated transformation of *Phelipanche ramosa* and another adding further information on the tranascriptomics in parasite development of *Striga hermonthica.*

Biology and biochemistry. Marc-Marie Lechat presented a novel finding that there is an 'ABA lock' in parasite seeds and it is only after the germination stimulant triggers the up-regulation of genes involved in the destruction of ABA that seeds can then respond to stimulant, first demonstrated with GR24 in *Phelipanche ramosa* but then confirmed with 2-phenyl-ethyl isothiocyanate in *P. ramosa,* GR 24 in *Striga hermonthica* and dehydrocostus lactone in *Orobanche cumana*. It did not occur with compounds which did not stimulate germination. Takatoshi Wakabayashi reported on the importance of the metabolism of trisaccharide to monosaccharide in the course of germination of *Orobanche minor* in response to stimulant. This conversion, and hence germination, is inhibited by nojirmycin bisulfite, while the inhibition can be overcome by addition of suitable monosaccharide. Anna Wiese provided further observations on the importance of carbon metabolism in parasitic and in myceheterotrophic plants. Tal Shilo reported on exploration of the reason that *Phelipanche aegyptiaca* is damaged by glyphosate. It should be getting its amino acids from the host and should thus not be affected, but experiment showed that the enzyme responsible for shikimate synthesis is active in the parasite and the resultant accumulation of shikimate apparently causes general dispruption in carbon metabolism and a fatal reduction in sink strength in the parasite. Luiza Teixera-Costa reported on detailed studies of the detrimental influence of *Phoradendron crassifolius* on wood structure of the host tree *Tapira guianensis*. Juan Lopez-Raez showed that the response of tomato to infection by *Phelipanche ramosa* involved an increase in jasmonate-related genes but a reduced expression of salicylate marker genes. Jason Smith broadened our view somewhat to show a three-way interaction of host, parasite and insect herbivore. *Cuscuta* spp. growing on turnip are less attacked by most aphid species but one that tolerates glucosinolate toxins can thrive on it. Further tests with *C. gronovii* on *Arabidopsis* mutants varying in glucosinolate content confirmed that this type of toxin is readily transported from host to parasite in *Cuscuta* and can influence susceptibility to insect attack. Ai-Rong Li showed that two *Pedicularis* spp., *P. rex* and *P. tricolor* grown without hosts responded differently to N, P and K fertilization. *P. tricolor* shows a greater dependency on P than *P. rex,* corresponding apparently to its greater need for a host for optimum growth. *P. rex* was more dependent on N, less dependent on hosts, and may obtain P more successfully via mycorrhyza. Posters included a study of the role of a β-mannosidase in the early stages of germination of *Orobanche minor*; another studied the genes involved in sucrose metabolism in *Phelipanche ramosa*; another also on *P. ramosa,* looked at the three distinct types of the weed occurring in France, with varying host range and susceptibility to germination by strigolactones; one on metabolomic analysis of *P. aegyptiaca*; and finally a comparison of two species of *Struthanthus*, *S. vulgaris* and *S. flexicaulis*, overlapping in distribution but parasitising different hosts and with distinctly different phenology. Flowering and fruiting times are distinct reducing the risk of competition for seed-dispersing birds.

Ecology and population biology. Gui-Lin Chen described the distribution, host range and evolution of

the 2 closely related species of *Cynomorium*, *C. coccineum* mainly in W. Asia and *C. songaricum* mainly in E. Asia, differing in stamen colour and tepal length; noting particularly the horizontal transfer of genes from their hosts and the role this may have played in their divergence. Peter Toth had studied the volatiles emitted by a range of 11 *Orobanche* and *Phelipanche* spp., and the range of insect pollinators on each, concluding that at least 150 compounds may be involved and that 'weedy' parasite species, mainly parasitizing annual hosts, apparently have a smaller range of emitted volatiles than 'non-weedy' species attacking mainly perennial hosts. As described and illustrated by Nina Hobbhahn, the pollination of *Cytinus* spp. involves a wider range of agents including ants, rodents, elephant shrews and birds. Mechanisms vary between the several populations of *Cytinus* spp. in S. Africa, Madagascar and the Mediterranean. A careful genomic study of *Phelipanche* spp. in Bulgaria tended to confirm that, while *P. purpurea* and *P. arenaria* are not well distinguished from each other, *P. nana*, *P. oxyloba* and *P. mutelii* are each quite distinct from *P. ramosa.* However, the *'O. mutelii*' occurring in Bulgaria does not clearly match material from elsewhere. Jane Prider reported on studies of the rate of decline of viable seeds of *P. ramosa* (possibly to be re-defined now as *O. mutelii*?) in the soil. After 10 years, the decline in viability had varied from 35% to 98% depending on soil depth, moisture and organic matter. New sites had been established and tend to confirm that total loss of viability cannot be expected in less than at least 17 years and may be 30 years or more. A survey of *Striga hermonthica* problems in N. Nigeria showed correlations with low P, N and organic matter, while *S. gesnerioides* continues to be a major threat. Although good cowpea varieties resistant to *S. gesnerioides* have been developed in the region they are not widely available because of the lack of seed production and distribution. Finally Emmanuel Aigbokhan reported on a survey of *Cuscuta campestris* in Benin City, Nigeria, recording susceptibility in a range of 79 species, including many vegetable, medicinal and forage species.

Control and management. Jonne Rodenburg described experiments in rain-fed rice in Tanzania which suggested that infestation by *Striga asiatica* and *Rhamphicarpa fistulosa* could be reduced by varying the sowing dates of the crop. The following presentation by Meva Tahiry Randrianjafizanaka compared a range of varietal, rotational and intercropping options for the control of *S. asiatica* in rain-fed rice in Madagascar, and showed that there were great benefits from use of variety NERICA-4 and from intercropping with *Stylosanthes guianensis* in rice and in a rotational maize crop. Yaakov Goldwasser described control of *Phelipanche aegyptiaca* in tomato by imazapic via drip irrigation ('dripigation') but timing and concentration have to be very precise. Alistair Murdoch showed that root exudates from *Desmodium uncinatum* and *D. intortum* could reduce *Phelipanche ramosa* in tomato and *Orobanche crenata* in pea, but there was significant damage to the host crops. An entertaining presentation by Gregorio Ceccantini described a novel approach to control of mistletoes by use of a modified paint-ball gun delivering a herbicide (ethephon) in a gel. Other presentations and posters included a comparison of crops and wild plants for their trap-crop potential - sorghum and cotton proving superior to others in stimulating germination of *Striga hermonthica*; the successful combination of imidazolinone-resistance with *Striga*- resistance in maize; the potential value of aqueous sawdust extracts and of neem tree leaf extracts for control of *S. hermonthica*; successful reduction of *S. hermonthica* in maize by alternate inter-planting with *Aeschynomene histrix*. Finally, *Fusarium oxysporum* was the most active of several fungi appraised for potential bio-control of *Phoradendron macrophyllum* a problem mistletoe in pecan trees in Mexico, while a further possibility for biocontrol is offered by the finding of a hemipteran *Ceroplastes* sp. on *P. bolleanum*, also in Mexico.

Crop resistance and tolerance. Michael Timko described the latest findings from studies of the genes controlling susceptibility and resistance of cowpea to *Striga gesnerioides*, confirming that there are distinct genes involved in the resistance to different races of the *Striga* and providing valuable new detail on the up- and down-regulation of genes in cowpea B.301 in response to the non-virulent race SG3 and to the virulent Benin race SG4z. Boubacar Koutche gave a welcome presentation reporting useful progress from 5 cycles of recurrent selection of pearl millet (now known as *Cenchrus americanus*?) for combined resistance to *Striga hermonthica* and downy mildew, though high genotype by environment interaction suggests work will need to continue on multiple sites before progress is fully assured. Xi Cheng studied 349 *Arabidopsis* ecotypes and looked for reaction to *Phelipanche ramosa* (germination, attachment, vigour) and, via

genome-wide mapping, identifying association in the form of significant variation in SNPs. Oz Ben David looked for cross resistance in confectionary sunflower, to *Orobanche cumana* (races B and C) and *Phelipanche aegyptiaca*. A resistant sunflower 'Emeq 3' proved highly resistant to *O. cumana* but not to *P. aegyptiaca* though another sunflower variety 'Ambar' had shown resistance to both. Anne-Laure Hepp looked in more detail at the metabolic reactions in roots of resistant and susceptible sunflower and identified a range of up-regulated metabolic processes in resistant roots, especially involving flavonoid and isoflavonoid biosynthetic pathways. Posters relating to this section included one from IITA on detail of the breeding programme for *Striga*-resistant maize, another on selection of a number of rice varieties highly resistant to *Striga hermonthica*, especially NERICA 5 and NERICA 13 and SATREP S1. Performance was confirmed in the field and SATREPS1 selected for use in Sudan. An apparently new source of resistance to *Striga gesnerioides* was reported in cowpea from Nigeria but its relationship to other sources of resistance has not been clarified. A marker-assisted breeding programme for *Striga*-resistant sorghum in Kenya, based on 5 QTLs from the resistant variety N-13 had yielded 21 promising selections and 4 varieties had been released in Sudan. These and others are being further tested across eastern Africa.

Environmental factors: modelling and mapping. Hanan Eisenberg discussed the valuable contribution to be made by modelling in the prediction of below-ground parasite development and hence the optimum timing of herbicide treatments, which are routinely used in Israel for control of *Orobanche/Phelipanche* spp. in tomato, carrot and sunflower. The use of drones for mapping distribution of emerged parasite was also illustrated. Ammon Cochavi followed with description of a Decision Support System that had been developed for multiple applications of glyphosate for the control of *P. aegyptiaca* in carrot (see Thesis abstract below). Abebe Menkir described how the efforts of IITA had, over the past 5 years, focused on ensuring that both drought and *Striga*-resistance were selected for simultaneously in the maize breeding programme and reporting on very encouraging results in terms of new inbred lines and hybrids. Simon N'Cho presented an analysis of factors affecting the intensity of *Rhamphicarpa fistulosa* in rice in Benin, using a double-hurdle modelling approach and concluding that low soil fertility and farmer ignorance contribute most and that improved farming practices and herbicide use can greatly reduce the problem.

Host-parasite communication. An introductory paper by Harro Bouwmeesterr reviewed the biosynthesis of the strigolactones, the genes involved and the influence of P. The multiple functions of SLs suggest possibilities for selection of e.g. more branched varieties associated with lower SL exudation. However, the specificity of different SL structures to different functions may complicate this approach while also providing some reassurance that reduced parasite germination may be achievable without interfering with the other benefits of SL biosynthesis. He also referred to the unrelated dehydrocostuslactone and 2-phenylethyl isothiocyanate, important stimulants exuded by sunflower and rapeseed (and *Arabidopsis*) respectively. In a following paper Kaori Yoneyama confirmed that the relative resistance of maize variety KST 94 was associated with lower exudation of 5-deoxystrigol but that other SLs were presumably involved in the branching of AM fungi as there was little difference in mycorrhizal colonisation between this and the susceptible variety Pioneer 3253. Johann Louarn then confirmed that the dehydrocostuslactone (DHCL) that stimulates germination of *Orobanche cumana* is not involved in mycorrhizal branching and that normal mycorrhizal development could further reduce the germination of *O. cumana* by direct inhibition rather than by reducing DHCL exudation. Danny Joel presented a detailed appraisal of haustorium structure in Orobanchaceae (based on his chapter in Joel et al., 2013) and emphasised that the terms terminal and lateral haustorium should be used in place of 'primary' and 'secondary'. Jeff Morawetz expanded further on variation in haustorial structure in relation to the main taxonomic groups within the Orobanchaceae. Takanori Wakatake then described detailed studies of the pattern of cell division and development in the haustorium in the hemi-parasitic *Phtheirospermum japonicum.* The final (prize-winning) presentation was by Juliane Ishida describing studies of gene expression during haustorial development in *P. japonicum* and demonstrating the importance of genes related to the YUCCA genes in *Arabidopsis.* A relevant paper in another section, by Gregorio Ceccantini described the use of microtomography in studies of the anatomical interface between host and parasite. In related posters, one by Yukihiro Sugimoto demonstrated that the SLs needed for germination of *Striga gesnerioides*– alectrol and *ent*-2'-*epi*-

orobanchol– were quite distinct from those stimulating *S. hermonthica* - sorgolactone, sorgomol and 5-deoxystrigol – which were actually inhibitory on *S. gesnerioides* (thus reducing the risk of cereal crops causing suicidal germination). Other posters referred to the stimulants exuded by tobacco (13 SLs identified including 5 not yet fully defined); by *Houttuynia cordata* (5 identified including the new 'strigone'); and by black oat (*Avena strigosa*) (6 apparently new structures). Finally a poster on *Cistanche deserticola* described effects of norflurazon in promoting seed germination and attachment to the host *Haloxylon ammodendron*.

Julie Scholes and Duncan Cameron are to be thanked and congratulated on all the excellent arrangements for this meeting. Thanks are also due to Sheffield University, Syngenta Corp and IITA for generous financial support which contributed to the attendance of many student newcomers to the field, as well as to an extremely enjoyable social programme, including a half day visit to the Chatsworth stately home and good opportunities each evening to meet and socialise. The exceptionally warm un-British weather also contributed to what must be regarded as an unqualified success. The next Congress will have something to live up to!

Abstracts will be available on the Congress website http://ipps13.group.shef.ac.uk/ and/or the IPPS website quite soon.

Chris Parker

Papers presented:

NB Only the presenter's name is included below. He/she may not always be the senior author.

Binne Zwanenburg - Advances and challenges in strigolactone research.
Salim AI-Babili - Strigolactone biosynthesis: few enzymes for a complex backbone.
Kotomi Ueno - The bioconversion of 5-deoxystrigol to mono- hydroxylatedstrigolactone by plants.
Carolien Ruyter-Spira - Natural variation in strigolactone biosynthesis in rice is associated with structural variation and deletion of two *MAX1* orthologs
Yoram Kapulnik - Biological and functional activity of different strigolactone analogues.
Evgenia Dor - Characterization of new tomato varieties lacking strigolactones.
Takahito Nomura - The effects of phosphate and nitrogen nutrients on the production of strlgolactones in *Arabldopsls.*
Kosuke Fukui - Debranones partially and selectively mimic strigolactone function.
David C. Nelson - An investigation of the genetic basis for strigolactone perception in parasitic plant germination.
Ken Shirasu - Genome and transcriptome analyses of *Striga* spp.
Claude W. dePamphilis - Tissue specific *de novo* transcriptomics in the parasitic Orobanchaceae.
Loren A. Honaas - Genome scale analysis of laser micro-dissected tissues sheds light on parasitic plant-host plant interactions.
Steven Runo - *Agrobacterium rhizogenes* transformation of *Zea mays*: a functional genomics tool for host-parasite interaction.
John Yoder - Trans-specific gene silencing: a biological strategy to control parasitic weeds?
Gunjune Kim - *De novo* transcriptome assembly of *Cuscuta pentagona* and bidirectional movement of mRNA between hosts and parasite using high-throughput sequencing.
Jim Westwood - Characterization of mobile RNA from hosts to *Cuscuta pentagona.*
Marc-Marie Lechat - *CYPlOlAl*, an ABA catabolic gene, is a ubiquitous component of parasitic plant seed germination in response to various germination stimulants.
Takatoshi Wakabayashi - Inhibitory effect of nojirimycin on germination and sugar metabolism of a broomrape.
Tal Shilo - Aspects of glyphosate mechanism in Egyptian broomrape control.
LuizaTeixeira-Costa - Anatomical and functional changes on the host wood caused by the infestation of *Phoradendron crassifolium* (Viscaceae).
Juan A. Lopez-Raez - Plant defence responses against root parasitic plants.
Anna J. Wiese - The chemical nature of parasitic and mycoheterotrophic metabolism involves the reconfiguration of substrate usage in order to sustain the tricarboxylic acid cycle.
Jason D. Smith - Parasitic plants imbibe host plant toxins that influence insect herbivores.
Ai-Rong Li - Nutrient requirements differ in two *Pedicularis* species in the absence of a host plant:

implication for driving forces in the evolution of host preference of root hemiparasitic plants.

Gui-Lin Chen - The distribution and evolution of the genus *Cynomorium*.

Peter T6th - Broomrape pollinators in the light of floral volatiles.

Nina Hobbhahn - Pollination systems in *Cytnus:* ants, rodents, elephant shrews, and more.

Iliya Denev - A molecular taxonomy study on *Phelipanche* species (Orobanchaceae) in Bulgaria.

Jane Prider - Natural seed bank decline of *Phelipanche mutelii* in South Australia.

Emmanuel Aigbokhan - Host range and preference of *Cuscuta campestris* (Yunck.) among common weeds in Benin City.

Jonne Rodenburg - The potential of timing as a parasitic weed management strategy for smallholder rice farmers.

Meva Tahiry Randrianjafizanaka - The role of resistant rice varieties in a locally adapted integrated *Striga* management approach.

Yaakov Goldwasser - *Phelipanche aegyptiaca* control in tomato by application of imazapic through drip irrigation.

Alistair J. Murdoch - Effects of *Desmodium* root exudates on *Phelipanche ramosa* and *Orobanche crenata* and other associated hosts.

Greg6rio Ceccantini - Shoot the mistletoe - a new method for controlling mistletoes in trees.

Djibril Yonli - Use of potential non-host crop genotypes and allelopathy properties of local plants for controlling *Striga hermonthica* in Burkina Faso.

Michael M. Timko - Identification of genes controlling compatible and incompatible interactions of cowpea with *Striga. gesnerioides*.

Boubacar A. Kountche - Breeding for *Striga* resistance in pearl millet: response to five cycles of recurrent selection.

Xi Cheng - Natural variation in resistance against parasitic plants

Oz Ben David - Variation in response of a resistant sunflower cultivar to *Phelipanche aegyptiaca and Orobanche cumana.*

Anne-Laure Hepp - Metabolomic analysis of the resistance response in sunflower roots to the parasitic weed *Orobanche cumana*.Lucky O. Omoigui - Identification of new sources of

Thomas Péron - Characterization of the genes encoding sucrose transporters and sucrose-degrading enzymes in the parasitic plant *Phelipanche ramosa*

resistance to *Striga gesnerioides* in a cowpea accession.

Hanan Eizenberg - Tempo-spatial modeling of broomrapes (*Orobanche* and *Phelipanche* spp.) parasitism - a key for their sustainable management.

Abebe Menkir - Combining resistance to *Striga hermonthica* with tolerance to drought in maize.

Amnon Cochavi - Development of a decision support system based on modeling approach for Egyptian broomrape (*Phelipanche aegyptiaca*) control in carrot.

Greg6rio Ceccantini - Using microtomography techniques to better understand the anatomical interface between host and parasite.

Simon N'Cho - Factors affecting parasitic weed infestation in rain-fed lowland rice systems: the case of *Rhamphicarpa fistulosa* in Benin.

Harro Bouwmeester - Regulation of parasitic plant germination.

Kaori Yoneyama - Difference in *Striga*-susceptibility correlates with 5-deoxystrigol exudation but not with compatibility/selectivity to AM fungi in maize.

Johann Louam - Can we use arbuscular mycorrhizal fungi to improve resistance to *Orobanche cumana* in sunflower?

Daniel M. Joel - The haustorium of the Orobanchaceae - a review.

Jeffery J. Morawetz - Comparative haustorial morphology and structure in parasitic Orobanchaceae.

Takanori Wakatake - Dynamic changes in cell morphology during haustorium development in *Phtheirospermum japonicum*.

Juliane K. Ishida - Functional identification of the genes involved in haustorium development in the facultative parasitic plant *Phtheirospermum japonicum*.

Posters:

Radoslava Matusova - *Agrobacterium*-mediated transformation of *Phelipanche ramosa.*

Yasunori Ichihashi – Tnscriptomics in parasite development of *Striga hermonthica.*

Gregory Guirimand - Functional characterization of a 13-mannosidase involved in the early germination process of *Orobanche minor.*

Philippe Simier - Genetic and phenotypic diversities in the parasitic species *Phelipanche ramosa*

Luiza Teixeira-Costa - Comparative phenology of two parasitic plants of the genus Struthanthus (Loranthaceae) infesting two different hosts.
Kristen Clermont - Metabolomic analysis of early stages of *Phelipanche aegyptiaca* development.
Maria Paz-Ponce - Report on *Ceroplastes* sp in mistletoe (*Phoradendron bolleanum*) Sierra de Arteagam Caohuila, Mexico.
Alpha Y. Kamara - Assessment of the level and extent of *Striga* infestation of cereal and cow pea fields in a dry savanna ecology of northern Nigeria.
Stella Kabiri - Ecological niche differences between *Rhamphicarpa fistulosa* and *Striga asiatica* in rain-fed rice.
Nina Hobbhahn - Limitation of current reproduction by resource availability and mating costs in two South African Harveya species - An experimental field study.
Lum A. Fontem - Combating purple witchweed (*Striga hermonthica* (Del.) Benth.) with acetolactate synthase-modified maize seeds in the West African savannas.
Emmanuell. Aigbokhan - Screening effects of crude aqueous sawdust extracts on germination of *Striga hermonthica* seeds.
Musa G. M. Kolo - Management of *Striga hermonthica* with *Aeschynomene histrix* in maize (*Zea mays* L.).
Daniel T. Gungula - Reactions of different genotypes of maize treated with varying rates of imazapyr in Vola Nigeria.
Rosemary Ahom - Studies on the potential of neem tree products as bioagents for management of *Striga hermonthica* in maize.
Maria Paz-Ponce - Isolation of fungi infecting mistletoe, *Phoradendron macrophyllum*, at Saltillo, Mexico.
Baffour Badu-Apraku - Combining ability and heterotic patterns of quality protein maize inbreds under *Striga*-infested environments.
Hiroaki Samejima - *Striga asiatica* Evaluation of resistance of upland rice varieties to *Striga hermonthica* through laboratory, pot and field experiments.
Dan Kiambi - Evaluation of marker assisted Breeding *Striga* resistant sorghum varieties in Eastern and Central Africa.
Yukihiro Sugimoto - Structural requirements of strigolactones for germination induction and inhibition of *Striga gesnerioides* seeds.
Xiaonan Xie - Novel germination stimulants for root parasitic plants produced by *Nicotiana tabacum* L.
Takaya Kisugi - Identification of strigolactones produced by a Chinese medicinal plant *Houttuynia cordata*.
Hyun II Kim - Novel strigolactones produced by black oat.
Yu-xia Song - Effects of exogenous substances on parasitism of *Cistanche deserticola*.

BRAZILIAN PARASITIC PLANTS RESEARCH GROUP

Created in 2012, the Parasitic Plants Research Group - PPRG - was chartered by the National Council for Scientific and Technological Development - CNPq, aiming to bring together scientists and students, especially Brazilians, who develop research on different biological aspects of plant-plant parasitism in the Neotropical region. Devoting itself to the study of Anatomy, Ecology, Phylogeny, Physiology, Plant Geography, Morphology, Taxonomy and Floristics, the PPRG is currently formed by 12 researchers* from different institutions plus three undergraduate and postgraduate students. Since its creation six scientific papers were published about parasitism by its participants in Brazilian and foreign magazines. We intend that this production grows as a result of the inclusion of new members and facilitation of partnerships between its participants with external researchers, as well as by the publication of manuscripts from recently qualified doctoral and masters graduates who are group participants.

The first meeting of PPRG took place at the 63rd National Botanical Congress, held in November 2012 at the city of Joinville-SC. There, goals were drawn up to promote the development and integration of research conducted in different regions of Brazil. Thus, in 2013 we intend to further consolidate PPRG through further publications, conducting new scientific meetings and formalizing the group with the Botanical Society of Brazil, which will bring greater visibility and integration between the Brazilian and international botanic communities. In this way, we would like to invite potential stakeholders to meet and participate in PPRG. Soon we will launch a web page in English to facilitate the release of the group's actions, as well as facilitating contact with affiliate members.

More information about this group, researchers or research lines, can be viewed at:

http://dgp.cnpq.br/buscaoperacional/ or by typing the group name in the search field. To contact the coordinators of PPRG email Dr. Claudenir S. Caires (cscaires@hotmail.com) or Dr. Rafael S. Arruda (rafael.arruda@pq.cnpq.br).

***Members of the Parasitic Plants Research Group are:**
Claudenir Simões Caires, Leandro Jorge Telles Cardoso, Greta Aline Dettke, Jesiani Rigon, João Marcelo A. Braga, Grazielle Sales Teodoro, Eduardo van den Berg, Fabiana Alves Mourão, Claudia Maria Jacobi, Rodrigo Ferreira Fadini, Lucélia Nobre Carvalho, Kleber Del-Claro and Rafael Soares Arruda.

Articles published by PPRG members since its inauguration:

Arruda, R. *et al.* 2012. (see Literature below)
Dettke, G.A. and Waechter, J.L. 2012. (see Literature below)
Dettke, G.A. and Waechter, J.L. 2012. (see Literature below)
Caires, C.S. *et al.* 2012. (see Literature below)
Arruda, R. *et al.* 2013. (see Literature below)
Ferreira, P.P.A., Dettke, G.A., Waechter, J.L. and Miotto, S.T.S. In press. A new species of Cuscuta (Convolvulaceae) from South America. Systematic Botany

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STREAM - STRIGOLACTONES: BIOLOGICAL ROLES AND APPLICATIONS: A NEW EUROPEAN NETWORK WITHIN THE COST FRAMEWORK: COST ACTION FA1206.

Strigolactones (SLs) are a class of structurally related carotenoid-derived compounds with multiple functions in plant physiology and plant-biotic interactions. They are produced in all plants examined so far, including eudicot, monocot and primitive plants. SLs are produced mainly in plant roots and are secreted to the soil, thus present in the rhizosphere. Their benefit to agriculture may be derived from their association both with beneficial and detrimental plant biotic nteractions, and their function as planthormones that regulate both shoot and root development. The consortium will form a network of collaborations that will facilitate finding SLs-related alternatives for field use. SLs were first identified as root-exuded host factors that stimulate the germination of the seeds of parasitic plants (e.g.: *Orobanche, Phelipanche* and spp.).

Parasitic 'witchweeds' and 'broomrapes' are causing massive damage to cereal, legumes, solanaceous crops, sunflower and many other crop production in the Mediterranean area and in the developing world; overall they are among the most destructive weeds in agriculture around the world. They represent a serious risk for food security, because they substantially reduce yield, and may lead in some of the regions to increase poverty and hunger. This threat led the UN to state that *Striga* infection alone is the largest impediment to poverty alleviation in Africa and the Gates Foundation to support a *Striga*control project in 2011. Moreover, weed management of parasitic plants is extremely difficult. This is because almost all the traditional methods of control were proven to be scarcely effective. A better knowledge on their mode of action may lead to development of ways to block the SLs-related seed germination signal, and thus to prevent parasitic weed seed germination. SLs act also in the rhizosphere as signalling molecules in the interaction with beneficial arbuscular-mycorrhizal fungi (AMF) and nitrogen-fixing bacteria of the genus *Rhizobium*, facilitating the establishment of these symbioses.

In agricultural systems, SLs may be used for promoting these beneficial associations. For that purpose, a structure-activity relationship allowing to reduce the molecular complexity to minimum structures while maintaining the essential functionalities and bioproperties is desidered. The design and synthesis of analogues of SLs that are more potent or have longer sustainability in the soil is strongly needed. These may be used to specifically promote these beneficial symbioses in agricultural systems. An additional agriculturally relevant aspect of SLs is related to nutrition balance. Since SLs are promoted under nutrient limiting conditions (mainly phosphorus and nitrogen), they are proposed to play a key role in the regulatory network for adaptation of shoot and root architecture to poor mineral nutrient supply, including the fostering of rhizosphere associations for added nutrient acquisition. An example for the usage of SLs in this regard is development of biotechnological means for treating plants in the field with SLs, with the

aim of regulation of their shoot and root development. This will reduce the need for development of genetically modified crops, and may promote sustainable solutions to nutrient poor environments.

To conclude, a more comprehensive and coordinated knowledge on SLs will facilitate the possibilities of implementing SL usage in sustainable agriculture. In this sense a coordinated research on SLs, termed STRigolactones Enhanced Agricultural Methodologies (STREAM) consortium, in the frame of the COST program will provide a unique opportunity to create a forum for meetings and discussions on the concepts and understanding of SLs, as well as their potential use in agriculture for a variety of plant species and crops in Europe, but also in developing countries. Thanks to the flexibility of the COST Action tool, other scientists from non-EU countries could be involved in the scientific advances. Also, the network might be joined by people that have never worked directly on SLs, but their expertise could be very useful for opening new research frontiers: e.g. experts in parasitic weed management and parasite biology, plant-microbe interactions, chemistry, bioinformatics, etc. Likewise, scientists from the industry may join the action: their integration will promote further collaborations financed by EU Framework Program and other European organizations, both as basic and applied research as well as the opportunity to jointly develop new means for efficient and specific application of SLs for agricultural usage. As this is a coordinating network, it will foster collaboration rather than internal ompetition, avoid redundancies in research effort, and allow the emergence of synergies in this highly competitive field of research. In later stages this network might lead to discovery of innovative research areas and to the ability to submit joint proposals for EU research funds (e.g., the EU Framework Program). The Network is chaired by Prof. Cristina Prandi (Department of Chemistry, University of Turin, Torino, Italy) and vice-chaired by Dr. Hinanit Koltai (Volcani Center, Faculty of Plant Sciences, Bet Dagan, Israel), and currently counts 20 signatory Countries. It was officially approved in November 2012 and had the kickoff meeting in Bruxelles on April 12, 2013. Further information can be found on the COST website at
http://www.cost.eu/domains_actions/fa/Actions/FA1206
and on the website of the Action when available.

Good possibilities of collaboration of participants are foreseen between the Action and the EWRS Working Group 'Parasitic Weeds', also considering that one of the Working Group to be established within the Action regards parasitic plants.

Maurizio Vurro, Coordinator EWRS Working Group Parasitic Weeds; maurizio.vurro@ispa.cnr.it

From EWRS Newsletter April 2013

N.B. See also the notice below of the 1st meeting of the COST Action to be held in Israel, November 3-7.

OBITUARIES

Robert Eugene Eplee - 1933-2013

Anyone who works with witchweeds, parasitic species of the genus *Striga* (Orobanchaceae), is familiar with the work of Bob Eplee who passed away January 30th 2013. He is best remembered for his research on the biology and control of *Striga asiatica*, a weed native to Africa, first recognised in southeastern North Carolina in July 1956.

Thanks in large part to his 30 year research program to develop methods and equipment for the US Department of Agriculture (USDA) Carolinas Witchweed

Eradication Program, the infestation has been reduced from 432,000 acres in the Carolina Coastal Plain in 1970 to 1,542 acres by the end of 2012. This is unquestionably the most successful suppression of a parasitic weed in history.

Of particular note is the ethylene injection equipment he designed and developed making it practical to induce suicidal germination of 99% of viable witchweed seeds in infested fields. Another achievement was the development of safe and effective application methods for 2,4-D and dicamba for witchweed control. Over the years, hundreds of thousands of acres in the witchweed infested area have been treated by contract applicators around susceptible crops without any damage.

Bob?s accomplishments in the USDA witchweed eradication program led to his involvement with the development of parasitic weed control strategies that were adopted in several countries. His work resonated with scientists trying to control witchweed in Africa. When recalling his visit to laboratories in West Africa, local witchweed workers always spoke of Bob Eplee in superlatives. His name is attached to such practical technology for witchweed research as the Underflow Elutriator for separation of microscopic parasitic plant seeds from soil. Those of us who worked with Bob recall with a fond smile when he explained how the elutriator worked by separating out everything '… bigger than, smaller than, heavier than, and lighter than witchweed seeds' which he delivered in his pleasant growl with an Appalachian mountain accent. He also developed fine mesh bags affectionately referred to as 'Eplee bags' for testing the long term viability of witchweed seeds in the soil, and numerous greenhouse and field techniques for growing witchweed for research, and much more.

Eplee received his BS degree in Agronomy from Berea College, Kentucky (1955) and his MS Degree in Agronomy from the University of Kentucky, Lexington (1963). His PhD in Crop Science (Weed Science) was from North Carolina State University (NCSU) in December, 1965.

After serving in the U.S. Army in France from 1955-1957, Bob worked as an extension agent with the USDA Cooperative Extension Service in Morehead County, Kentucky, from 1957-1961. Upon completing his doctoral studies, he accepted the position as director of the Witchweed Laboratory in the Crop Pest Division of the USDA Agricultural Research Service in Whiteville, North Carolina. He held that position until the Whiteville Plant Methods Center was closed by USDA Animal Plant Health Inspection Service (APHIS) in August, 1995. From 1995 until his retirement in 2000, Bob served as the Director of the APHIS Oxford Plant Methods Center (Oxford, North Carolina), and the APHIS Center for Plant Health Science and Technology in Raleigh, North Carolina.

He has been recognized on national and international levels for his professional accomplishments including Fellow of the Weed Science Society of America (1993) and two parasitic plant awards - the Otto Heinreicher Award, International Parasitic Plant Society, 6th International Congress, Cordoba, Spain (1996), and the Legacy Award, International Parasitic Plant Society, 9th International Congress, Charlottesville, Virginia (2007) in recognition of extraordinary contributions to understanding the biology, control, and quarantine of witchweed over 30 years .in the Carolinas not only possible, but practical, and economically feasible.

His influence on parasitic plant research was immense. Although his emphasis was always the applied aspect, he garnered so much information on witchweed that has been used worldwide by basic researchers. Perhaps just as important is how Bob and his work heightened awareness of these pathogens on a worldwide basis. One way he so effectively did this was through graduate students, American and foreign, working in his Whiteville lab. There they saw first-hand how lab science translates into field programs, and experienced first hand the warm hospitality of the Eplees - and such local cuisine as chicken bog and barbecue. He is survived by his wife Mary and a son, Eugene. He was preceded in death by one son, David.

His quick wit, ready smile, innovation, and generous spirit will be missed by all who were privileged to know him.

Lytton Musselman, based on an article by Randy Westbrooks, Doug Worsham and Lytton Musselman.

F. Nigel Hepper 1929-2013.

Nigel Hepper (never known by his first name Frank) has died at the age of 84. He was a plant scientist with

an international reputation. He was an authority on the plants of West and East Africa, where he took part in many scientific expeditions. He was the managing editor of the authoritative *Flora of West Tropical Africa* (1972). Independently his regular observations of the changes over time of the first flowering of plants at Kew led him to give warning in the early 1970s of the effects of climate change. He studied the incense trade at first hand in the Yemen and East Africa and wrote about it. Always interested in Egyptology, he studied the plants from Tutankhamun's tomb when they first arrived at Kew and wrote *Pharaoh's Flowers: the Botanical Treasures of Tutankhamun* (1990).

Nigel was always a specialist in the Orobanchaceae and presented the very first paper at the very first parasitic weed meeting in Malta in 1973, describing the 'Problems in naming *Orobanche* and *Striga*'. He continued to help many of us with the identification of difficult specimens over many years. His expertise and friendly helpful character will be greatly missed.

Chris Parker

PRESS RELEASES

Red witchweed found near Mackay

BIOSECURITY Queensland has confirmed that a serious exotic weed, red witchweed (*Striga asiatica*), which can affect the production of sugarcane and cereal crops has been found near Mackay. Biosecurity Queensland's Director Invasive Plants and Animals John Robertson said samples were collected and have been identified by the Queensland Herbarium.

'While the weed has been confirmed on one property, information to date suggests that the infestation may be on a small number of other properties in the immediate area,' Dr Robertson said. 'The affected property is being placed under movement restrictions which means no equipment, soil or plant material is allowed to be moved on or off the property without approval. While our priority is to minimise the biosecurity risks, we will continue to work with the owner to ensure some business continuity. Biosecurity Queensland has established a response program including a local control centre in Mackay. Potentially affected plant industries have been notified and Biosecurity Queensland is working with industry representatives to provide information to producers. We are urging producers to check their crops and report anything they suspect could be red witchweed.'

Red witchweed is a root parasite that is exotic to Australia and affects the production of sugarcane and cereal crops by depriving them of water and nutrients. Dr Robertson said this was the first confirmed detection of red witchweed in Australia. Red witchweed is a prescribed pest under the Plant Protection Act 1989 and all exotic *Striga* species are declared Class 1 pests under the Land Protection (Pest and Stock Route Management) Act 2002. Producers are urged to report any suspect weeds to Biosecurity Queensland on 132 523.

The Observer, Queensland, 25 July 2013

Medicinal attributes of mistletoe

Mistletoe, the same plant you kiss under at holiday time, may be an effective aid against certain types of cancer. A semi-parasitic plant, mistletoe grows on a variety of common trees including apple, oak, elm and pine. As a traditional medicine, mistletoe (*Viscum album*) was used by the Druids and the ancient Greeks, and was widely regarded as something of a cure-all. The plant has been used for centuries in European herbalism for treating epilepsy, hypertension, headaches, menopausal symptoms, infertility, arthritis and rheumatism. Since the 1920s, mistletoe has also been studied for its applications in treating various forms of cancer, especially solid tumors.

For people undergoing cancer treatments, the widely studied plant is often used as a complementary-based therapy. In Europe, mistletoe preparations are regularly prescribed for various types of cancers as its extract demonstrates anti-cancer activity when used against cancerous cells in the lab. It's been said that mistletoe extract enhances immune function, which increases the production of the immune cells. When administered as a form of therapy for cancer, the extracts are given by injection under the skin, into a vein or directly into a tumor. The anti-cancer activity of mistletoe may be influenced by the host plant. Mistletoe growing on an apple tree, for example, may have a somewhat different chemical composition than mistletoe growing on an elm. However, there does not seem to be any definitive research on which type of extract is preferable for which types of cancer.

Human clinical studies on mistletoe and cancer have been conducted in Europe, primarily in Germany. In a number of studies, mistletoe has demonstrated efficacy

against cancer. However, critics in the United States regard these studies as either too small or improperly designed. In one study conducted between 1993 and 2000, researchers examined the use of a mistletoe extract by the brand name Iscador in 800 patients with colorectal cancer. They were all treated with chemotherapy and/or radiation therapy. Researchers found the patients treated with Iscador had fewer adverse events, better symptom relief and improved disease-free survival compared to patients who did not receive the mistletoe extract as adjuvant therapy. This finding concurs with other research, that mistletoe therapy reduces the discomfort and undesirable symptoms of other traditional therapies, such as chemotherapy.

In 2002, the National Center for Complementary and Alternative Medicine (NCCAM), and the National Cancer Institute (NCI), initiated a clinical study of a mistletoe extract (Helixor A) in conjunction with the chemotherapeutic drug gemcitabine in patients with advanced solid tumors. In the study, the combination of the two showed low toxicity and health benefits in almost half the patients. In this case, mistletoe demonstrated its value as an adjuvant, helping to modify the chemotherapy.

At present time, two research groups have "investigational new drug" approval to conduct studies on the use of mistletoe extract for cancer. Their studies may further the cause of this treatment in the U.S. However, at this time, the FDA does not recognize the use of mistletoe to treat any form of cancer, and injectable mistletoe extracts cannot be sold in the U.S.

Chris Kilham
Medicine Hunter
December 24, 2012

(A video associated with this story at :http://www.foxnews.com/health/2012/12/24/medicinal-attributes-mistletoe/ shows Chris Kilham discussing the medical uses of *Viscum album*.)

Bird spreads mistletoe towards East Lancashire

Romantics are getting excited as mistletoe is spreading towards East Lancashire thanks to a tiny bird. The blackcap, which usually flies south for the winter, but has more recently been staying in Britain, is helping to spread the plant to wooded areas. The distinctive grey warbler, which has the nickname 'northern nightingale', carefully pick the berries on mistletoe (*Viscum album*) apart and leave the seeds embedded in trees, like apple, lime, hawthorn, poplar, maple and willow.

Lancashire Wildlife Trust projects manager Mark Champion said mistletoe had now been found in Wigan and that it would not be long before it spread to other parts of Lancashire. He said: 'Mistletoe has been increasing its range. It used to be quite localised on the orchards of Herefordshire and Worcestershire where the climate is warm and moist but both here and on the continent the range has expanded. Most birds don't like the berries of mistletoe because they don't taste nice for starters and, quite frankly, the berries are full of sticky goo which puts birds right off their lunch.' Mark added that the mistle thrush, which is normally associated with spreading the parasitic plant, is much less reliable as when the seeds pass through their guts, they rarely land in ideal places for growth.

But since the 1980s, the blackcap has been wintering in the UK and is causing a resurgence of the festive plant. Mark said: 'This small bird should migrate south for the winter but a small population from central Germany got lost and confused and they now fly west to winter in Britain. It is these birds which carefully take the berry apart, thus avoiding the sticky bits and leaving the seed nicely embedded in the trees where it can sprout to continue its semi-parasitical lifestyle.'

Why do people kiss under the mistletoe?

The mistletoe was part of the mystical Celtic druids' rites and was considered to be sacred. It is probable that this is the last vestige of a winter fertility rite. In cultures across pre-Christian Europe, mistletoe was seen as a representation of divine male essence as well as romance, fertility and vitality. According to Pliny the Elder, the Celts considered it a remedy for barrenness in animals and an antidote to poison. The earliest documented case of kissing under the mistletoe dates from 16th century England.

Jessica Cree

Lancashire Telegraph, 21st December 2012

Project makes significant progress to save maize from the 'violet vampire' in western Kenya

Thousands of farmers in western Kenya are successfully battling the invasion in their farms by a deadly parasitic weed called *Striga*, dubbed the **violet vampire** because of its beautiful violet flowers. As a

consequence, they are enjoying higher yields of their number one staple, maize. This is thanks to the efforts of the Integrated *Striga* Management in Africa (ISMA) project that has introduced a combination of sustainable multiple-pronged management options to sustainably eliminate the weed from their fields. *Striga* attacks and greatly reduces the production of staple foods and commercial crops such as maize, sorghum, millet, rice, sugarcane, and cowpea. The weed attaches itself to the roots of plants and extracts its water and nutrients adversely affecting its growth. It can cause farmers up to 100% crop loss. Furthermore, a single flower of the weed can produce up to 50,000 seeds that can lie dormant in the soil for up to 20 years. Studies have shown that this parasitic weed is the number one maize production constraint in Western Kenya with most farmers' fields being infested. The four-year ISMA project is demonstrating the effectiveness of using a combination of existing and new technologies developed by various national and international research organizations and private companies, to sustainably control the beautiful but lethal *Striga* weed.

The technologies range from simple cultural practices such as intercropping maize with legumes, such as groundnuts, rotating maize with soybean (soybean stimulates the *Striga* to germinate but it later dies in the absence of a maize host to latch onto) to deploying a "push-pull' technology that involves intercropping cereals with specific *Striga*-suppressing desmodium forage legume. Other technologies include using *Striga*-resistant maize varieties and maize seeds coated with and resistant to imazapyr, a BASF herbicide (*Striga*way) developed by the International Maize and Wheat Improvement Center (CIMMYT) which kills the *Striga* seed as it germinates and before it can cause any damage. The project is also testing the effectiveness of biocontrol technologies which use a naturally occurring host-specific fungal pathogen that kills the *Striga* at all stages without affecting other crops. '*Striga* is very difficult to control and all the various methods have their challenges. Therefore the key to sustainably manage this weed is to combine various technologies,' says Dr Fred Kanampiu, a CIMMYT agronomist leading the project activities in Kenya. 'ISMA is providing farmers with options and they can choose the combination that works best for them.' According to Dr Mel Oluoch, the project manager based at the International Institute of Tropical Agriculture (IITA) which is coordinating the project, over 6,000 farmers in the western region of Kenya now have access to the imazapyr-resistant (IR) maize variety and maize-legume intercrop and rotation technologies. Furthermore, Dr Oluoch says, on-farm studies have shown that imazapyr resistant-maize and *Striga*-resistant maize hybrids reduce *Striga* emergence by more than 60% and increase maize yields by two to three times compared with the current commercial open-pollinated varieties and hybrids commonly grown by farmers. 'Partner seed companies have produced 98 tons of IR maize seed, with over 44 tons disseminated through commercial channels consisting of agro-dealer networks. Another 6.5 tons have been disseminated to at least 29,000 smallholder farmers in the *Striga* hot spots of western Kenya,' Dr Oluoch said. George Martin Mitende,56, from Bonda village in Migori County is one of the farmers who donated land on his farm to the project for demonstration of the technologies. He said the project researchers requested for that part of his land that was the most affected by *Striga* to the project to set up a the trials in 2011. With the application of a combination of the new technologies, Mitende now gets more maize from this parcel of land than from the rest of his farm. He says that *Striga* has been dramatically decreasing on this piece of land. He notes that although the piece of land is about a quarter of an acre only, he has been able to repeatedly harvest four 90-kg bags of maize for the last two growing seasons. He usually harvests only one to two bags per acre from the rest of his farm. 'My favorite *Striga* control technology is intercropping *Desmodium* with WS303. I will extend this technology to the rest of my farm,' he says. WS303 is an IR maize variety being marketed by the Western Seed Company. *Desmodium,* a legume that is also fed to livestock, is intercropped with the maize to suppress the growth of *Striga* as part of the push-pull *Striga* management technology developed by the International Centre of Insect Physiology and Ecology (icipe) and partners. To ensure availability of *Desmodium* seeds, Mr Jimmy Pittchar, a Research Scientist with icipe, says the project has been working with community seed producers and partner seed companies who have produced and disseminated 3 tons of the seeds to farmers. More than 14,000 farmers have been trained on the push-pull technology, with 6,800 of them using it on their farms. Farmers who have adopted the push-pull technology have reported almost 100% reduction in *Striga* infestation and up to three-fold maize grain yield increases. 'The *Striga* menace is expanding in the Lake Victoria basin of Western Kenya

largely due to declining soil fertility and climate change, which has created a conducive environment for increased infestation. This has made the need for a sustainable solution very urgent,' says Mr Pittchar. The *Striga* problem in the region is exacerbated by the new Maize Lethal Necrosis (MLN) virus disease, a combination of two virus diseases which is fast spreading in the area and has wiped out up to 100% of maize fields in Western Kenya, including many *Striga* technology demonstration and testing fields. 'We need to develop integrated solutions to tackle both problems. CIMMYT and the Kenya Agricultural Research Institute (KARI) are currently screening hundreds of maize inbred lines from the genebank and other sources to help identify MLN- resistant sources to be used for resistant hybrid development. Some of these inbred lines could be used for *Striga* control work,' says Ms Edna Mageto, a researcher with CIMMYT. Researchers from the Real IPM Company Ltd., a biopesticide company working in collaboration with IITA, the University of Hohenhiem, and Kenya Agricultural Research Institute (KARI) in the ISMA project are also conducting field validation of the effectiveness of biocontrol technology against *Striga* in maize farms of western Kenya.

The successful *Striga* control technology models in Kenya will be scaled out to other countries in sub-Saharan Africa with similar ecologies and where *Striga* is also a major concern to maize, cowpea, sorghum, and millet production systems. ISMA is funded by the Bill & Melinda Gates Foundation and is being implemented in partnership with icipe, CIMMYT, African Agricultural Technology Foundation (AATF), BASF Crop Protection, and other national agricultural research and extension services and private sector players in Kenya and Nigeria.

For more information, please contact:
Catherine Njuguna (c.njuguna@cgiar.org)
Dar es Salaam-March 25, 2013.

STOP PRESS!

OROBANCHE CRENATA DESTROYING FABA BEAN IN UK

Orobanche crenata has been previously recorded in UK but only at one site whose whereabouts has been kept secret because of its rarity! But it has now, very recently been reported by the Processors and Growers Organisation (PGRO), causing severe damage to faba bean at two sites, in Kent and in Norfolk. The source of the infestations has not been explained but is not thought to have involved recently imported seed. Perhaps *O. crenata* has been a little more widespread in UK than realised, having been confused with *O. minor*? More anon.

Photo: Courtesy of Matthew Bailey (Frontier Agriculture Ltd.)

THESES

Distribution, Identification and Diversity of *Orobanche* spp. populations in Greece
Dionyssia Lyra; PhD, Agricultural University of Athens, Faculty of Crop Science.

Orobanche spp. parasitize a considerable number of economically important crops such as tobacco, tomato, sunflower, legumes etc. in Greece. All *Orobanche* spp. are characterized as holoparasites, since they totally depend on their plant hosts for their survival and development.

Sixty five broomrape populations were collected throughout Greece parasitizing tobacco, tomato, faba bean, carrot and pea crops, with the aim to study the extent of morphological, genetic, physiological variability. Spatial heterogeneity was also studied for the sampling regions. 17 morphological characteristics were studied for the identification of collected broomrape samples, according to Flora Europaea and Flora d' Italia taxonomic keys. The identified species were: *O. aegyptiaca*, *O. ramosa* and *O. crenata*.

However, some broomrape samples were characterized as intermediate forms of *O. aegyptiaca* and *O. ramosa* and named as '*O.* ?' biotypes. Analysis of variance for morphological characteristics showed that *Orobanche* spp. differentiated even among and within surveyed areas. In all multivariate analyses conducted, broomrape populations were clearly distinct on the basis of flower morphological characteristics, while '*O.* ?' biotypes were grouped between *O. aegyptiaca* and *O. ramosa* samples.

RAPD molecular markers were used for the study of genetic variability of *Orobanche* samples. Molecular analyses showed that *O. aegyptiaca* populations were characterized by higher differentiation compared to *O. ramosa* ones. In addition, high within-population variability was observed for *O. crenata* samples. It seems for '*O.* ?' biotypes that they are interspecific hybrids between *O. aegyptiaca* and *O. ramosa* species and they are possibly products of continuous back-crosses. Host-plant seems to influence more the genetic variability for *O. crenata* , whereas geographical distance seems to have more impact on the other species. Physiological variability for *Orobanche* populations was investigated with germination and parasitism studies. Algit Super®, an aqueous solution of the alga *Ascophyllum nodosum*, and GR24, a stimulant-control, were evaluated for their efficacy to induce *O. aegyptiaca*, *O. ramosa* and *O. crenata* seeds' germination at 18, 20 and 23°C. In most cases, *Orobanche* seeds responded in a greater extent to GR24 compared to Algit Super®. However, *O. aegyptiaca* and *O. ramosa* seeds responded much better to Algit Super® compared to *O. crenata* whose germination was very low. On the contrary, the radical of all broomrape species was longer after Algit Super® application compared to GR24. In addition, high variability was observed between and within *Orobanche* species. Moreover, *Orobanche* populations were studied for their efficacy to germinate and parasitize host-plant seedlings in vivo with plastic bag assays. Tomato and tobacco were the host-plants used for *O. aegyptiaca* and *O. ramosa* and faba bean was used for *O. crenata*. *O. ramosa* seeds germinated more compared to *O. aegyptiaca* seeds. The number of tubercles developed on the root system of tobacco and tomato was approximately the same for *O. aegyptiaca*, but *O. ramosa* formed more tubercles on tomato roots. *O. crenata* seeds did not develop any tubercle on faba bean roots. High interspecific variability was observed among all *Orobanche* populations.

The distribution and the infestation level of all *Orobanche* species for all infested crops in all surveyed regions were also studied. Global Position System (GPS) and Geographical Information System (GIS) were utilized in order to map these two parameters. Mapping gave a clear image of the variation in the infestation level among species and sampling areas. Furthermore, several soil and bioclimatic parameters of spatial heterogeneity were taken into account for the regions under study: soil structure, pH, organic matter, annual humidity index and degree days for the whole biological cycle of cultivated crops. Statistical analyses, which were conducted to trace any correlation between the aforementioned parameters and the level of infestation provoked by *O. aegyptiaca* and *O. ramosa*, showed that it was negatively correlated with pH, annual humidity index and positively with organic matter. As far as *O. crenata* is concerned, no correlation was observed.

From EWRS Newsletter April 2013

Development of a decision support system (DSS) for Egyptian broomrape (*Phelipanche aegyptiaca*) management in carrot (*Daucus carota* L.)

Amnon Cochavi, MSc, Faculty of Agriculture, Food and Environment, The Hebrew University of Jerusalem, Rehovot 76100, Israel.Aptil, 2013. Supervisors: Hanan Eizenberg and Baruch Rubin.

Egyptian broomrape (*P. aegyptiaca*) and crenate broomrape (*Orobanche crenata*) are severe threats to agriculture in the Mediterranean area in many crops and vegetables. Carrot is sown in mid-July, and harvested in the late spring of the next year. Depending on the level of infestation, the potential damage of broomrapes in heavily infested fields may reduce carrot quality and yields, sometimes up to total yield loss. As a root parasite that can be effectively controlled only in the soil subsurface, the prediction of the parasitism dynamics in this phase is a key factor in the development of a smart decision support system (DSS) for a rational chemical control of *P. aegyptiaca* in carrot.

The main objective of this study was to develop a DSS for a rational broomrape management in carrot. The sub-objectives are: a) to develop a robust predicting model for the parasitism dynamics in the soil sub-surface growth stages; b) to optimize a broomrape

control program based on the parasitism dynamics model; c) to integrate parasitism dynamics models and chemical control approaches into a robust DSS for a rational broomrape management. Fifteen field experiments were conducted in commercial carrot fields throughout Israel between 2010 and 2012, under various geographical and climatic conditions. The experiments employed a minirhyzotron camera, which allows non-destructive in-situ subsurface observations of parasite development. At each location, four transparent tubes artificially inoculated with *P. aegyptiaca* seeds, were buried in soil. Observations for carrot root growth and *P. aegyptiaca* development were conducted once a week throughout the growing season. Soil surface temperature (top 10 cm) was recorded, and the measured temperature units were converted to thermal-time using several mathematical equations that included among other linear equation, parabolic equation or β-function. The latter function takes into consideration that parasitism dynamics in supra-optimal temperature ranges which in our case is completely inhibited and therefore the computed contribution of temperature to the parasitism dynamics is zero. Several models were tested for best predicting the parasitism dynamics and the specific parasitism stage of 1-2 mm size of broomrape attachments using appropriated statistical analysis. Fit of equations was evaluated by ANOVA of the regressions and root mean-square error (RMSE). Another set of experiments that were conducted under field and controlled conditions examined the broomrape control efficacy and the selectivity of carrots to glyphosate ('Roundup', 0.36 kg ae glyphosate L^{-1}), imazapic ('Cadre', 240 g ai imazapic L^{-1}) and imazamox ('Pulsar', 40 g ai imazamox L^{-1}) applied post-emergence.

The results indicate that temperature has the major effect on broomrape parasitism in carrot. The greatest parasitism rate was observed when carrot was grown under 28-22°C (D/N) temperature regime. The fact that temperature has a great impact on host-parasite relationship was used to develop a predicting model for the parasitism dynamics. The model was developed based on minirhyzotron observations under field conditions and was supported by experiments that were conducted under controlled conditions.

For model development, data of temperature and calendar days were converted to growing degree days (GDD) using the β-function model and parasitism dynamics was obtained by the Weibull Equation. This equation allows predicting and analyzing the significance of the initial parasitism stage, (attachment size 1-2 mm) and the optimal stage for herbicide application. A first attachment was observed at 500 GDD while 63% from total attachments (a parameter that was extracted from Weibull Equation) appeared at 600 GDD and the maximum number of attachments appeared at 800 GDD. Glyphosate was found to be the safest and the most selective herbicide to carrot. Herbicide control efficacy over time revealed that glyphosate (0.072 kg ha-1) effectively controlled Egyptian broomrape when applied at 600 to 800 GDD and excellent control was achieved 150-300 GDD after herbicide application. A protocol for a rational management strategy for broomrape control based on parasitism dynamics was developed. The protocol proposed the commercial application of three sequential treatments of glyphosate at 650, 800 and 950 GDD based on the β-function model. This protocol was evaluated under field conditions and found to be robust and effective for broomrape control in carrot.

From: EWRS Newsletter April 2013

NEW BOOKS

Parasitic Orobanchaceae: Parasitic Mechanisms and Control Strategies. 2013, Edited by Joel, D.M., Gressel, J and Musselman, L.J., Heidelberg, Gerrmany: Springer. 500 pp. Full price Euro 150; £135; $209. Also available electronically – see http://www.springer.com/life+sciences/plant+sciences/book/978-3-642-38145-4 We hope to include a full review in the next issue.

Die Mistel in der Tumortherapie 3 – Aktueller Stand der Forschung und klinische Anwendung, 2013. Edited by Rainer Scheer, Susanne Alban, Hans Becker, Wolfgang Blaschek, Fritz H. Kemper, Wolfgang Kreis, Harald Matthes, Heinz Schilcher, Rainer Stange. 502 Seiten mit zahlreichen farbigen Abbildungen ISBN 978-3-86864-032-8, Essen 2013, 39,00 Euro. The book's main language is German. All abstracts and some contributions are in English. This meeting was reviewed in Haustorium 61 and the abstracts are available at http://www.sciencedirect.com/science/journal/09447113/18/supp/S1

OLD BOOK

Parasitic Weeds of the World; Biology and Control 1993 by Chris Parker and Charlie Riches. As there is some lingering demand for this volume, CAB International are planning to make it available on a 'print-on-demand basis, from SeptemberOctober. This will be complete and unexpurgated – i.e. with all its original errors and misprints! We have been given no opportunity for any correction but we hope a sheet of 'ERRATA' might be available. The price is not yet fixed but will be of the order of £85.

MEETING REPORT

16th European Weed Research Society Symposium, Samsun, Turkey, 24-27 June, 2013.

Contributibutions on parasitic weeds included the following:

Demirbas, S. *et al.* - Suicidal germination of some broomrape species under the influence of polymeric particles.

Yergin-Özkan and Tepe, I. - Germination physiology of *Cuscuta approximate* Bab. (alfalfa dodder).

Miryamchik, H. *et al.* – Studying the resistance mechanism of chickpea (*Cicer arietinum*) and tomato (*Solanum esculentum*) to field dodder (*Cuscuta campestris*).

Demirbas, S. and Acar, O. – Changes in antioxidative enzyme activities caused by *Phelipanche ramosa* (L.) Pomel and salt stress in *Arabidopsis thaliana* (L.) Heynh.

Aly, R. – translocation of molecules and macromolecules from host plants to parasitic weed *Phelipanche aegyptiaca.*

Dikilitas, M. *et al.* – Effect of *Fusarium oxysporum f. sp. menongenae* and its interaction with *Orobanche ramosa* on the disease development and growth parameters of eggplant.

Stępowska, A. *et al.* – The search for resistance to *Phelipanche ramosa* (L.) Pomel among different tomato cultivars.

Nemli, Y. *et al.* – Problem and management of broomrape (*Phelipanche ramosa* (L.) Pomel/*P. aegyptiaca* (Pers.) Pomel) in tomato greenhouses of Turkey.

Bastiaans, L. *et al.* – PARASITE – an integrated research programme on parasitic weeds of rice in sub-Saharan Africa.

Lyra, D. *et al.* – Impact of environmental and management factors on weed species composition in sunflower fields in Greece, Turkey and Croatia: a comparative approach.

Farhangfar, M. *et al.* – Possibility of *Phelipanche aegyptiaca* control in tomato by strains of *Pseudomonas fluorescens.*

Varga, I. *et al.* – Effective control methods against European mistletoe (*Viscum album*): biological control or herbicide treatment.

Aksoy, E. *et al.* – Significant outputs of national *Orobanche* project/Turkey.

(Availability of full set of abstracts uncertain, but I have copies of the above. Chris Parker)

FORTHCOMING MEETINGS

The Third Symposium on the Biology of Non-weedy Parasitic Plants will take place in Namur, Belgium on September 12-15 2013. The meeting will be hosted by the Université Catholique de Louvain. There could still be space for further participants. For further information see: http://botanika.prf.jcu.cz/hemiparasites/

Joint Workshop of the EWRS Working Groups 'Novel and Sustainable Weed Management in Arid and Semi-arid Agroecosystems' and 'Weed Mapping'. 29 September – 03 October 2013 Mediterrannean Agronomic Institute of Chania, Crete, Greece. Including session on parasitic weeds. For further information go to: http://confer.maich.gr/

Building a new research alliance to reclaim Faba bean production area abandoned to *Orobanche*. Rabat, Morocco, 7-9th October, 2013. Regiastration closed on 15th August, but for further information contact: orobanche2013rabat@gmail.com

COST meeting 2013: Strigolactones: biological roles and applications. Jerusalem, Dan Hotel, November 3-7, 2013. **N.B.** Deadline for registration is August 15 and for abstract submission September 15. For more information, please contact Dr. Einav Mayzlish Gati at: streamisrael2013@gmail.com

22nd COLUMA Conference, International Meeting on Weed Control, Dijon, France, 10-12 Dec. 2013**.** e-mail: afpp@afpp.net

The XVI Congress on Molecular Plant-Microbe Interactions will be held July 6–10, 2014 in Rhodes Island, Greece at the Rodos Palace Hotel. No detailed programme as yet, but parasitic plants likely to be covered. To keep track, see: http://www.mpmi2014rhodes-hellas.gr/index.php

XIV Congresso de la Sociedad Espaňola de la Malherbologia (SEMH) 5-7 November 2013, Valencia, Spain. Coordinator: Dr. Dr.José Mª Osca (josca@prv.upv.es) Technical Secretariat Dr. Diego Gómez de Barreda, Dr. Nuria Pascual Technical University of Valencia, amino de Vera s / n 46022-Valencia, Spain.
Email: 14congresosemh@upv.es Inernet: http://14congresosemh.webs.upv.es/

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/ (N.B. currently a little out of date)
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 information on the work of the African Agricultural Technology Foundation (AATF) on *Striga* control in Kenya, including periodical 'Strides in *Striga* Management' and 'Partnerships' newsletters, see: http://www.aatf-africa.org/
For Access Agriculture (click on cereals for videos on *Striga*) see: http://www.accessagriculture.org/
For The Mistletoe Center (including a comprehensive Annotated Bibliography on mistletoes up to 1995, but apparently incomplete since then) see: http://www.rmrs.nau.edu/mistletoe/
For information on future Mistel in derTumortherapie Symposia see: http://www.mistelsymposium.de/deutsch/-mistelsymposien.aspx
For a compilation of literature on *Viscum album* prepared by Institute Hiscia in Arlesheim, Switzerland, see: http://www.vfk.ch/informationen/literatursuche (in German but can be searched by inserting author name).
For the work of Forest Products Commission (FPC) on sandalwood, see: http://www.fpc.wa.gov.au (Search *Santalum*)
For past and current issues of the Sandalwood Research Newsletter, see: http://www.jcu.edu.au/mbil/srn/index.html

LITERATURE

- indicates web-site reference only

Abdul, K., Chemining'wa, G.N. and Onwonga, R.N. 2012. Relationships between agronomic practices, soil chemical characteristics and *Striga* reproduction in dryland areas of Tanzania. Journal of Agricultural Science and Technology A 2(10): 1134-1141. [A survey of *Striga asiatica* (not specified in paper) in relation to soil properties in the Morogoro and Dodoma districts indicated a strong positive correlation between K and *Striga* seed production, and a reduction of *Striga* with intercropping compared to sole cropping.]
Abu-Shall, A.M.H. 2012. Effect of laboratory preservation of *Phytomyza orobanchia* (Diptera: Agromyzidae) pupae in broomrape shoots on emergence and viability of resultant adults. Egyptian Journal of Biological Pest Control 22(2): 121-126. [Recording no difference in the emergence of *P. orobanchia* from stems stored at 18 and at 25^{0}C]

Adam, I.Y.S. and Asma, E.A., 2012. Assessment of antihepatotoxic effect of *Cuscuta californica* against carbon tetra chloride induced liver damage in Wistar rats. Journal of Pharmacology and Toxicology 7(7): 322-329. [Although *C. californica* is traditionally regarded as having hepatoprotective effects, these were not confirmed in this study, while there were hepatotoxic effects.]

Addis, G.G., Asfaw, Z., Singh, V., Woldu, Z., Baidu-Forson, J.J. and Bhattacharya, S. 2013. Dietary values of wild and semi-wild edible plants in southern Ethiopia. African Journal of Food, Agriculture, Nutrition and Development 13(2): 7485-7503. [*Ximenia caffra* among 15 most favoured edible plants, but 'anti-nutrients' tannins and phenolics of some concern.]

Adegboyega, A.M. and Odunola, O.O. 2012. The modulatory effects of aqueous extracts of *Viscum album* and garlic on sodium arsenite induced toxicity in wistar albino rat. Journal of Chemical and Pharmaceutical Research 4(11): 4698-4701. [Results suggest that pretreatment of rats with either garlic or *V. album* extracts reduced the elevated plasma levels of liver enzymes and clastogenicity induced by sodium arsenite in rats.]

Adesina, S.K., Illoh, H.C., Johnny, I.I. and Jacobs, I.E. 2013. African Mistletoes (Loranthaceae); ethnopharmacology, chemistry and medicinal values: an update. African Journal of Traditional, Complementary and Alternative Medicines 10(4): 161-170. [Reviewing the medicinal uses of *Globimetula*, *Phragmanthera*, *Agelanthus* and *Tapinanthus* spp. in West Africa and apparently presenting new results to support potential for use in treatment of diabetes mellitus, hypertension, arthritis, pain, cancer, etc.]

Agbo, M.O., Lai DaoWan, Okoye, F.B.C., Osadebe, P.O. and Proksch, P. 2013. Antioxidative polyphenols from Nigerian mistletoe *Loranthus micranthus* (Linn.) parasitizing on *Hevea brasiliensis*. Fitoterapia 86: 78-83. [Compunds isolated from *L. micranthsu* (= *Ileostylus micranthus*).]

Akinwale, R.O., Badu-Apraku, B. and Fakorede, M.A.B. 2013. Evaluation of *striga*-resistant early maize hybrids and test locations under *striga*-infested and *striga*-free environments. African Crop Science Journal 21(1): 1-19. [Trials in 2008/2009 identified the hybrids TZEI11 × TZEI127 and TZEI80 × TZEI2B as the most outstanding under *S. hermonthica*-infested conditions.]

Alagarsamy Karthikeyan, Ramakrishnan Rameshkumar, Sivakumar, N., Al-Amri, I.S., Pandian, S.K. and Manikandan Ramesh. 2012. Antibiofilm activity of *Dendrophthoe falcata* against different bacterial pathogens. Planta Medica 78(18): 1918-1926. [Activity shown against *Proteus mirabilis*, *Vibrio vulnificus*, *Aeromonas hydrophila*, *Shigella sonnei*, *Chromobacterium violaceum*, *Vibrio parahaemolyticus*, *V. harveyi*, *V. alginolyticus*, *Vibrio cholerae*, and *Proteus vulgaris*.]

Alemu Tirfessa, Fetsum Sahlemariam, Nigus Belay, Wasihun Legesse, Sisay Kidane, Mulugeta Atnaf, Tizazu Degu, Dawit Mitiku and Moges Mekonen. 2012. *Striga* management in maize production in north western Ethiopia: review of research results. In: Worku, M. *et al.* (eds) Proceedings of the 3rd National Maize Workshop of Ethiopia, Addis Ababa, Ethiopia, 18-20 April, 2011: 134-138. [Describing experiments with IITA maize hybrids, with and without imazapyr seed-dressings in fields infested with *S.hermonthica*, and showing benefits from both approaches, but differences not highly significant.]

Andolfi, A., Zermane, N., Cimmino, A., Avolio, F., Boari, A., Vurro, M. and Evidente, A. 2013. Inuloxins A-D, phytotoxic bi-and tri-cyclic sesquiterpene lactones produced by *Inula viscosa*: potential for broomrapes and field dodder management. Phytochemistry 86: 112-120. [Inuloxins A, C and D caused up to 100% inhibition of germination in both *Cuscuta campestris* and *Orobanche crenata*. Inuloxin B was less active on *C. campestris* and completely inactive against *O. crenata*. The main metabolite α-costic acid had a suppressive effect on the germination of *C. campestris* but a stimulating action on *O. crenata*.]

Antonova, T.S., Araslanova, N.M., Strelnikov, E.A., Ramazanova, S.A., Guchetl, S.Z. and Chelyustnikova, T.A. 2013. Distribution of highly virulent races of sunflower broomrape (*Orobanche cumana* Wallr.) in the southern regions of the Russian Federation. Russian Agricultural Sciences 39(1): 46-50. [Recording wide distribution of the most virulent races F, G, and H, and a high percentage of the races G and H in some districts.]

Archna Kumar, Abhilasha Verman, Nidhi Wadhwa, Prajjalendra Barooah and Asfiya Zayeem 2013. Impact of synomones on foraging response of larval parasitoid, *Bracon brevicornis*. Annals of Plant Protection Sciences 21(1): 77-82. [Extracts of

Cuscuta refexa acted as attractants to *B. brevicornis*, of potential to attract the parisitoid to the host plant.]

Arruda, R., Lunardelli, C., Kitagawa, C., Caires, C.S., Teodoro, G.S. and Mourão, F.A.. 2013. Two mistletoes are too many? Interspecific occurrence of mistletoes on the same host tree. Acta Botanica Brasilica 27(3): 226-230. [Recording various combinations of 2 or 3 of the following on a range of hosts - *Passovia ovata*, *P. stelis, Dendrophthora warmingii, Phoradendron mucronatum Ph. tunaeforme, Ph. andersonii Ph. apiciflorum Ph. crassifolium, Ph. strongyloclados, Ph. affine, Ph. bathyoryctum, Psittacanthus acinarius* and *Ps. cordatus* and discussing the possible 8interactions.]

Arslan, Z.F., Aksoy, E. and Uygur, F.N. 2012. (Effect of solarization on weeds in greenhouse tomatoes and tomato yield in East Mediterranean region of Turkey.) (in Turkish) Bitki Koruma Bülteni 52(4): 349-366. [Solarization with clear plastic raised soil temperatures to 50^0 C daily over 8 weeks in a greenhouse and reduced *Phelipanche ramosa* by 97%.]

Asare, A., Gowda, B.S., Galyuon, I.K.A., Aboagye, L.M., Takrama, J.F., Padi, F.K. and Timko, M.P. 2013. Identification of potential sources of *striga* resistance in cowpea [*Vigna unguiculata* (L.) Walp.] accessions from Ghana. Journal of Microbiology and Biotechnology Research 3(1): 14-22. [Screening of a range of cowpea lines available in Ghana showed only one with resistance to *S. gesnerioides*. Line GH3684 carried the SG3 resistance marker SSR1, but not SCAR 61RM2.]

Assaf, A. M,; Haddadin, R.N., Aldouri, N.A., Alabbassi, R., Mashallah, S., Mohammad, M. and Bustanji, Y. 2013. Anti-cancer, anti-inflammatory and anti-microbial activities of plant extracts used against hematological tumors in traditional medicine of Jordan. Journal of Ethnopharmacology 145(3): 728-736. [*Viscum cruciatum* extracts showed high anti-cancer and anti-microbial potentials. They also had an anti-inflammatory effect, supporting its traditional use for hematopoietic neoplasms.]

Atewolara-Odule, O.C. and Aiyelaagbe, O.O. 2013. Antimicrobial properties and phytochemical studies of extracts of *Phragmanthera incana* (Schum) Balle [Loranthaceae] grown in Nigeria. International Journal of Research in Chemistry and Environment (IJRCE) 3(1): 203-207. [Confirming good activity from extracts of *P. incana* against a range of bacteria and fungi, suipporting the traditional use of these locally in traditional medeicine.]

Badu-Apraku, B. and Fakorede, M.A.B. 2013. Breeding early and extra-early maize for resistance to biotic and abiotic stresses in sub-Saharan Africa. Plant Breeding Reviews 37: 123-205. [A general review of the programme for breeding maize varieties for resistance to stresses including *Striga hermonthica*.]

Badu-Apraku, B., Oyekunle, M., Akinwale, R.O. and Aderounmu, M. 2013. Combining ability and genetic diversity of extra-early white maize inbreds under stress and nonstress environments. Crop Science 53(1): 9-26. [Describing selection procedures for combined resistance to *Striga hermonthica* and to drought.]

Badu-Apraku, B., Yallou, C.G. and Oyekunle, M. 2013. Genetic gains from selection for high grain yield and *Striga* resistance in early maturing maize cultivars of three breeding periods under *Striga*-infested and *Striga*-free environments. Field Crops Research 147: 54-67. [Reviewing progress in breeding maize for resistance to *Striga hermonthica* over the past 3 decades.]

Baker, F., Hansen, M., Shaw, J.D., Mielke, M. and Shelstad, D. 2012. The incidence of dwarf mistletoe in Minnesota black spruce stands detected by operational inventories. Northern Journal of Applied Forestry 29(3): 109-112. [Unspecified dwarf mistletoe, presumably *Arceuthobium pusillum*, occurred in about 50% of the stands of *Picea mariana* surveyed, with about 20% of trees infested , estimated to be reducing timber yield by 14%.]

Bandaranayake, P.C.G. and Yoder, J.I. 2013. Trans-specific gene silencing of acetyl-CoA carboxylase in a root-parasitic plant. Molecular Plant-Microbe Interactions 26(5): 575-584. [Explicating the potential for control using interfering RNA produced in the host that reduced root viability in the parasite *Triphysaria* parasitizing *Medicago*.]

Bar-Sela, G., Wollner, M., Hammer, L., Agbarya, A., Dudnik, E. and Haim, N. 2013. Mistletoe as complementary treatment in patients with advanced non-small-cell lung cancer treated with carboplatin-based combinations: a randomised phase II study. European Journal of Cancer 49(5): 1058-1064. [The *Viscum album* product Iscador had no significant effect on quality of life or total adverse events but chemotherapy dose reductions, severe non-haematological side-effects and hospitalisations were less frequent in patients, warranting further

investigation as a modifier of chemotherapy-related toxicity.]

Barbasz, A., Kreczmer, B., Rudolphi-Skórska, E. and Sieprawska, A. 2012. Biologically active substances in plant extracts from mistletoe *Viscum album* and trees: fir (*Abies alba* Mill.), pine (*Pinus sylvestris* L.) and yew (*Taxus baccata* L.). Herba Polonica 58(1): 16-26. [With particular mention of proline, malondialdehyde and spermidine.]

Barbasz, A., Kreczmer, B., Rudolphi-Skórska, E., Sieprawska, A. and Woz´nica, D. 2012. Content of antioxidants in extracts of mistletoe (*Viscum album* L.), yew (*Taxus baccata* L.), pine (*Pinus sylvestris* L.) and fir (*Abies alba* Mill.). Herba Polonica 58(1): 27-36. [Noting a much higher content of non-enzymatic antioxidants such as ascorbic acid, glutathione or beta-carotene in the tissues of *V. album* compared to other plants analyzed.]

Barea, L P, and; Watson, D.M. 2013. Trapped between popular fruit and preferred nest location - cafeterias are poor places to raise a family. Functional Ecology 27(3): 766-774. [Suggesting that the habit of the painted honeyeater *Grantiella picta* to nest near its main source of food, *Amyema quandang*, may be counter-productive due to interference by othe species attracted to the mistletoe fruits.]

Barraza, S.Q., Mathiasenm R, and Gonzalez-Elizondo, S. 2013. First report of white fir dwarf mistletoe (*Arceuthobium abietinum* f. sp. *concoloris*) on Durango fir (*Abies durangensis*) from Durango, Mexico. Plant Disease 97(3): 431-432. [Recording *A. abietinum* f. sp. *concolor* on *Abies durangensis*, 370 km further S. from previously known populations.]

Bassey, M.E. 2012. Phytochemical investigations of *Tapinanthus globiferus* (Loranthaceae) from two hosts and the taxonomic implications. International Journal of Chemical, Environmental and Pharmaceutical Research 3(2): 174-177. [Presenting data on components of *T. globiferus*, popular as a medicinal plant in Nigeria, growing on hosts *Pentaclethra macrophylla* and *Cola acuminata*.]

Bellot, S. and Renner, S.S. 2013. Pollination and mating systems of Apodanthaceae and the distribution of reproductive traits in parasitic angiosperms. American Journal of Botany 100(6): 1083-1094. [A report on fly floral visitors of *Pilostyles haussknechtii* in Iran and *P.* [*Berlinianche*] *aethiopica* in Zimbabwe. Also a review of parasitic plant reproductive systems showing that most are animal-pollinated and ca. 10% are dioecious.]

Bernardinelli, I. 2010. (BAUSINVE 2010: regional lithopathology forest inventory. State of forest health in Friuli-Venezia Giulia in 2010.) (in Italian) Notiziario ERSA 1: 8 pp. [Including reference to *Viscum album*.]

Bhavannarayana, C., Rao, P.B., Saritha, V. and Sarala, K. 2012. A study on community managed degraded forest in Srikakulam and Vizaynagaram districts of Andhra Pradesh. Advance Research in Pharmaceuticals and Biologicals 2(4): L-40-L-50. [Including information on *Osyris peltata* and *Ximenia americana*.]

Bincy Raj, Singh, S.D.J., Samual, V.J., Soosamma John; and Ayesha Siddiqua. 2013. Hepatoprotective and antioxidant activity of *Cassytha filiformis* against CCl_4 induced hepatic damage in rats. Journal of Pharmacy Research 7(1): 15-19. [Confirming hepatoprotective effects from *C. filiformis* in rats.]

Binu Thomas, Mathews, R.P., Rajendran, A. and Kumar, K.M.P. 2013. Ethnobotanical observations on tribe *Arnatans* of nilambur forest, Western Ghats region of Kerala, India. Research in Plant Biology 3(2): 12-17. [Including reference to unspecified '*Viscum*'.]

Blick, R.A.J., Burns, K.C. and Moles, A.T. 2013. Dominant network interactions are not correlated with resource availability: a case study using mistletoe-host interactions. Oikos 122(6(: 889-895. [Based on a range of mistltetoe species in semi-arid Australia.]

Bonabana-Wabbi, J. and Taylor, D.B.A 2012. A limited dependent variable analysis of Integrated Pest Management adoption in Uganda. Journal of Agricultural Science and Technology A 2(10): 1162-1174. [Studying the factors influencing uptake by farmers of IPM practices in sorghum, cowpea and groundnut, including (for *Striga hermonthica* in sorghum) intercropping with *Celosia argentea,* or *Desmodium* sp., crop rotation, improved varieties, and fertilizer use. Concluding that economic factors, including labor availability, technology resource requirements, technology complexity, and the level of expected benefits are more important than social factors.]

Boublík, K. 2012. (Flora and vegetation of the Fabian Nature Reserve in the southwestern edge of the Českomoravská vrchovina hills.) (in Czech) Sborník Jihočeského Muzea v Českých Budějovicích,

Přírodní Vědy 52: 26-33. [Noting that *Viscum album* ssp. *abietis* is listed in the Red List for the Czech Republic.]

Boussim, I.J., Yonli, D., Guinko, S. and Salle, G. 2011. (State infestation, endogenous knowledge and systematic approach to the genus *Striga* in Burkina Faso.) (in French) International Journal of Biological and Chemical Sciences 5(4): 1374-1386. [Reporting on a survey indicating the occurrence of at least 13 species of *Striga* in Burkina Faso, including *S. forbesii* not previously reported. The most important agriculturally are *S. hermonthica, S. gesnerioides* and *S. aspera*. Only *S. hermonthica* is utilised in traditional medicine, and as a dye.]

Boussim, I.J., Yonli, D., Guinko, S. and Salle, G. 2012. (Prospects for an integrated control of Loranthaceae species parasitizing *Vitellaria paradoxa* C. F. Gaertn in Burkina Faso.) (in French) International Journal of Biological and Chemical Sciences 6(1): 355-364. [Describing useful control of Loranthaceae (probably *Tapinanthus* spp.) from a range of treatments including pruning and herbicide (glyphosate or 2,4-D). Also noting possible resistance in some accessions of *V. paradoxa* and the potential for biocontrol by some insects or birds.]

Braukmann, T., Kuzmina, M. and Stefanovic, S. 2013. Plastid genome evolution across the genus *Cuscuta* (Convolvulaceae): two clades within subgenus *Grammica* exhibit extensive gene loss. Journal of Experimental Botany 64(4): 977-989. [All major plastome genes were examined using hybridization methods in 56% of the 200 species species of *Cuscuta*. Clades 'O' and 'K' within subgenus *Grammica* exhibit more plastid gene loss relative to other members of *Cuscuta* making these good candidates for whole plastome sequencing.]

Builders, M.I., Uguru, M.O. and Aguiyi, C. 2012. Antiplasmodial potential of the African mistletoe: *Agelanthus dodoneifolius* Polh and Wiens. Indian Journal of Pharmaceutical Sciences 74(3): 223-229. [Results suggest that extracts of *A. dodoneifolius* (= *Tapinanthus dodoneifolis*) may be active in the treatment of malaria, supporting further studies of its active components.]

Burgman, M.A., Mccarthy, M.A., Robinson, A., Hester, S.M., McBride, M.F., Elith, J. and Panetta, F.D. 2013. Improving decisions for invasive species management: reformulation and extensions of the Panetta-Lawes eradication graph. Diversity and Distributions 19(5/6): 603-607. [Using *Orobanche ramosa* and efforts at its eradication in Australia as an example to illustrate the potential value of the modified 'eradograph' tool.]

*Büssing, A., Raak, C. and Ostermann, T. 2012. Quality of life and related dimensions in cancer patients treated with mistletoe extract (*Iscador*): a meta-analysis. Evidence-based Complementary and Alternative Medicine 2012: Article ID 219402. (http://www.scielo.br/scielo.php?script=sci_arttext&pid=S1516-05722012000400008&lng=en&nrm=iso&tlng=pt) [A meta-analysis of 13 studies confirmed moderate benefits from the *Viscum album* extract Iscador in terms of quality of life.]

Caballero, P., Ossa, C.G., Gonzáles, W.L., González-Browne, C., Astorga, G., Murúa, M.M. and Medel, R. 2013. Testing non-additive effects of nectar-robbing ants and hummingbird pollination on the reproductive success of a parasitic plant. Plant Ecology 214(4): 633-640. [Concluding that the low amount of nectar removed by nectar-robbing ants was insufficient for hummingbirds to avoid the robbed flowers of *Tristerix aphyllus*.]

Caires, C.S., Gomes-Bezerra, K.M. and Proença, C.E.B.. 2012. (New synonyms and a new combination in *Pusillanthus* (Loranthaceae)) (in Portuguese) Acta Botanica Brasilica 26: 668-674. [Describing the morphology, and distribution in Brazil, of the one *Pusillanthus* species and suggesting the new combination *Pusillanthus pubescens* and its synonymy with *Phthirusa caatingae*, *Pusillanthus trichodes* and *Struthanthus pubescens* var. *bahiensis*.]

Campagna, G., Geminiani, E. and Rapparini, G. 2013. (The weeding of alfalfa maintains production and quality.) (in Italian) Informatore Agrario, 69(8): 64-67. [Presumably refers to *Cuscuta* spp. but no abstract available.]

Catão, M.H.C.de V., da Silva, M.S.P., da Silva, A.D.L., da Costa, R.O. 2012. (Clinical study using medicinal plants for the treatment of oral diseases.) (in Portuguese) UNOPAR Científica Ciências Biológicas e da Saúde Journal 14(4): 279-285. [Including some reference to the use of *Krameria* spp. in traditional medicine in Brazil.]

Chandrakasan, L. and Neelamegam, R. 2012. Allelopathic effect of aqueous extracts and leachates of *Loranthus longiflorus* leaf collected from different host plants on paddy var. Ponmani. Advances in Plant Sciences 25(2): 509-512.

[Suggesting some allelopathic effects against germinating seeds of rice (in Tamil Nadu, India).]

Chaves, E.M.F. and Barros, R.F.M. 2012. (Diversity and use of medicinal resources of "carrasco" in the EPA of Serra da Ibiapaba, Piauí, Northeast Brazil.) (in Portuguese) Revista Brasileira de Plantas Medicinais 14(3): 476-486. [*Ximenia americana* among the most widely used medicinal herbs in the area surveyed.]

Chen LuZhen, Huang Li, Li XiaoFei, You SiYang, Yang ShengChang, Zhang YiHui and Wang WenQing. 2013. Water and nutrient relationships between a mistletoe and its mangrove host under saline conditions. Functional Plant Biology 40(5): 475-483. [Discussing the interaction of *Viscum ovalifolium* and the mangrove *Sonneratia caseolaris* in terms of transpiration, nitrogen balance and avoidance of excessive salt uptake.]

Chen YuChao, Li Miao, Chen XiaoJun, Zhang Li and Song YuXia. 2012. (Effects of exogenous signal substances on seed germination and haustoria formation of *Cistanche deserticola*.) (in Chinese) Plant Physiology Journal 48(3): 260-264. [Germination of *C. deserticola* was stimulated by norflurazone, fluridone and GR24. DMBQ stimulated haustorial initiation in 'well-growing' seedlings '30 days after germination'.]

Chen YuChao, Li Miao, Wang JingDong, Yang LiLi and Song YuXia. 2012. (Study of manual control *in vitro* parasitism key technology of *Cistanche deserticola*.) (in Chinese) Acta Botanica Boreali-Occidentalia Sinica 32(12): 2556-2559. [Describing *in vitro* germination and attachment of *C. deserticola* on roots of *Haloxylon ammodendron* on sterile glass fibre filter paper in the dark but not in light.]

*Chen YuhFung, Ching Chien, Wu TianShung, Wu ChiRei, Hsieh WenTsong and Tsai HueiYann. 2012. *Balanophora spicata* and lupeol acetate possess antinociceptive and anti-inflammatory activities *in vivo* and *in vitro*. Evidence-based Complementary and Alternative Medicine 2012: Article ID 371273. (http://www.hindawi.com/journals/ecam/2012/371273/)

Christov, M. 2012. Contribution of interspecific hybridization to sunflower breeding. Helia 35(57): 37-45. [Reviewing the use of hybridisation with wild *Helianthus* spp. in the course of developing varieties for a range of purposes including resistance to *Orobanche cumana*.]

Clay, D.L., Novak, S.J., Serpe, M.D., Tank, D.C. and Smith, J.F. 2012. Homoploid hybrid speciation in a rare endemic *Castilleja* from Idaho (*Castilleja christii*, Orobanchaceae). American Journal of Botany 99(12): 1976-1990. [Concluding from study of granule-bound starch synthase II (*waxy*) sequences and 26 morphological characters, that *C. christii* is a stabilized homoploid hybrid derivative of *C. linariifolia* and *C. miniata* and is apparnetly following an independent evolutionary trajectory from its progenitors.]

Cohen, M., Prandi, C., Occhiato, E.G., Tabasso, S., Wininger, S., Resnick, N., Steinberger, Y., Koltai, H. and Kapulnik, Y. 2013. Structure-function relations of strigolactone analogs: activity as plant hormones and plant interactions. Molecular Plant 6(1): 141-152. [The results support the conclusion that *Arabidopsis*, *Orobanche*, and AM fungi possess variations in receptor sensitivity to SL analogs, probably due to variation in SL receptors among the different species.]

Conran, J.G. and Li Jie. 2012. (A preliminary report of small mammal frugivory on *Balanophora harlandii* (Balanophoraceae).) (in Chinese) Plant Diversity and Resources 34(5): 466-470. [Suggesting that mammal frugivory of *B. harlandii* could result from the spadiciform infructescences mimicking mushrooms for dispersal by mycophagous rodents.]

Costa, J.F. and Alfaro-Tapia, A. 2012. (Bees (Hymenoptera: Apidae) visiting flowers in Acjanaco, National Park del Manu (PNM), Cusco, Peru.) (in Spanish) Boletín del Museo de Entomología de la Universidad del Valle (BHEUV) 13(2): 8-11. [*Bombus handlirschii* recorded visiting flowers of *Agalinis genistillpoides*.]

Cui ZhanHu, Guo ZhiQin, Miao JianHua, Wang ZhenWang, Li QianQuan, Chai XingYun and Li MinHui. 2013. The genus *Cynomorium* in China: an ethnopharmacological and phytochemical review. Journal of Ethnopharmacology 147(1): 1-15. [A, comprehensive review of *C. songaricum* and *C. coccineum* and their widespread uses in traditional medicine for e.g. impotence, premature ejaculation, kidney-*yang* deficiency, spermatorrhea, colic, and stomach ulcers, also as health foods, tea, and cosmetics. The active ingredients and potential for further uses as anti-fatigue, anti-hypoxia, anti-oxidationanti-diabetic, immune system modulating, and antiviral agents are also discussed.]

*Cunha, N.L. and 14 others. 2012. *In vitro* schistosomicidal activity of some Brazilian cerrado

species and their isolated compounds. Evidence-based Complementary and Alternative Medicine 2012: Article ID 173614. (http://www.hindawi.com/journals/ecam/2012/958740/) [Extracts of *Struthanthus syringifolius* failed to show useful anti-schistosome activity.]

Cursino, L.M.de C., Nunez, C.V., de Paula, R.C., do Nascimento, M.F.A. and dos Santos, P.A. 2012. Triterpenes from *Minquartia guianensis* (Olacaceae) and *in vitro* antimalarial activity. Química Nova 35(11): 2165-2168. [Identifying several triterpenes and confirming moderate activity against chloroquine-resistant *Plasmodium falciparum*.]

Dai ShaoJuan, Li Lin, Zou ShengDong and Cheng WeiDong. 2012. (Development of cistanche coffee health drink.) (in Chinese) Food Research and Development 33(9): 113-116.

Daniel, I.O., Adeboye, K.A., Oduwaye, O.O. and Porbeni, J. 2012. Digital seed morpho-metric characterization of tropical maize inbred lines for cultivar discrimination. International Journal of Plant Breeding and Genetics 6(4): 245-251. [Confirming the value of digital imaging for analysis of seed characters as a means of checking identity of inbred lines of *Striga*-resistant maize.]

Danylyuk, K. 2013. (Genus *Pedicularis* L. (Orobanchaceae) in the Ukrainian Carpathians: the key for identification.) (in Russian) Modern Phytomorphology 3: 255-257.

Das, S.C. 2013. Growth and yield of white sandal (*Santalum album* L.) in South West Bengal. Indian Forester 139(2): 109-112. [Recording yields averaging 215 kg per tree with a maximum of 415 kg/tree suggesting good commercial prospects for its exploitation in this region.]

de Vega, C. and Herrera, C.M. 2013. Microorganisms transported by ants induce changes in floral nectar composition of an ant-pollinated plant. American Journal of Botany 100(4): 792-800. [Ants pollinating *Cytinus hypocistus* carry yeast fungi which modify the balance of sugars in the plant's nectar, increasing fructose and glucose and reducing sucrose. Not clear if this favours the ants or not.]

Decleer, K., Bonte, D. and van Diggelen, R. 2013.The hemiparasite *Pedicularis palustris*: 'ecosystem engineer' for fen-meadow restoration. Journal for Nature Conservation 21(2): 65-71. [By its parasitism on *Carex acuta, P. palustris* modifies the habitat and allows regeneration of other species.]

Deepak Prashar, Sanjay Saklani, Yogesh Barshiliya, Mohit Sharma, Sushant Mankotia and Ashish Soni 2012. Pharma-economical world of herbal antitussive - an overview. Asian Journal of Research Pharmaceutical Sciences 2(2): 48-51. [Including information on *Euphrasia* and possibly some other parasitic genera.]

Deepu Mathew and Habeeburrahman, P.V. 2013. Base banding technique for the management of mistletoes (*Loranthus falcatus* L. f. and *L. utui* Molina) from perennial fruit trees. Archives of Phytopathology and Plant Protection 46(1): 29-38. [Proposing control of *L. falcatus* (= *Dendrophthoe falcata* and *L. utui* (= *Tristerix corymbosus*) by the use of 2,4-D soaked bands around the trunk after removing outer bark. Sprays with 1% ethephon or 60% diesel are also effective, but costly.]

Deforce, K., Bastiaens, J., van Neer, W., Ervynck, A., Lentacker, A., Sergant, J. and Crombé, P. 2013. Wood charcoal and seeds as indicators for animal husbandry in a wetland site during the late mesolithic-early neolithic transition period (Swifterbant culture, ca. 4600-4000 B.C.) in NW Belgium. Vegetation History and Archaeobotany 22(1): 51-60. [Finding high numbers of *Viscum album* charcoal fragments, suggesting use as leaf fodder and evidence for animal husbandry.]

*Derbidge, R., Feiten, L., Conradt, O., Heusser, P. and Baumgartner, S. 2013. Assessment of shape changes of mistletoe berries: a new software approach to automatize the parameterization of path curve shaped contours. PLoS ONE 8: 4pp. (http://www.plosone.org/article/info%3Adoi%2F10.1371%2Fjournal.pone.0060522) [Describing a photographic technique for following the progress of fruit development in *Viscum album*.]

Dettke, G.A. and Waechter, J.L.. 2012. *Struthanthus martianus*, a replacement name for the illegitimate *Struthanthus vulgaris* Mart. ex Eichler (Loranthaceae). Phytotaxa 57: 6-9. [*S. martianus* Dettke & Waechter is proposed as a replacement for the illegitimate name *S.vulgaris* (= *S. marginatus* (Desr.).) A neotype for *Loranthus vulgaris* is also designated.]

*Dettke, G.A. and Waechter, J.L. 2012. Generic identity of *Phoradendron rusbyi:* Viscaceae) and a new record for Argentina. Darwiniana 50: 148-153. (http://www.redalyc.org/articulo.oa?id=669239670100) [A herbarium specimen represents only the third example of *P. rusbyi* to be seen (the others from Peru and Bolivia) and the first with staminate

flowers which confirm its inclusion in *Phoradendron.* It is a leafless hyperparasite on *P. bathyoryctum*.]

Dibong, S.D. and 10 others. 2010. (Should eradicate Loranthaceae on woody fruits marketed in the coastal region of Cameroon?) (in French) International Journal of Biological and Chemical Sciences 4: 3pp. [Noting the occurrence of *Phragmanthera capiata* ('generalist') and *Tapinanthus ogowensis* ('specialist') in Cameroon and questioning the desirability of their eradication, given their importance in traditional medicine.]

Dibong, S.D., Obiang, N.L.E., Din, N., Priso, R.J., Taffouo, V., Fankem, H., Salle, G. and Akoa, A. 2009. (The Loranthaceae: an asset for the development of traditional medicine in Cameroon.) (in French) International Journal of Biological and Chemical Sciences 3: 4 pp. [Reviewing the widespread uses of Loranthaceae in trasditional medicine in Cameroon, including their occasional undesirable side-effects.]

Dibong, S.D., Obiang, N.L.E., Din, N., Taffouo, V., Fankem, H., Salle, G. and Akoa, A. 2009. (Level of infestation on plant fruit trees by *Phragmanthera capitata* (Loranthaceae) in the coastal region of Cameroon.) (in French) International Journal of Biological and Chemical Sciences 3: 2 pp. [Survey confirms *P. capitata* as the commonest and most damaging mistletoe in the region, occurring on 16 species in 10 families, including rubber and *Cola acuminata.*]

Dibong, S., Taffouo, D.V., Boussim, J.I. and Akoa, A. 2012. Effects of host specificity in parasitic Loranthaceae for sodium and potassium distribution in coastal region of Cameroon. International Journal of Botany 8(3): 159-164. [Recording differences in distribution of Na and K in generalist Loranthaceae *Phragmanthera capitata*, and its hosts *Citrus maxima Psidium guajava* and *Theobroma cacao*, compared to that in the specialist *Tapinanthus ogowensis* and its host *Dacryodes edulis*. And suggesting potential for the use of these differences in predicting host range of other mistletoes.]

Ding Bo, Dai Yi, Hou YunLong, Wu XiaoMeng, Chen Xue and Yao XinSheng. 2013. Four new hemiterpenoid derivatives from *Taxillus chinensis*. Fitoterapia 86: 1-5.

Dong LiNa, Wang Hong, Wortley AH, Lu Lu and Li DeZhu. 2013. Phylogenetic relationships in the *Pterygiella* complex (Orobanchaceae) inferred from molecular and morphological evidence. Botanical Journal of the Linnean Society 171(3): 491-507. [This molecular phylogenetic study of the *Pterygiella* complex (*Pterygiella*, *Phtheirospermum*, *Pseudobartsia* and *Xizangia*) used ITS and plastid regions. See McNeal et al. (2013) who suggest placing some *Phtheirospermum* in *Pterygiella*.]

Dourma, M., Batawila, K., Guelly, K.A., Bellefontaine, R., de Foucault, B. and Akpagana, K. 2012. Flora of *Isoberlinia* spp. woodlands in the sudanian zone of Togo. Acta Botanica Gallica 159(4): 395-409. [*Olax subscorpioidea* among commonest components of the flora of *Isoberlinia* woodlands.]

Dunstan, H., Florentine, S.K., Calviño-Cancela, M., Westbrooke, M.E. and Palmer, G.C. 2013. Dietary characteristics of Emus (*Dromaius novaehollandiae*) in semi-arid New South Wales, Australia, and dispersal and germination of ingested seeds. Emu - Austral Ornithology 113(2): 168-176. [Seeds of *Santalum acuminatum* failed to germinate after passage thrrough emus.]

Eizenberg, H., Hershenhorn, J., Achdari, G. and Ephrath, J.E. 2012. A thermal time model for predicting parasitism of *Orobanche cumana* in irrigated sunflower-field validation. Field Crops Research 137: 49-55. [Reporting on a 5-year field study to refine the model previously described, by inclusion of allowance for a 'lag phase'.]

El-Metwally, I.M., El-Shahawy, T.A. and Ahmed, M.A. 2013. Effect of sowing dates and some broomrape control treatments on faba bean growth and yield. Journal of Applied Sciences Research 9(1): 197-204. [Delayed sowing reduced infestation of faba bean by *O. crenata* but yields were higher with November planting than October or December. These yields were further significantly enhanced by 3 applications of glyphosate or imazapic.]

Esfandiari, M.R., Veysi, R. and Ebadi, S.E. 2013. Properties of iron wood branches. Middle East Journal of Scientific Research 13(2): 224-226. [Concluding that (unspecified) mistletoe infestation in Iran did not negatively influence the wood properties of the host *Parrotia persica.*]

Fernández-Aparicio, M., Huang, K., Wafula, E.K., Honaas, L.A., Wickett, N.J., Timko, M.P., de Pamphilis, C.W.,Yoder, J.I. and Westwood, J.H. 2013. [Application of qRT-PCR and RNA-Seq analysis for the identification of housekeeping genes useful for normalization of gene expression values during *Striga hermonthica* development. Molecular Biology Reports 40(4): 3395-3407. [Identifying

three 'house-keeping' genes, *UBQ1*, *PP2A* and *TUB1* which provide the best normalization for gene expression throughout the life cycle of *S. hermonthica*. These should facilitate descriptions of parasite gene expression patterns.]

*Fernández-Aparicio, M., Rubiales, D., Bandaranayake, P.C.G., Yoder, J.I. and Westwood, J.H. 2011. Transformation and regeneration of the holoparasitic plant *Phelipanche aegyptiaca*. Plant Methods 7: 36 pp. (http://www.plantmethods.com/content/7/1/36) [Using transformed calli of *P. aegyptiaca*, tomato plants were infected and after eight months the parasite formed haustoria. This is the first report of the transformation and subsequent regeneration of a holoparasite]

Fernández-Martínez, J.M., Velasco, L. and Pérez-Vich, B. 2012. Progress in research on breeding for resistance to sunflower broomrape. Helia 35(57): 47-56. [Reviewing the on-going programme for development of sunflower varieties resistant to *Orobanche cumana*, referring particularly to the unsolved problem of uncertainty in the designation of races and resistance genes identified in different countries.]

Fisher, J.P., Phoenix, G.K., Childs, D.Z., Press, M. C., Smith, S.W., Pilkington, M.G. and Cameron, D.D. 2013. Parasitic plant litter input: a novel indirect mechanism influencing plant community structure. New Phytologist 198(1): 222-231. [Confirming that *Rhinanthus minor* can influence community structure via its nutrient-rich litter as well as via its parasitism.]

Flematti, G.R., Waters, M.T., Scaffidi, A., Merritt, D.J., Ghisalberti, E.L., Dixon, K.W. and Smith, S.M. 2013. Karrikin and cyanohydrin smoke signals provide clues to new endogenous plant signalling compounds. Molecular Plant 6(1): 29-37. [Discussing karrikins and the ways in which they differ from strigolactones. Also noting the existence of cyanohydrins which release germination-stimulating cyanide upon hydrolysis, though no indication that these would be active on *Striga* etc.]

Friedman, C.R., Ross, B.N. and Martens, G.D. 2013. An antibody against a conserved C-terminal consensus motif from plant alternative oxidase (AOX) isoforms 1 and 2 label plastids in the explosive dwarf mistletoe (*Arceuthobium americanum*, Santalaceae) fruit exocarp. Protoplasma 250(1): 317-323. [Concluding that plastid terminal oxidases (PTOX) in plastids may be involved in fruit ripening in *A. americanum*, although a role for PTOX in thermogenesis cannot be eliminated.]

Fujimori, K. and Shibano, M. 2013. Avicularin, a plant flavonoid, suppresses lipid accumulation through repression of C/EBPα-activated GLUT4-mediated glucose uptake in 3T3-L1 cells. Journal of Agricultural and Food Chemistry 61(21): 5139-5147. [Avicularin derived from *Taxillus kaempferi*.]

Fukui, K., Ito, S. and Asami, T. 2013. Selective mimics of strigolactone actions and their potential use for controlling damage caused by root parasitic weeds. Molecular Plant 6(1): 88-99. [Reporting the discovery of a new phenoxyfuranone compound, 4-Br debranone that shows similar activity to that of GR24 in strigolactone-deficient *Arabidopsis* but much less activity on *Striga* germination.]

Gadalla, N.O., Fahmy, E.M., Abd-Elsattar, A., Ashry, N.A., El-Enany, M.A.M. and Bahieldin, A. 2012. Evaluation of gene expression for Orobanche tolerance in faba bean (Vicia faba L.). Journal of King Abdulaziz University – Science 24(1): 21-38. [Presenting results from comparison of an *O. crenata*-susceptible variety. Giza 3 and a tolerant variety G 843.]

Gao Lei, Xie YuQi, Wang XingHua and Li Yin 2010. Extraction technology of eight botanical pesticides and their antifungal activities on fungus. Plant Diseases and Pests 1(6): 54-57. [Extracts of cinnamon and clove proved active against the 'pathogens' *Fusarium oxysporum* and *Cistanche deserticola.*]

Gargya, G.R., Sharma, A.K. and Vasistha, H.B. 2012. Population of *Nardostachys jatamansi* DC. and its phyto-associates in different densities of alpine region in Dayyara meadow of Garhwal Himalaya. Journal of Non-Timber Forest Products 19(3): 179-184. [No adverse interaction seen between *N. jatamansi* (Valerianaceae) and *Pedicularis* spp.]

Gauthier, M., Véronési, C., El-Halmouch, Y., Leflon, M., Jestin, C., Labalette, F., Simier, P., Delourme, R. and Delavault, P. 2012. Characterisation of resistance to branched broomrape, *Phelipanche ramosa*, in winter oilseed rape. Crop Protection 42: 56-63. [Describing variation in susceptibility among 10 oilseed rape varieties, showing variously reduced germination, reduced penetration and some failure after attachment. Proposing that judicious breeding to combine these characters could lead to more fully resistant varieties.]

George, G.S., Uwakwe, A.A. and Ibeh, G.O. 2013. Glycated haemoglobin, glucose and insulin levels in diabetic treated rats. Canadian Journal of Pure & Applied Sciences 7(1): 2223-2226. [Rats treated with an extract of *Tapinanthus banwgensis* showed reduced plasma glucose and glycated haemoglobin and increased insulin suggesting a high hypoglycemic propensity.]

Ghafarbi, S.P. and Hassannejad, S. 2013. Weed flora survey in University of Tabriz Botanical Garden. International Journal of Agronomy and Plant Production 4(1): 7-14. [*Cuscuta monogyna* (wrongly referred to as *C. campestris* in the abstract) recorded and the subject of an attempt at eradication.]

Ghazanfari, T. Naseri, M., Shams, J. and Rahmati, B. 2013. Cytotoxic effects of *Cuscuta* extract on human cancer cell lines. Food and Agricultural Immunology 24(1): 87-94. [Presenting preliminary evidence for cytotoxic effects of an extract of (unspecified) *Cuscuta* sp. on SK-MEL-3 and Raji cell lines.]

González, M., López, S., Mullens, B.A., Baldet, T. and Goldarazena, A. 2013. A survey of *Culicoides* developmental sites on a farm in northern Spain, with a brief review of immature habitats of European species. Veterinary Parasitology 191(1/2): 81-93. [A survey of *Culicoides* spp., vectors of the blue-tongue virus showed an association of larvae of *C. scoticus* and *C. lupicaris* with soil litter that included *Lathraea clandestina*.]

Goulson, D., Park, K.J., Tinsley, M.C., Bussière, L.F. and Vallejo-Marin, M. 2013. Social learning drives handedness in nectar-robbing bumblebees. Behavioral Ecology and Sociobiology 67(7): 1141-1150. [*Rhinanthus minor* may be robbed of nectar by bumblebees cutting holes in either right or left of the corolla tube. This study shows that patches of *R. minor* tended to be raided all from one side, whether by *Bomus wurflenii* or by *B. lucorum*, suggesting a tendency for learning and copying among the local bee community .]

Grewell, B.J., Espeland, E.K. and Fiedler, P.L. 2013. Sea change under climate change: case studies in rare plant conservation from the dynamic San Francisco Estuary. Botany 91(5): 309-318. [Describing efforts to conserve and increase the population of the facultative hemiparasite *Chloropyron molle* (= *Cordylanthus mollis*). Concluding that assisted colonization may sustain populations threatened by sea level rise, but only if a strong commitment to effective stewardship is realized.]

Guerrero, P.C., Carvallo, G.O., Nassar, J.M., Rojas-Sandoval, J., Sanz, V. and Medel, R. 2012. Ecology and evolution of negative and positive interactions in Cactaceae: lessons and pending tasks. Plant Ecology & Diversity 5(2): 205-215. [Including discussion of the evolutionary ecology of a mistletoe-cactus parasitism in central Chile (species unspecified in abstract).]

Guimarães, A.C., Siani, A.C., Bezerra, J.L., de Souza, A.Q.L. and Sarquis, M.I.M. 2103. Endophytic mycobiota characterization of the amazonian mistletoe *Cladocolea micrantha* hosted in cashew tree. American Journal of Plant Sciences 4(4): 917-921. [Eight fungal endophytes isolated from *C. micrantha* growing on cashew, including *Guignardia mangiferae* and strains of *Mycelia sterilia*.]

Habak, H. Ahmad, M., and El-Rahban, B. 2012. (Distribution and effectiveness of *Phytomyza orobanchia* Kalt. in tomato fields infested with *Orobanche ramosa* L. along the coastal region of Syria.) (in Arabic) Arab Journal of Plant Protection 30(2): 255-260. [Recording extensive occurrence of *P. orobanchia* and significant reductions in seed production in *P. phelipanche.*]

Hajimehdipoor, H., Kondori, B.M., Amin, G.R., Adib, N., Rastegar, H. and Shekarchi, M. 2012. Development of a validated HPLC method for the simultaneous determination of flavonoids in *Cuscuta chinensis* Lam. by ultra-violet detection. Daru - Journal of Pharmaceutical Sciences 20: 57.

Halligudi, N. and Al-Ojaili, M. 2013. The science and art of aromatherapy: a brief review. Journal of Biomedical and Pharmaceutical Research 2(2): 6-14. [Including reference to *Santalum album*.]

Hamilton, M.L., Kuate, S.P., Brazier-Hicks, M., Caulfield, J.C., Rose, R., Edwards, R., Torto, B., Pickett, J.A. and Hooper, A.M. 2012. Elucidation of the biosynthesis of the di-*C*-glycosylflavone isoschaftoside, an allelopathic component from *Desmodium* spp. that inhibits *Striga* spp. development. Phytochemistry 84: 169-176.

Hassannejad, S. and Ghafarbi, S.P. 2013. Allelopathic effects of some Lamiaceae on seed germination and seedling growth of dodder (*Cuscuta campestris* Yunck.). International Journal of Biosciences (IJB) 3(3): 9-14. [Lavender the most inhibitory of a range of herbal plants in inhibiting germination of *C. campestris* but dosages probably unrealistic.]

Hassannejad, S. and Ghafarbi, S.P. 2013. Allelopathic effects of Allspice, Eucalyptus, Jujube, and Persian walnut on field dodder (*Cuscuta campestris* Yunck.) seed germination and seedling growth. International Journal of Agronomy and Plant Production 4(3): 442-449. [As previous item but presenting apparently promising results from *Ziziphus jujuba, Calycanthus floridus* and *Eucalyptus camaldulensis* in suppression of *C. campestris.*]

Haynes, M.A., Fang ZhenDong and Waller, D.M. 2013. Grazing impacts on the diversity and composition of alpine rangelands in Northwest Yunnan. Journal of Plant Ecology 6(2): 122-130. [*Pedicularis* spp. included in the species surveyed at different grazing levels. In general heavy grazing decreased species richness.]

Hemissi, I., Mabrouk, Y., Abdi, N., Bouraoui, M., Saidi, M. and Sifi, B. 2013. Growth promotion and protection against *Orobanche foetida* of chickpea (*Cicer aerietinum*) by two *Rhizobium* strains under greenhouse conditions. African Journal of Biotechnology 12(12): 1371-1377. [Inoculation of chickpea with 2 out of the 4 *Rhizobium* strains tested resulted in reduced infection by *O. foetida*, perhaps a result of toxic root secretions resulting from these inocula.]

Hettiarachchi, D.S., Liu, Y.D., Boddy, M.R., Fox, J.E.D. and Sunderland, V.B. 2013. Contents of fatty acids, selected lipids and physicochemical properties of Western Australian sandalwood seed oil. Journal of the American Oil Chemists' Society 90(2): 285-290. [Presenting an analysis of seed oils in *Santalum spicatum*.]

*Hire, K.K. and Dhale, D.A. 2012. Antimicrobial effect and insilico ADMET prediction of *Santalum album* L. International Journal of Pharma and Bio Sciences 3(4): P-727-P-734. (http://www.ijpbs.net/vol-3/issue-4/Pharma/77.pdf) [*S. album* oils showed activity against *Escherichia coli*, *Staphylococcus aureus* and *S. typhi* and against some carcinogenic cell lines]

*Ho ShangTse, Tung YuTang, Huang ChiChang, Kuo ChaoLin, Lin ChiChen, Yang SuhChing and Wu JyhHorng. 2012. The hypouricemic effect of *Balanophora laxiflora* extracts and derived phytochemicals in hyperuricemic mice. Evidence-based Complementary and Alternative Medicine 2012: Article ID 910152. (http://www.hindawi.com/journals/ecam/2012/910152/) [Concluding that *B. laxiflora* extracts and derived phytochemicals could be potential candidates as new hypouricemic agents.]

*Honaas, L.A. and 10 others. 2013. Functional genomics of a generalist parasitic plant: laser microdissection of host-parasite interface reveals host-specific patterns of parasite gene expression. BMC Plant Biology 13: 9 pp. (http://www.biomedcentral.com/1471-2229/13/9/abstract) [Results suggest that the wide host range of *T. versicolor* involves a reliance on overlapping but distinct gene sets, depending upon the host plant it is parasitizing.]

Höniges, A., Ardelean, A., Xi XiaoNan, Yoneyama, K., Yoneyama, K. and Wegmann, K. 2012. Towards understanding *Orobanche* host-specificity. Romanian Agricultural Research 29: 313-322, [Comparing the strigolactone complex in the root exudates of *Cirsium vulgare* and *Carduus personata* (host of *O. reticulate*), *Centaurea scabiosa* (host of *O. elatior*), *Hedera helix* (host of *O. hederae* and *Galium verum* (host of *O. caryophyllacea*). and finding orobanchol in all, but other components, epi-orobanchol, orobanchyl-acetate, fabacyl acetate and didehydro-orobanchol isomers varying in each case. Discussing the likelihood that these variations may contribute to host specificity.]

Houehanou, T.D., Kindomihou, V., Stevart, T., Tente, B., Houinato, M. and Sinsin, B. 2013. Variation of Loranthaceae impact on *Vitellaria paradoxa* C. F. Gaertn. fruit yield in contrasting habitats and implications for its conservation. Fruits (Paris) 68(2): 109-120. [Recording surprisingly little impact of even 'heavy' unspecified mistletoe infestation (presumably by *Tapinanthus* spp.?) on fruit yield of shea butternut (*V. paradoxa*).]

Houenon, J.G., Yedomonhan, H., Adomou, A.C., Tossou, M.G., Madjidou, M. and Akoegninou, A. 2012. (The Loranthaceae and their hosts in the Guinean and Sudano-Guinean areas in Benin.) (in French) International Journal of Biological and Chemical Sciences 6(4): 1669-1686. [An extensive survey revealed 10 species of Loranthaceae - *Agelanthus brunneus, A. dodoneifolius, Globimetula braunii, G. cupulata, Phragmanthera capitata, P. nigritana, Tapinanthus bangwensis, T. belvisii, T. globiferus* and *T. sessilifolius* of which *G. cupulata* and *T. belvisii* are newly recorded in Benin. 105 hosts were identified in 85 genera of which 23% are in Leguminosae.]

Houston, K. and Wolff, K. 2012. *Rhinanthus minor* population genetic structure and subspecies:

potential seed sources of a keystone species in grassland restoration projects. Perspectives in Plant Ecology, Evolution and Systematics 14(6): 423-433. [Identifying moderate levels of genetic differentiation between *R. minor* populations within the UK. In addition, *R. minor* individuals from the UK appear to be distinct from *R. minor* and *Rhinanthus angustifolius* individuals from other European countries based on microsatellite genotyping and DNA sequencing of cpDNA and rDNA ITS.]

Hrytsyna, M.R. 2013. (Position of the family Scrophulariaceae from Ukrainian flora in APG system.) (in Russian) Modern Phytomorphology 4: 363-365. [This paper apparently converts the Ukraninian flora familial classification of genera from the old concept of Scrophulariaceae to the modern concept composed now of Scrophulariaceae, Veronicaceae, Orobanchaceae.]

Huang Wen, Wu ShiBiao, Wang YeLing, Guo ZhiYong and Kennelly, E.J. 2013. Chemical constituents from *Striga asiatica* and its chemotaxonomic study. Biochemical Systematics and Ecology 48: 100-106. [Six flavonoids, diosmetin, apigenin, luteolin, chrysoeriol, apigenin-7-*O*-glucuronide and acacetin, two caffeic acid sugar esters, verbascoside and isoverbascoside, as well as one norsesquiterpene, blumenol A were isolated or detected in extracts of *S. asiatica*.]

Huerta-Martínez, F.M., Muñoz-Urias, A., Neri-Luna, C., Uribe-Mu, C.A. and García-Moya, E. 2012. Reciprocal effects of plant-soil relationships at two spatial scales in a semiarid land of Central Mexico. Journal of Agricultural Science and Technology A 2(1): 71-79. [Noting an apparent influence of *Krameria cytisoides* on soil properties.]

Ibadullayeva, S.J., Seidov, M.M. and Gasimov, H.Z. 2012. (*Viscum album* (*Viscaceae*), a new species to the flora of Nakhchivan Autonomous Republic.) (in Russian) Botanicheskiĭ Zhurnal 97(10): 1368-1369.

Irum Mukhtar, Ibatsam Khokhar and Sobia Mushtaq. 2012. *Cuscuta pedicellata* (Convolvulaceae): a new parasitic weed recorded from Pakistan. Pakistan Journal of Weed Science Research 18(4): 485-493. [*C. pedicellata* recorded on *Trifolium alexandrinum* and *Duranta erecta.*]

Isah, K.M. and Lagoke, S.T.O. 2013. Effects of rotation of trap crop varieties on the reaction of some cereal host crops to *Striga hermonthica* biotypes. African Journal of Microbiology Research 7(6): 488-497. [Results of pot experiments conducted in 2005-2006 suggesting a benefit from previous growth of soyabean, groundnut and cotton in reduction of *S. hermonthica* on maize, sorghum and rice.]

Isah, K.M., Niranjan Kumar, Lagoke, S.T.O. and Atayese, M.O. 2013. Management of *Striga hermonthica* on sorghum (*Sorghum bicolor*) using arbuscular mycorrhizal fungi (*Glomus mosae*) and NPK fertilizer levels. Pakistan Journal of Biological Sciences 16(22): 1563-1568. [Pot experiments confirmed that the mycorrhizal fungus reduced the impact of *S. hermonthica* on the crop, but NPK had an even greater benefit.]

Ishiyaku, M F and Aliyu, H. 2013. Field evaluation of cowpea genotypes for drought tolerance and Striga resistance in the dry savanna of the North-West Nigeria. Journal of Plant Breeding and Genetics 7(1): 47-56. [Among 22 local cowpea varieties tested only IAR-07-1050 proved resistant to *Striga gesnerioides* and this was susceptible to drought.]

Jamil, M., van Mourik, T.A., Charnikhova, T. and Bouwmeester, H.J. 2013. Effect of diammonium phosphate application on strigolactone production and *Striga hermonthica* infection in three sorghum cultivars. Weed Research (Oxford) 53(2): 121-130. [Confirming the effectiveness of P in the form of diammonium phosphate, in pots and in the field, successfully reducing exudation of sorgomol and 5-deoxystrigol and hence infestation by *S. hermonthica* and increasing sorghum yield. Promoting the use of 'microdosing' with DAP as part of an integrated control programme.]

*Janssen, B.J. and Snowden, K.C. 2012. Strigolactone and karrikin signal perception: receptors, enzymes, or both? Frontiers in Plant Science 28 December 2012 (doi: 10.3389/fpls.2012.00296) [The signal transduction pathways for both SLs and karrikins require the same F-box protein (MAX2) but a different but closely related α/β hydrolase fold protein: DAD2 and KAI2, respectively. The crystal structure of DAD2 has been solved revealing an α/β hydrolase fold protein with an internal cavity capable of accommodating SLs. Results suggest a model for binding that requires nucleophilic attack by the active site serine of the hydrolase at the carbonyl atom of the butenolide ring.]

Jeanmonod, D. and Schlüssel, A. 2012. Notes and contributions on Corsican flora, XXIV. Candollea 67(2): 293-321. [Confirming the presence of *Cuscuta suaveolens*.]

Jiang, L.J. Qu, F., Li ZhaoHu and Doohan, D. 2013. Inter-species protein trafficking endows dodder (*Cuscuta pentagona*) with a host-specific herbicide-tolerant trait. New Phytologist 198(4): 1017-1022. [Confirming that *C. pentagona* parasitizing a soyabean variety with resistance to the herbicide glufosinate acquired the same resistance.]

Joel, D.M., Gressel, J and Musselman, L.J. (eds) 2013. Parasitic Orobanchaceae: Parasitic Mechanisms and Control Strategies. Gerrmany: Springer. 500 pp. [Just published - a major new contribution to the literature on parasitic plants, to be reviewed in the next issue.]

*Jiménez-Estrada, M., Velázquez-Contreras, C., Garibay-Escobar, A., Sierras-Canchola, D., Lapizco-Vázquez, R., Ortiz-Sandoval, C., Burgos-Hernández, A. and Robles-Zepeda, R. 2013. In vitro antioxidant and antiproliferative activities of plants of the ethnopharmacopeia from northwest of Mexico. BMC Complementary and Alternative Medicine 13: 12pp. (http://www.biomedcentral.com/1472-6882/13/12) [Confirming antioxidant activity in *Krameria erecta*, *Struthanthus palmeri*, and *Phoradendron californicum* all used in traditional medicine, apparently associated with flavanoids. *K. erecta* especially deserving further study.]

Kabambe, V.H., Tembo, Y.L.B. and Kazira, E. 2013. Awareness of the parasitic weed *Alectra vogelii* (Benth.) amongst extension officers in three districts in Malawi. American Journal of Experimental Agriculture 3(2): 432-442. [*A. vogelii* has been reported in Lilongwe and Kasungu plains and parts of the southern region. This survey found that less than 40% of extension personnel were aware of *A. vogelii*, as against 91% familiar with *Striga asiatica*. Suggesting the need for dissemination of information via meetings.]

Kacan, K. and Tursun, N. 2012. Effect of planting time and tomato varieties on broomrape (*Phelipanche aegyptiaca*) emergence and tomato yield in western Turkey. Research on Crops 13(3): 1070-1077. [Trials over 3 years showed increasing infestation by *P. ramosa* with repeated cropping in successive years. Best yields and least *P. ramosa* was obtained with early planting and with certain varieties, not specified in the abstract.]

Kamara, A.Y., Ewansiha, S.U., Menkir, A. and Tofa, A.I. 2012. Agronomic response of drought-tolerant and *Striga*-resistant maize cultivars to nitrogen fertilization in the Nigerian Guinea savannahs. Maydica 57(2): 114-120. [Results support the idea that maize bred for tolerance to drought and resistance to *Striga hermonthca* does well under conditions of low N. Two cultivars (DT STR SYN-W/IWD C3 SYN and IWD C3 SYN/DT-SYN-1-W) performed particularly well and deserve further demonstration and release.]

Karamoko, O., Tiegbe, K., Dodehe, Y. and Adama, C. 2013. Antifungal activity of the aqueous and ethanolic extracts of *Thonningia sanguinea* Vahl (Balanophoraceae). Journal of Drug Delivery and Therapeutics 3(1): 29-32. [Extracts of *T. sanguinea* are used in West Africa to treat dermatitis, diarrhea and asthma. These traditional uses are supported by evidence for antifungal activity on *Candida albicans* and *C. neoformans*.]

Katiyar, N.S., Rao, N.V. and Gangwar, A.K. 2012. Evaluation of anti-inflammatory activity of stem extracts of *Cuscuta reflexa* (Roxb) in rats. International Journal of Research in Pharmaceutical and Biomedical Sciences 3(4): 1805-1808. [Confirming anti-inflammatory activity from *C. refexa* against histamine-induced paw oedema.]

Katsarou,A., Rhizopoulou, S. and Kefalas, P. 2012. Antioxidant potential of the aerial tissues of the mistletoe *Loranthus europaeus* Jacq. Records of Natural Products 6(4): 394-397. [Extracts of twigs and stems of *L. europaeus* growing on *Quercus* spp. in Greece exhibited higher antioxidant activity than those of fruits, leaves and flowers.]

Kavita Salkar, Ashish Suthar, VijaySingh Chauhan and Vinayak Naik 2013, Anti-MRSA activity of few Indian medicinal plants. Asian Journal of Biological and Life Sciences 2(1): 73-78. [*Viscum articulatum* not among species found to have activity.]

Kazantseva, E.S. 2013. Fertilization and irrigation effects on the Geranium-Hedysarum Meadows, Northwestern Caucasus, Russia. Moscow University Biological Sciences Bulletin 68(1): 35-43. [Addition of calcium favoured growth of *Euphrasia ossica*.]

Khan, M.R. 2012. Nematodes, an emerging threat to global forests: assessment and management. Plant Pathology Journal (Faisalabad) 11(4): 99-113. [Including information on nematodes associated with sandal wood (*Santalum* species) globally.]

Khodaie, L., Delazar, A., Lotfipour, F., Nazemiyeh, H., Asnaashari, S., Moghadam, S.B., Nahar, L. and Sarker, S.D. 2012. Phytochemistry and bioactivity of *Pedicularis sibthorpii* growing in Iran. Revista Brasileira de Farmacognosia 22(6): 1268-1275.

[Identifying some components of *P. sibthorpii*, used medicinally in Iran.]

Khwaja Salahuddin, Gor Suresh, Visavadia Manish, Soni Virendra and Tatmia Nalin. 2013. Ethnobotanical survey of some parasitic plants growing in Girnar forest of Junagadh district of Gujarat, India. International Research Journal of Biological Sciences 2(4): 59-62. [Covering *Dendrophthoe falcata* (commonly on *Mangifera indica, Diospyros melanoxylon* and *Zizyphus jujube*), *Cistanche tubulosa* (on *Salvadora oleoides, Argemone mexicana*), *Viscum articulatum* (on *S. oleoides, A. mexicana*), *Cuscuta reflexa* (on *Cassia fistula*, *Caesalpinia pulcherima* and *Acacia* nilotica) and '*C. chinensis*' (on *Zizyphus nummularia, A. nilotica* and *C. fistula.* But doubts on identity of '*C. chinensis'* described as having 'thick, greenish stems', 'large flowers' 'thick style' - suggesting ?*Cassytha*?]

Kifuko-Koech, M., Pypers, P., Okalebo, J.R, Othieno, C.O., Khan, Z.R., Pickett, J.A., Kipkoech, A.K. and Vanlauwe, B. 2012. The impact of *Desmodium* spp. and cutting regimes on the agronomic and economic performance of *Desmodium*-maize intercropping system in western Kenya. Field Crops Research 137(9): 97-107. [Demonstrating that, with adequate P fertilization, intercropping with *Desmodium* spp. supplied N to substitute for urea, but only after several seasons. In spite of higher labour costs this would be economic in the long run, in addition to the reduction of *Striga hermonthica*. *D. intortum* provided higher fodder yield than *D. uncinatum* but slightly lower maize yield. Times of cutting for forage did not have significant influence.]

Kisugi, T., Xie XiaoNan, Kim HyunIl, Yoneyama, K., Sado, A., Akiyama, K., Hayashi, H., Uchida, K., Yokota, T., Nomura, T. and Yoneyama, K. 2013. Strigone, isolation and identification as a natural strigolactone from *Houttuynia cordata*. Phytochemistryn 87: 60-64. [Confirming the structure of strigone and its 4 isomers, differing in their activity as germination stimulants. (+)-strigone was highly active on *Striga hermonthica* and on *Phelipanche ramosa* but less so on *Orobanche minor*. *H. cordata* also exuded strigol, sorgomol and 5-deoxystrigol.]

Kokubugata, G. and Yokota, M. 2012. Host specificity of *Cassytha filiformis* and *C. pergracilis* (Lauraceae) in the Ryukyu Archipelago. Bulletin of the National Museum of Nature and Science. Series B, Botany 38(2): 47-53. [*C. filiformis* has at least 24 host species in this area. But the endemic *C. pergracilis* has only two - *Aristida takeoi* (Poaceae) and *Rhynchospora rubra* (Cyperaceae) - helping to explain its ralative rarity.]

Kołodziejek, J., Patykowski, J. and Kołodziejek, R. 2013. Distribution, frequency and host patterns of European mistletoe (*Viscum album* subsp. *album*) in the major city of Lodz, Poland. Biologia (Bratislava) 68(1): 55-64. [*V. album* ssp. *album* recorded on 28 tree species, but mainly on *Acer saccharinum, Populus* x *canadensis* and *Robinia pseudoacacia*. Also recording observations on the abundance on *A. saccharinum* in relation to tree size and nitrogen level.]

Kotan, R., Okutucu, A., Gömez, A.A., Karagoz, K., Dadasoglu, F., Karaman, I., Hasanekoglu, I. and Kordalı, S, 2013. Parasitic bacteria and fungi on common mistletoe (*Viscum album* L.) and their potential application in biocontrol. Journal of Phytopathology 161(3): 165-171. [Assessing a wide range of bacteria and fungi collected from *V. album* in Turkey. Several bacteria showed activity when injected but not when sprayed on *V, album.* A number of fungi were active when sprayed on among which *Alternaria alternata* and *Acremonium kiliense* had highest activity.]

Kouakou, S.K., Toure, A., Ouattara, K. and N'Guessan, J.D. 2010. (Anticoccidial activity in vivo aqueous extract of inflorescences of *Thonningia sanguinea* (Balanophoraceae) in laying hens.) (in French) International Journal of Biological and Chemical Sciences 4(4). [Recording beneficial results from *T. sanguinea* extracts in the treatment of coccidiosis caused by *Eimeria* spp.]

Koutecký, P., Tuleu, G., Bad'urová, T., Košnar, J. Štech, M. and Tešitel, J. 2012. Distribution of cytotypes and seasonal variation in the *Odontites vernus* group in central Europe. Preslia 84(4): 887-904. [Confirming the existence of a widespread diploid (2n=2x=18) with a high but variable number of internodes and an early-flowering tetraploid (2n=4x=40) with a low number of internodes occurring on fallows or as an agricultural weed. Also a distinctly late-flowering tetraploid (2n=4x=40) that has the highest number of internodes of all the three types.]

Kuijt, J. 2013. Prophyll, calyculus, and perianth in *Santalales.* Blumea 57: 248–252. [The concept put forward by Wanntorp & Ronse De Craene (2009) (see Haustorium 57) that the calyculus is a fusion of prophylls was challenged whereas the traditional

concept that it is a reduced calyx was supported. The view that the corolla in Loranthaceae is biseriate was also rejected.]

Kumar, A.N.A., Geeta Joshi, and Ram, H.Y.M. 2012. Sandalwood: history, uses, present status and the future. Current Science 103(12): 1408-1416. [Regretting the extensive over-exploitation of *Santalum album* in southern India and propsong the establishment of reference plantations as a source of genetic material.]

Kwon SungMin, Jang JaeHyuk, Kim ChulWoo, Kim KwangMo, Yi JaeSeon and Kim NamHun. 2012. (Anatomical characteristics of Korean mistletoe (*Viscum album* var. *coloratum*).) (in Korean) Mokchae Konghak = Journal of the Korean Wood Science and Technology 40(4): 268-275. [A study using light and scanning electron microscopy.]

Lakshmana, A.C. 2012. Conservation of *Melia dubia* Cav. and *Santalum album* Linn. by extension and development: trials in tobacco farms in South India In: Sim Heok-Choh, Syuqiyah Abdul Hamid and Li Mei (eds) Asia and the Pacific Workshop: Multinational and transboundary conservation of valuable and endangered forest tree species. Extended abstracts from the workshop held in Guangzhou, China, 5-7 December 2011. IUFRO (International Union of Forestry Research Organizations) Secretariat, Wien, Austria, IUFRO World Series 30: 33-35.

Lati, R., Aly, R., Eizenberg, H. and Lande, T. 2013. First report of the parasitic plant *Phelipanche aegyptiaca* infecting kenaf in Israel. Plant Disease 97(5): 695.

Lee KeunPyo and Lee DaeWon. 2013. The identification of *in vitro* production of lectin from callus cultures of Korean mistletoe (*Viscum album* L. var. *coloratum*). Bioscience, Biotechnology and Biochemistry 77(4): 884-887.

Lee KyuBae and Jernstedt, J.A. 2013. Defense response of resistant host *Impatiens balsamina* to the parasitic angiosperm *Cuscuta japonica*. Journal of Plant Biology (New York) 56(3): 138-144. [Results suggested that in the tissues of *I. balsamina* penetrated by the *C. japonica*, the formation of secondary tissue and swellings caused by active cell division of ground tissue and host vessel occlusion by tyloses constitute the host structural defense against the parasite.]

Leitão, F., Moreira, D.deL., de Almeida, M.Z. and Leitão, S.G. 2013. Secondary metabolites from the mistletoes *Struthanthus marginatus* and *Struthanthus concinnus* (Loranthaceae). Biochemical Systematics and Ecology 48: 215-218. [*S. marginatus* was growing on a *Vernonia* sp. and *S. concinnus* was on *Morus alba*.]

Lepší, M. and Lepší, P. 2012. (Records of interesting and new plants in the South Bohemian flora XVIII.) (in Czech) Sborník Jihočeského Muzea v Českých Budějovicích, Přírodní Vědy 52: 34-48. [*Orobanche purpurea* ssp. *purpurea* among rare species listed.]

Li, D.M., Wang, J.H., Peng, S.L., Zhu, G.F. and Lu, F.B. 2012. Molecular cloning and characterization of two novel *NAC* genes from *Mikania micrantha* (Asteraceae). Genetics and Molecular Research 11(4): 4383-4401. [Results indicated that the two genes *MmATAF1* and *MmNAP*, besides having roles in *M. micrantha* adaptation to *C. campestris* infection and abiotic stresses, also integrate signals derived from both *C. campestris* infection and abiotic stress.]

Li Fei, Yang XiaoLin, Yang YaNan, Guo ChangRun, Zhang ChunFeng, Yang ZhongLin and Li Ping. 2013. Antiosteoporotic activity of echinacoside in ovariectomized rats. Phytomedicine 20(6): 549-557. [Reporting a 'remarkable antiosteoporotic activity' and suggesting that this extract from *Cistnache tubulosa* may be a promising candidate for treatment of postmenopausal osteoporosis induced by oestrogen deficiency.]

Li Fei, Yang YaNan, Zhu PanPan, Chen WeiNa, Qi DongLi, Shi XiuPu, Zhang ChunFeng, Yang ZhongLin and Li Ping. 2012. Echinacoside promotes bone regeneration by increasing OPG/RANKL ratio in MC3T3-E1 cells. Fitoterapia 83(8): 1443-1450. [Presenting strong evidence for the potential of echinacoside, derived from *Cistnache tubulosaa* in treatment of osteoporosis.]

Li FengLan, Li MingGuang, Zan QiJie, Guo Qiang, Zhang WeiYin, Wu Zhi and Wang YongJun 2012. Effects of the residues of *Cuscuta campestris* and *Mikania micrantha* on subsequent plant germination and early growth. Journal of Integrative Agriculture 11(11): 1852-1860. [Following the successful use of *C. campestris* to control *M. micrantha*, the remaining residue – including seeds of *C. campestris* - continued to suppress recovering *M. micrantha* but had only minor effects on a range of other tree, shrub and grass species.]

Li RuiJuan, Yang GuanE, Bai HongJuan, Zhang Qiong, Li JianKuan, Li QingShan and Zhang ZhaoMing. 2012. A new flavonoid glycoside from mistletoe transformed by *Rhodobacter sphaeroides*.

Chemistry of Natural Compounds 48(5): 761-764. [From *Viscum album*.]

*Li Xi, Zhang TiCao, Qiao Qin, Ren ZhuMei, Zhao JiaYuan, Yonezawa, T., Hasegawa, M., Crabbe, M.J.C., Li JianQiang and Zhong Yang. 2013. Complete chloroplast genome sequence of holoparasite *Cistanche deserticola* (Orobanchaceae) reveals gene loss and horizontal gene transfer from its host *Haloxylon ammodendron* (Chenopodiaceae). PLoS ONE 8: 3pp. e58747. (http://www.plosone.org/article/info%3Adoi%2F10.1371%2Fjournal.pone.0058747) [*C. deserticola* retains almost a full set of tRNA genes, and has lower *dN/dS* for most genes than e.g. *Epifagus virginiana*, suggesting that *C. deserticola* has undergone fewer losses, either due to a reduced level of holoparasitism, or to a recent switch to this life history. Also noting that the *rpo*C2 gene was present in two copies, one being a homolog of the host plant, *H. ammodendron*.]

Li Xi, Zhu Ming, Sun YanXia, Zhong Yang and Li JianQiang. 2012. (Systematic position of *Cistanche* (Orobanchaceae) based on cpDNA *rps*16 and ncDNA ITS sequences.) (in Chinese) Plant Science Journal 30(5): 431-436. [This phylogenetic analysis of ITS and chloroplast regions showed that *Cistanche* is in a clade with *Orobanche* and *Boschniakia*.]

Liang HaiDong, Yu Fang, Tong ZhiHong, Zhang HongQuan and Liang Wu. 2013. *Cistanches Herba* aqueous extract affecting serum BGP and TRAP and bone marrow Smad1 mRNA, Smad5 mRNA, TGF-β1 mRNA and TIEG1 mRNA expression levels in osteoporosis disease. Molecular Biology Reports 40(2): 757-763.

Liu GuangDa, Chen GuiLin, Li Wei and Li ChunXing. 2013. Genetic and phytochemical diversities of *Cynomorium songaricum* Rupr. in Northwest China indicated by ISSR markers and HPLC-fingerprinting. Biochemical Systematics and Ecology 48: 34-41. [The main host of *C. songaricum* is noted to be the desert species *Nitraria tangutorum.*]

*Liu HsinPing, Chang RongFu, Wu YihShyuan, Lin WeiYong and Tsai FuuJen. 2012. The Yang-Tonifying herbal medicine *Cynomorium songaricum* extends lifespan and delays aging in *Drosophila*. Evidence-based Complementary and Alternative Medicine 2012: Article ID 735481. (http://www.hindawi.com/journals/ecam/2012/735481/) [*C. songaricum* is traditionally used to improve sexual function and treat kidney dysfunction in traditional Chinese medicine. Here it was shown to have anti-ageing effects on *Drosophila* flies as well as improving mating readiness and fecundity, and suppressing age-related learning impairment in aged flies.]

Liu XiaoJin, Xu DaPing, Yang ZengJiang, Zhang NingNan, Yang LiJun, Deng HeDa and Zhang XiaoYun. 2012. (Evaluation of growth and heartwood formation of young sandal plantations in Guangdong Province, south China.) (in Chinese) Scientia Silvae Sinicae 48(5): 108-115.

Liu XiaoMing, Li Jun, Jiang Yong, Zhao MingBo and Tu PengFei. 2013. Chemical constituents from *Cistanche sinensis* (Orobanchaceae). Biochemical Systematics and Ecology 47: 21-24. [Fifteen compunds identified.]

*Liu YuHuei, Li MengLuen, Hsu MengYu, Pang YaYueh, Chen ILing, Chen ChingKuei, Tang SaiWen, Lin HsuanYuan and Lin JungYaw. 2012. Effects of a Chinese herbal medicine, Guan-Jen-Huang (*Aeginetia indica* Linn.), on renal cancer cell growth and metastasis. Evidence-based Complementary and Alternative Medicine, 2012, Article ID 935860 (http://www.hindawi.com/journals/ecam/2012/935860/) [Results support the potential role of *A. indica* extracts in the treatment of human renal cancer.]

Logan, B.A. and 14 others. 2013. Impact of eastern dwarf mistletoe (*Arceuthobium pusillum*) on host white spruce (*Picea glauca*) development, growth and performance across multiple scales. Physiologia Plantarum 147(4): 502-513. [Recording in detail the changes in growth substances in foliage of *P. glauca* as a result of infection with *A. pusillum*, including a distinct increase in cytokinin and lowering of abscisic acid, resulting in higher transpiration and a disproportionate fraction of photo-assimilate and other resources being diverted to self-shaded branches with low water use efficiency, and leading to development of witches brooms and dramatically decreased diameter growth of the bole.]

López-Martínez, S., Navarrete-Vázquez, G., Estrada-Soto, S., León-Rivera, I. and Rios, M.Y. 2013. Chemical constituents of the hemiparasitic plant *Phoradendron brachystachyum* DC Nutt (Viscaceae). Natural Product Research 27(2): 130-136. [Identifying 19 compounds in *P. brachystachyum*, commonly used in Mexico as a

substitute for *Viscum album*. Morolic acid the major component.]

López-Ortega, M., Pérez-Rodríguez, P., Rojas, J.C., Hernández, R.M.S., López-Mata, L. and Rico-Gray, V. 2013. Host use and resource sharing by fruit/seed-infesting insects on *Schoepfia schreberi* (Olacaceae). Environmental Entomology 42(2): 231-239. [Discussing the interactions between the dipteran fruit fly *Anastrepha spatulata* and two moths, the gelechiid *Coleotechnites* sp. and an unidentified tortricid on the substantial reduction in seed production in fruits of *S. schreberi*. *A, spatulata* was the more important.]

López-Ráez, J.A., Jung, S.C., Fernandez, I., García, J.M., Bouwmeester, H. and Pozo, M.J. 2012. Mycorrhizal symbiosis as a strategy for root parasitic weed control. In: Schmitt A, Mauch-Mani B, Pozo MJ, Flors V, Nicot P, Bardin M, Mazzotta S (eds) IOBC/WPRS Bulletin 83: 59-63. [Confirming that tomato plants colonized by the AM fungus *Glomus mosseae* induce less germination of *Orobanche ramosa* seeds than non-mycorrhizal plants. The results indicate that AM fungi may be used as a suitable tool for controlling root parasitic weeds by reducing strigolactone production by the host plant.]

*Louarn, J., Carbonne, F., Delavault, P., Bécard, G. and Rochange, S. 2012. Reduced germination of *Orobanche cumana* seeds in the presence of arbuscular mycorrhizal fungi or their exudates. PLoS ONE 7(11): e49273. (http://www.plosone.org/article/info%3Adoi%2F10.1371%2Fjournal.pone.0049273) [Reduction of germination of *O. cumana* is apparently not only due to reduced stimulant exudation, but also perhaps to some more direct influence of the fungus, *Rhizophagus irregularis* (= *Glomus intraradices*).]

Lu, J.K., Kang, L.H., Sprent, J.I., Xu, D.P. and He, X.H. 2013. Two-way transfer of nitrogen between *Dalbergia odorifera* and its hemiparasite *Santalum album* is enhanced when the host is effectively nodulated and fixing nitrogen. Tree Physiology 33(5): 464-474. [Investigating the transfer of N from *D. odorifera* to *S. album* in the presence and absence of nodulation. Not clear what is meant by 'two-way transfer'.]

Luo YaHuang and Zhang Ling 2013. Germination characteristics of *Dendrophthoe pentandra* seeds. Plant Diversity and Resources 35(1): 73-80. [Germination of *D. pentandra* was optimal at 20°C and required light. Germination percentage was increased by passage trhough the main bird disperser, *Dicaeum concolor*.]

Ma YongQing, Jia JinNan, An Yu, Wang Zhong and Mao JianChang. 2013. Potential of some hybrid maize lines to induce germination of sunflower broomrape. Crop Science 53(1): 260-270. [Describing varied activity of maize lines in stimulating germination of *O. cumana* and suggesting selection of highly stimulant lines as trap crops.]

McNeal, J.R., Bennett, J.R., Wolfe, A.D. and Mathews, S. 2013. Phylogeny and origins of holoparasitism in Orobanchaceae. American Journal of Botany 100(5): 971-983. [The most complete molecular phylogeny of Orobanchaceae to date in terms of sampling taxa and genes. Strong support was obtained for relationships for six major clades: *Lindenbergia*, Cymbarieae, Orobancheae, Pedicularideae, Rhinantheae, and Buchnereae. In contrast to previous studies, the genus *Orobanche* appears to be monophyletic.]

Madeiro, S.A.L., de Lucena, H.F.S., Siqueira, C.D., Duarte, M.C., Braz Filho, R., Barbosa Filho, J.M., da Silva, M.S. and Tavares, J.F. 2012. New neolignans from *Krameria tomentosa* A. St.-Hil. Journal of the Brazilian Chemical Society 23(11): 2021-2026.

Magrach, A., Santamaría, L. and Larrinaga, A.R. 2013. Forest edges show contrasting effects on an austral mistletoe due to differences in pollination and seed dispersal. Journal of Ecology (Oxford) 101(3): 713-721. [Concluding that preserving relatively large patches of old-growth forest with low perimeter/area ratios would be key to the habitat requirements of the main disperser and humming bird pollinator and thus for reproductive performance of *Tristerix corymbosus*.]

Maheshwari, P.U., Babu, M.R. and Basha, S.K.M. 2012. Medicinal plant resources of Lankamalleswara wild life sanctuary, eastern Ghats, Andhra Pradesh. Vegetos 25(1): 94-101. [Noting *Santalum album* among predominant plants in this Andhra Pradesh sanctuary.]

Mapongmetsem, P.M., Kapchie, V.N. and Tefempa, B.H. 2012. Diversity of local fruit trees and their contribution in sustaining the rural livelihood in the northern Cameroon. Ethiopian Journal of Environmental Studies and Management 5(1): 32-46. [Listing *Ximenia americana* among favoured sources of fruit in Cameroon.]

Martin, L.L., Friedman, C.M.R. and Phillips, L.A. 2012. Fungal endophytes of the obligate parasitic dwarf mistletoe *Arceuthobium americanum* (Santalaceae) act antagonistically in vitro against the native fungal pathogen *Cladosporium* (Davidiellaceae) of their host. American Journal of Botany 99(12): 2027-2034. [Study of *A. americanum* tissues showed the presence of endophytic fungi matching *Phoma*, *Sydowia*, and *Phacidiopycnis*, which apparently help to suppress infection by pathogenic fungi including *Cladosporium* spp.]

Maruyama, P.K., Mendes-Rodrigues, C., Alves-Silva, E. and Cunha, A.F. 2012. Parasites in the neighbourhood: interactions of the mistletoe *Phoradendron affine* (Viscaceae) with its dispersers and hosts in urban areas of Brazil. Flora (Jena) 207(10): 768-773. [Describing the occurrence of *P. affine* on *Handroanthus chrysotrichus*, *Tabebuia roseoalba*, *Spathodea campanulata*, *Ligustrum lucidum* and *Melia azedarach,* consumption of the fruits by the bird *Euphonia chlorotica*, which was crucial for seed germination, failure of the germinated seeds to penetrate the bark of non-hosts, and its prevalence in large isolated trees.]

Maširevic´, S., Medic´-Pap, S. and Terzic´, A. 2012. Broomrape seed germination on nutritive media and possibility of its biological control. Helia 35(57): 79-86. [Recording germination rates for *Orobanche cumana* in the presence of sunflower roots and either gibberelin or of 'Trifender' a preparation including the fungus *Trichoderma asperellum*. Germination rates and length of seedlings was lower in the presence of 'Trifender' interpreted as suggesting some suppreson. But curiously no control with sunflower roots only.]

Mathiasen, R.L. 2013. Morphological comparisons of white fir and red fir dwarf mistletoes in the Sierra Nevada and southern Cascade Mountains. Madroño 58(2): 101-105. [Detailed morphological study of the two forms of *Arceuthobium abietinum* specific respectively to *Abies iowana* and *A. magnifica* failed to show differences, supporting the retention of these two forms as a single species.]

Mauseth, J.D. and Rezaei, K. 2013. Morphogenesis in the parasitic plant *Viscum minimum* (Viscaceae) is highly altered, having apical meristems but lacking roots, stems, and leaves. International Journal of Plant Sciences 174(5): 791-801. [Describing the fascinating morphology of *Viscum minimum* which has no roots or stems; no epidermis or endodermis but exists totally within the tissues of its succulent host *Euphorbia polygona.* It grows by multicellular apical meristems that produce axes of pure parenchyma, lacking the patterns of tissues typical of stems or roots. Suggesting that molecular genetic studies of morphogenesis in *V. minimum* would greatly expand our understanding of morphogenesis in all plants.]

Melo, A. and Alves, M. 2013. (Synopsis of aclorophyllus herbs in north of the Atlantic Forest of Brazil.) (in Portuguese) Revista Brasileira de Biociências 11(1): 29-38. (Recording *Langsdorffia hypogaea* (Balanophoraceae) for the first time in this region.]

Menkir, A., Makumbi, D. and Franco, J. 2012. Assessment of reaction patterns of hybrids to *Striga hermonthica* (Del.) Benth. under artificial infestation in Kenya and Nigeria. Crop Science 52(6): 2528-2537. [Confirming that *S. hermonthica*-resistant hybrids developed in Nigeria were also resistant in Kenya and identifying a number of hybrids for eventual release.]

Mesbah, N., Dehghanzadeh, H. and Jamnejad, M. 2012. Effects of Nitrogen fertilizers on growth of Egyptian broom rape (*Orobanche aegyptiaca*) in the presence of the host of sunflower (*Helianthus annus*) in pot conditions. Research Journal of Biological Sciences 7(8): 307-311. [Increasing amounts of nitrogen decreased *O. aegyptiaca* and increased sunflower growth.]

Midega, C.A.O., Pittchar, J., Salifu, D., Pickett, J.A. and Khan, Z.R. 2013. Effects of mulching, N-fertilization and intercropping with *Desmodium uncinatum* on *Striga hermonthica* infestation in maize. Crop Protection 44: 44-49. [In a field trial repeated over 12 cropping seasons, intercropping maize with *D. uncinatum* suppressed *S. hermonthica* almost completely from the first season and gave consistently high yields, approximately 3X those of the sole crop maize. over the full period. Treatments with N with or without straw mulch gave modest *Striga* control and yield increases but were far less effective than the inter-cropping. They also had a relatively small effect in increasing performance when combined with the inter-crop.]

Millar, M.A., Byrne, M. and Barbour, E. 2012. Characterisation of eleven polymorphic microsatellite DNA markers for Australian sandalwood (*Santalum spicatum*) (R.Br.) A.DC. (Santalaceae). Conservation Genetics Resources 4(1): 51-53.

Mirtchev, S. Zafirov, N. and Rasheed, R. 2012. Dendrochronology as a tool for the investigation of forest decline. Forestry Ideas 18(2): 117-124. [Noting drought as the most important factor in forest decline in Bulgaria, but also mentioning damage from (unspecified) mistletoes.]

Misra, B.B., Das, S.S. and Satyahari Dey. 2013. Volatile profiling from heartwood of East Indian sandalwood tree. Journal of Pharmacy Research 7(4): 299-303. [Separating 46 constituents from oil of *Santalum album*.]

Misra, B.B. and Satyahari Dey 2013. Evaluation of *in vivo* anti-hyperglycemic and antioxidant potentials of α-santalol and sandalwood oil. Phytomedicine 20(5): 409-416.

Misra, B.B. and Satyahari Dey. 2013. TLC-bioautographic evaluation of *in vitro* anti-tyrosinase and anti-cholinesterase potentials of sandalwood oil. Natural Product Communications 8(2): 253-256. [Results suggest that α-santalol, the major component of oil from *Santalum album*, is a strong inhibitor of both tyrosinase and cholinesterase indicating a potential for use in the treatment of Alzheimer's disease, as well as in skin-care.]

Misra, B.B. and Satyahari Dey. 2013. Accumulation patterns of phenylpropanoids and enzymes in East Indian sandalwood tree undergoing developmental progression *in vitro*. Australian Journal of Crop Science 7(5): 681-690.

Mohamed, A.A. and Azer, S.A. 2012. A study on the flora along Ismailia canal. Bulletin of Faculty of Agriculture, Cairo University 63(4): 419-431. [*Cuscuta campestris* among 110 species recorded.]

Montaño-Centellas, F.A. 2013. Effectiveness of mistletoe seed dispersal by tyrant flycatchers in a mixed Andean landscape. Biotropica 45(2): 209-216. [A study of the effectiveness of the bird dispersers, *Mionectes striaticollis* and *Zimmerius bolivianus* in the dispersal of seeds of *Struthanthus acuminatus* and *Phthirusa retroflexa,* and concluding that there were differences in the quantity and quality of dispersal according to the mistletoe species.]

Mony, R., Ondoua, J., Dibong, S., Issaka, J. and Akoa, A. 2009. (Myrmecofauna associated with *Phragmanthera capitata* (Sprengel) S. Ball/host in an orchard in Ndogbong (Douala, Cameroon).) (in French) International Journal of Biological and Chemical Sciences 3(6). [Four species of ant, 2 *Crematogaster* spp. *Pheidole megacephala* and a *Camponotus* sp., associated with *P. capitata* appeared to be associated with premature fall of buds and flowers and hence of potential interest for biocontrol.]

Morris, M.W. 2012. *Stenanthium leimanthoides* (Melanthiaceae) and *Nestronia umbellula* (Santalaceae) in Alabama. Castanea 77(4): 375-380. [Describing the ecology and distribution of *N. umbellula* in Alabama, USA.]

Mota, W.M., Barros, M.L., Cunha, P.E.L., Santana, M.V.A., Stevam, C.S., Leopoldo, P.T.G. and Fernandes, R.P.M. 2012. (Evaluation of acetylcholinesterase inhibition by extracts from medicinal plants.) (in Portuguese) Revista Brasileira de Plantas Medicinais 14(4): 624-628. [Moderate inhition of acetylcholinesterase was shown by extracts of *Phorodendron piperoides*.]

Mukhtar, I., Atiq, M., Hanan, A. and Iqbal, Z. 2012. Antifungal activity of *Cuscuta reflexa* Roxb. Pakistan Journal of Phytopathology 24(2): 163-166. [Confirming the activity of a crude extract of *C. reflexa* (parasitising *Bougainvillea glabra*) on the fungi *Fusarium solani*, *Fusarium oxysporium* and *Macrophomina phaseolina*.]

Muzafar Sheikh, Safiuddin, A., Zehra Khan, Rizvi, R. and Irshad Mahmood. 2013. Antibacterial and antifungal potential of some medicinal plants against certain phytopathogenic micro-organisms. Archives of Phytopathology and Plant Protection 46(9): 1070-1080. [Including results with *Santalum album*.]

Nair, J.J., Mulaudzi, R.B., Chukwujekwu, J.C., van Heerden, F.R. and van Staden, J. 2013. Antigonococcal activity of *Ximenia caffra* Sond. (Olacaceae) and identification of the active principle. South African Journal of Botany 86: 111-115. [Demonstrating activity of *X. caffra* against the gonorrheal pathogen *Neisseria gonorrhoeae* apparently associated with the bisnorsesquiterpene vomifoliol.]

Nazeer Ahmed, Khan, M.S.A., Abdul Manan, M.J., Norhafizah Mohtarrudin, Maryam Ranjbar, Amjad, M.S., Bee Nagaraju, Mohammed Faraz, Faiyaz Pathan and Anand Chincholi. 2013. Anti-ulcer activity of Sandalwood (*Santalum album* L.) stem hydro-alcoholic extract in three gastric-ulceration models of Wistar rats. Boletín Latinoamericano y del Caribe de Plantas Medicinales y Aromáticas 12(1): 81-91.

Ndagurwa, H.G.T. and Dube, J.S. 2013. Nutritive value and digestibility of mistletoes and woody species browsed by goats in a semi-arid savanna, southwest

Zimbabwe. Livestock Science 151(2/3): 163-170. [Concluding that *Erianthemum ngamicum*, *Plicosepalus kalachariensis* and *Viscum verrucosum* compared favourably with *Acacia* spp. as browse for goats.]

Ndagurwa, H.G.T., Dube, J.S. and Mlambo, D. 2013. The influence of mistletoes on nitrogen cycling in a semi-arid savanna, south-west Zimbabwe. Journal of Tropical Ecology 29(2): 147-159. [Recording varying but generally higher litterfall and N concentrations under *Acacia karoo* infested with *Erianthemum ngamicum*, *Plicosepalus kalachariensis* and *Viscum verrucosum* than under uninfested trees, with potential consequent effects on the understory biota.]

Ndhlovu, D.N. and Masika, P.J. 2013. Ethno-veterinary control of bovine dermatophilosis and ticks in Zhombe, Njelele and Shamrock resettlement in Zimbabwe. Tropical Animal Health and Production 45(2): 525-532. [Noting the occasional use of *Ximenia caffra* in treatment of bovine dermatophilosis.]

Nejad, A.S.M., Kamkar, A., Giri, A. and Pourmahmoudi, A.A. 2013. Ethnobotany and folk medicinal uses of major trees and shrubs in Northern Iran. Journal of Medicinal Plants Research 7(7): 284-289. [Noting the use of *Viscum album* in traditional medicine for a range of conditions in Iran.]

*Ngo, Q.,.A, Albrecht, H., Tsuchimatsu, T. and Grossniklaus, U. 2013. The differentially regulated genes *TvQR1* and *TvPirin* of the parasitic plant *Triphysaria* exhibit distinctive natural allelic diversity. BMC Plant Biology 13: 28pp. (http://www.biomedcentral.com/content/pdf/1471-2229-13-28.pdf) [Reporting an unexpected diversity, in a native population of *Triphysaria*, of molecular variants in compounds that are involved in the chain of events in induction of haustoria.]

Nhiem, N.X. and 10 others. 2013. Diarylheptanoids and flavonoids from *Viscum album* inhibit LPS-stimulated production of pro-inflammatory cytokines in bone marrow-derived dendritic cells. Journal of Natural Products 76(4): 495-502.

Nomura, S., Nakashima, H., Mizutani, M., Takikawa, H. and Sugimoto, Y. 2013. Structural requirements of strigolactones for germination induction and inhibition of *Striga gesnerioides* seeds. Plant Cell Reports 32(6): 829-838. [Stereoisomers of strigol, sorgolactone, orobanchol, sorgomol and 5-deoxystrigol, 36 in total, were screened for activity on seeds of *S. hermonthica* and *S. gesnerioides* collected from sorghum and cowpea, respectively. All compounds stimulated *S. hermonthica* to some degree. Only a few stimulated *S. gesnerioides* (while causing low germination of *S. hermonthica*). Several of those causing high germination of *S. hermonthica* were inhibitory to *S. gesnerioides*.]

Nowak, A.S. and Nobis, M. 2013. Distribution, floristic structure and habitat requirements of the riparian forest community *Populetum talassicae* ass. nova in the Central Pamir-Alai Mts (Tajikistan, middle Asia). Acta Societatis Botanicorum Poloniae 82(1): 47-55. [With reference to *Pedicularis dolichorhiza* as a major forest understory species.]

Nwaehujor, C.O., Ode, J.O. and Akande, M.G. 2013. *In vitro* antioxidant potentials of some herbal plants from southern Nigeria. Journal of Medical Sciences (Pakistan) 13(1): 56-61. [Including *Cassytha filiformis* among species with some antioxidant potential.]

Oga, E.F., Sekine, S., Shitara, Y. and Horie, T. 2012. P-glycoprotein mediated efflux in Caco-2 cell monolayers: the influence of herbals on digoxin transport. Journal of Ethnopharmacology 144(3): 612-617. [Results suggest that the traditional use of *Tapinanthus sessilifolius* for cancer and diabetes should not interfere with conventional drugs used against malaria.]

Oladimeji, O.H., Ani, L. and Nyong, E. 2012. Potential larvicides in Nigerian herbal recipes. International Journal of Pharmaceutical Sciences and Research (IJPSR) 3(10): 3783-3787. ['*Viscum album*' among species showing some moderate larvicidal properties against *Anopheles gambiae* – but species involved is uncertain.]

Omoigui, L.O., Yeye, M., Ousmane, B., Gowda, B.S. and Timko, M.P. 2012. Molecular characterization of cowpea breeding lines for *Striga* resistance using SCAR markers. Journal of Agricultural Science and Technology, B 2(3): 362-367. [Applying a new technique for more rapid assessment of cowpea lines against *Striga gesnerioides*.]

Omwenga, E.O., Okemo, P.O. and Mbugua, P.K. 2012. In vitro antimicrobial and preliminary phytochemical screening of some Samburu anti-diarrhoeal medicinal plants - Kenya. South Asian Journal of Experimental Biology 2(5): 217-226. [Noting activity of *Loranthus acaciae* against some fungi.]

*Önay-Uçar, E., Erol, Ö., Kandemir, B., Mertoğlu, E., Karagöz, A. and Arda, N. 2012. *Viscum album* L.

extracts protects HeLa cells against nuclear and mitochondrial DNA damage. Evidence-based Complementary and Alternative Medicine, 2012: Article ID 958740. (http://www.hindawi.com/journals/ecam/2012/958740/) [Confirming the potential for *V. album* extracts to prevent oxidative DNA damage but activity is affected by the host tree – *Robinia pseudoacacia* and *Tilia argentea* being more effective than *Acer campestre*.]

Onunogbo, C.C., Ohaeri, O.C. and Eleazu, C.O. 2013. Effect of mistletoe (*Viscum album*) extract on the blood glucose, liver enzymes and electrolyte balance in alloxan induced diabetic rats. American Journal of Biochemistry and Molecular Biology 3(1): 143-150. [Reporting on '*Viscum album*' but almost certainly some other, perhaps *Tapinanthus* sp.?]

Oroian, S. and Cotoara, I. 2012. The copacel hill forest, between Baĺa and Ercea, a future reserve of Mureş County. Journal of Plant Development 19: 157-164. [Including reference to *Melampyrum bihariense* in Romania forest.]

Ouattara, K., Doumbia, I., Coulibaly, A.F., Kouakou, S.K., Guessan, J.D., Djaman, A.J. and Coulibaly, A. 2012. (Influence of *Thonningia sanguinea* (THOS) on the productivity of laying hens.) (in French) International Journal of Biological and Chemical Sciences 6(5): 1960-1969. [A study in Cote d'Ivoire showed that feeding hens with 0.5 g extract of *T. sanguinea* for 2 weeks improved quantity and quality of egg production.]

Ouattara, K., Doumbia, I., Coulibaly, A.F., Siaka, S. and Coulibaly, A. 2013. *In-vitro* antibacterial activity of *Thonningia sanguinea* [Balanophoraceae (Vahl)] flowers extracts. Journal of Microbiology and Biotechnology Research 3(2): 83-87. [Confirming antibacterial activity against *Escherichia coli*, *Salmonella paratyphi*, *S. typhi* and *Enterobacter aerogenes*.]

Paduch, R. and Woz´niak, A. 2012. Plant extracts effect on sICAM-1 release form human corneal cells. Annales Universitatis Mariae Curie-Skłodowska. Sectio C, Biologia,67(2): 45-51. [Results suggest that extracts of several herbs including *Euphrasia officinalis* could be considered as supplementary compounds in eye drops, for control of inflammatory responses to ocular disease.]

Page, T., Tate, H., Tungon, J., Tabi, M. and Kamasteia, P. (eds) 2012. Vanuatu sandalwood: growers' guide for sandalwood production in Vanuatu. Australian Centre for International Agricultural Research (ACIAR), Canberra, Australia, 56 pp. [A general review on the cultivation of unspecified *Santalum* spp. in Vanuatu.]

Papademetrio, D.L., Trabucchi, A., Cavaliere, V., Ricco, R., Costantino, S., Wagner, M.L. and Álvarez, E. 2013. The catechin flavonoid reduces proliferation and induces apoptosis of murine lymphoma cells LB02 through modulation of antiapoptotic proteins. Revista Brasileira de Farmacognosia 23(3): 455-463. [Results confirm that catechin from *Ligaria cuneifolia* (Loranthaceae) can reduce proliferation of murine lymphoma cell line LB02.]

Parks, N. 2013.Tangled trends for temperate rain forests as temperatures tick up. Science Findings - Pacific Northwest Research Station, USDA Forest Service 149, 5 pp. [Among potential influences of global warming, suggesting that *Arceuthobium tsugense* could become more prevalent on *Tsuga heterophylla* in Alaska.]

Penney, D., Notcutt, B. and Rowntree, J.K. 2013. Seed predation of yellow rattle *Rhinanthus minor* by *Phytomyza varipes* (Diptera: Agromyzidae), with new British records. British Journal of Entomology and Natural History 26(1): 1-7. [The seed predator, *Phytomyza varipes* was found on *Rhinanthus minor* at all 10 sites studied in England and Wales. It was associated with reduced seed viability.]

Peregrym, O.M. and Futorna, O.A. 2013. (Seed morphology of section *Edentulae* Benth. of the genus *Pedicularis* L. (Orobanchaceae Vent.) in the Eastern Europe.) (in Russian) Modern Phytomorphology 3: 249-254. [Describing seeds of *P. dasyantha, P. exaltata, P. hacquetii, P. hirsuta* and *P. oederi*.]

Peregrym, O.M., Tsymbalyuk, Z.M. and Mosyakin, S.L. 2011. Pollen morphology of Ukrainian species of the genus *Pedicularis* L. (Orobanchaceae Vent.). Biodiversity: Research and Conservation 24: 5-12. [Describing varying pollen morphology in 10 *Pedicularis* spp. indicating the need for further taxonomic revision of the group.]

Piwowarczyk, R. 2012. *Orobanche alba* subsp. *alba* and subsp. *major* (Orobanchaceae) in Poland: current distribution, taxonomy, plant communities, hosts, and seed micromorphology. Biodiversity: Research and Conservation 26: 23-27. [Describing the distribution, seed micromorphology, taxonomy, biology, and ecology of the two subspecies of *O.*

alba, ssp. *major* mainly on *Salvia* spp. and ssp. *alba* mainly on *Thymus* spp.]

Piwowarczyk, R. 2012. Revised distribution and plant communities of *Orobanche alsatica* and notes on the Orobanchaceae series *Alsaticae* in Poland. Biodiversity: Research and Conservation 26: 39-51. [Describing the distribution of *O. alsatica* (mostly on *Peucedanum cervaria* and sporadically on *P. alsaticum* and *Seseli* sp.) also of *O. bartlingii* and *O. mayeri*, their taxonomy, biology, ecology, and habitat preferences.]

Piwowarczyk, R. 2012. *Orobanche bohemica* Čelak. (Orobanchaceae) at the eastern limit of its geographical range: new data on its distribution in Poland. Biodiversity: Research and Conservation 26: 53-59. [Recording a new occurrence of *O. bohemica* in Poland, on *Artemisia campestris,* and discussing its relationship to the closely related *O. purpurea* (on *Achillea* sp.) and *O. arenaria* (also on *A. campestris*).]

Piwowarczyk, R. 2012. Revised distribution and phytosociological data of *Orobanche coerulescens* Stephan in Willd. (Orobanchaceae): Poland in relation to Central Europe. Biodiversity: Research and Conservation 26: 61-72. [*O. coerulescens* recorded from 11 sites in Poland.]

Piwowarczyk, R. 2012. *Orobanche purpurea* (Orobanchaceae) in Poland: current distribution, taxonomy, plant communities, and preferred hosts. Biodiversity: Research and Conservation 26: 73-81. [*O. purpurea* now known from only 4 sites in Poland, on *Achillea* spp.]

Piwowarczyk, R. 2012. The genus *Orobanche* L. (Orobanchaceae) in the Małopolska Upland (S Poland): distribution, habitat, host preferences, and taxonomic problems. Biodiversity: Research and Conservation 26: 3-22. [Maps show the distribution of 12 species of *Orobanche* in southern Poland. With particular notes on the differences between *O. elatior s.s.* and *O. kochii.*]

*Podlech, O., Harter, P.N., Mittelbronn, M.. Pöschel, S. and Naumann, U. 2012. Fermented mistletoe extract as a multimodal antitumoral agent in gliomas. Evidence-based Complementary and Alternative Medicine 2012: Article ID 501796. (http://www.hindawi.com/journals/ecam/2012/501796/) [Concluding that *Viscum album* extract ISCADOR Q, showing multiple positive effects in the treatment of glioblastoma, may be a candidate for concomitant treatment of this cancer.]

Posadzki, P., Watson, L., Ernst, E., Schmitt, J. and Ferro A, 2013. Herb-drug interactions: an overview of systematic reviews. British Journal of Clinical Pharmacology 75(3): 603-618. [While most herbal medicinal products did not show interaction with conventional drugs, there were some serious interactions with *Viscum album*.]

Probatova, N.S., Kazanovsky, S.G., Barkalov, V.Yu., Rudyka, E.G. and Seledets, V.P. 2013. (Chromosome numbers in vascular plants from various regions of Russia.) (in Russian) Botanicheskiĭ Zhurnal 98(2): 255-268. [Including *Orobanche pycnostachya* but no info in abstract.]

Prušová, M., Lepš, J., Štech, M. and Těšitel, J. 2013. Growth, survival and generative reproduction in a population of a widespread annual hemiparasite *Melampyrum pratense*. Biologia (Bratislava) 68(1): 65-73. [A detailed study of seed production in *M. pratense* in the Czech Republic, greatest seed production occurring in larger plants persisting to the end of the season.]

Puneetha, G.K., Thriveni, M.C., Murali, M., Shivamurthy, G.R., Niranjana, S.R., Prakash, H.S., Sadashiva, M.P. and Amruthesh, K.N. 2013. Evaluation of a parasitic flowering plant *Dendrophthoe trigona* (Wt. & Arn.) Danser for its phytochemical and antioxidant activities. Journal of Pharmacy Research 7(1): 20-23. [Commenting that *D. trigona* is known for its deleterious effects but suggesting it could be exploited for its antioxidant properties.]

Quan JiShu, Li Tian, Zhao WenXi, Xu HuiXian, Qiu DeLai and Yin XueZhe. 2013. Hepatoprotective effect of polysaccharides from *Boschniakia rossica* on carbon tetrachloride-induced toxicity in mice. Journal of Clinical Biochemistry and Nutrition 52(3): 244-252. [Confirming some hepatoprotective activity in extracts of *B. rossica.*]

Rai, I.D., Adhikari, B.S. and Rawat, G.S. 2012. Floral diversity along sub-alpine and alpine ecosystems in Tungnath area of Kedarnath Wildlife Sanctuary, Uttarakhand. Indian Forester 138(10): 927-940. [*Balanophora involucrate* recorded in the area for the first time.]

Ramíres-Espinosa, J.J. and 9 other. 2013. Antihyperglycemic and sub-chronic antidiabetic actions of morolic and moronic acids, *in vitro* and *in silico* inhibition of 11β-HSD 1. Phytomedicine 20(7): 571-576. [Morolic and moronic acids in extracts of *Phoradendron reichenbachianum,* a medicinal plant used in Mexico for the treatment of

diabetes, have shown sustained antidiabetic and antihyperglycemic action.]

Rao, B.R.R., Syamasundar, K.V., Rajput, D.K., Nagaraju, G. and Adinarayana, G. 2012. Potential species of medicinal plants for cultivation in Deccan region. Journal of Pharmacognosy 3(2): 96-100. [Noting that this region is already well-known for its *Santalum album* resources.]

Rapparini, G., Campagna, G. and Geminiani, E. 2012. (Sugarbeet - integrated weed control strategies.) Informatore Agrario 68(48): 52-59. [Presumably containing reference to *Cuscuta campestris* and its control.]

Ramírez-Cisneros, M.Á., Rios, M.Y., Ríos-Gómez, R. and Aguilar-Guadarrama, A.B. 2012. Cycloartanes from *Krameria pauciflora* and their *in vitro* PLA_2, COX-1, and COX-2 enzyme inhibitory activities. Planta Medica 78(18): 1942-1948.

Rasmussen, A., Heugebaert, T., Matthys, C., Deun Rvan, Boyer, F.D., Goormachtig, S., Stevens, C. and Geelen, D. 2013. A fluorescent alternative to the synthetic strigolactone GR24. Molecular Plant 6(1): 100-112. [Reporting the synthesis of a fluorescent strigolactone molecule CISA-1 via a novel high-yielding method using simple starting materials, and its activity comparable to that of GR24 on *Orobanche aegyptiaca*.]

Ray, B.R. and Dasgupta, M.K. 2010. Management of root holoparasite *Aeginetia pedunculata* of (Orobanchaceae), causing wilt of sugarcane by trap and catch crops. The Journal of Plant Protection Sciences 2(2): 27-34. [Rice , maize, pearl millet, *Setaria italica*, *Phaseolus mungo*, *Sesbania aculeata*, sesame, jute, pigeon pea and groundnut all showed potential as trap crops, stimulating germination of *A. pedunculata*. Sorghum was identified as a catch crop supporting growth and development of *A. pedunculata* up to flowering.]

Rebeka, G., Shimelis, H., Laing, M.D., Tongoona, P. and Mandefro, N. 2103. Evaluation of sorghum genotypes compatibility with *Fusarium oxysporum* under striga infestation. Crop Science 53(2): 385-393. [From 50 sorghum lines tested, 12 selected for farmer-preferred agronomic traits and with *F. oxysporum* compatibility. Treatment with *F. oxysporum* resulted in significantly delayed emergence and weaker growth of *Striga hermonthica*.]

Rimbawanto, A. 2012. Conservation of genetic resources of sandalwood (*Santalum album* L. var. *album*) in Timor islands. In: Sim Heok-Choh, Syuqiyah Abdul Hamid and Li Mei (eds) Asia and the Pacific Workshop: Multinational and transboundary conservation of valuable and endangered forest tree species. Extended abstracts from the workshop held in Guangzhou, China, 5-7 December 2011. IUFRO World Series 30: 36-39.

Rivera Hernández, J.E. anbd Espinosa Henze, Á. 2011. (New information about recent records of Meliaceae, Poaceae and Viscaceae families in the fanerogamic flora of Mexico City, Mexico.) (in Spanish) Revista Cientifica UDO Agricola 11(1): 83-88. [*Arceuthobium abietis-religiosae* recorded for the first time in Mexico City.]

Riviere, S., Clayson, C., Dockstader, K., Wright, M.A.R. and Costea, M. 2013. To attract or to repel? Diversity, evolution and role of the "most peculiar organ" in the *Cuscuta* flower (dodder, Convolvulaceae) - the infrastaminal scales. Plant Systematics and Evolution 299(3): 529-552. [Results suggest that scales in *Cuscuta* evolved in connection with a modification of their function in the flower: from nectar protection and holding in the first diverged subgenus *Monogynella*, to ovary/ovule protection against herbivorous insects in the derived subgenera *Cuscuta* and *Grammica*. The study also elaborates on the development and ultrastructure of scales in *C. gronovii*, and provides details on their anatomy in other species.]

Rohadi, D., Setyawati, T., Maryani, R., Riwukaho, M., Gilmour, D., Boroh, P., Septiani, Y. and Lukas, E. 2012. Strategies for sustaining sandalwood resources in East Nusa Tenggara, Indonesia. In: Sim Heok-Choh, Syuqiyah Abdul Hamid and Li Mei (eds) Asia and the Pacific Workshop: Multinational and transboundary conservation of valuable and endangered forest tree species. Extended abstracts from the workshop held in Guangzhou, China, 5-7 December 2011. IUFRO World Series 30: 69-71.

Rommelaars, L. and Dam, N. 2013. (First records of *Phaeobotryosphaeria visci* from The Netherlands. Coolia 56(1): 35-39. [Describing the leaf spot disease *P. visci* occurring commonly on *Viscum album* in the Limburg Province.]

Roy, M., Gonneau, C., Rocheteau, A., Berveiller, D., Thomas, J.C,, Damesin, C. and Selosse, M.A. 2013. Why do mixotrophic plants stay green? a comparison between green and achlorophyllous orchid individuals in situ. Ecological Monographs 83(1): 95-117. [Showing that the mixotrophic green orchid *Cephalanthera damasonia* depends on fungal

mycorrhiza initially but soon relies very largely on its own photosynthesis. Albino individuals fail to grow well and produce few seeds. Discussing possible reasons for failure of these individuals to proceed to full mycoheterotrophy.]

Ruyter-Spira, C., Al-Babili, S., van der Krol, S. and Bouwmeester, H. 2013.The biology of strigolactones, Trends in Plant Science 18(2): 72-83. [A review on the latest knowledge on biosynthesis and perception of strigolactones and their role in regulating plant development]

Sabbagh, S.K.. Mazaheri, M., Panjehkeh, N. and Salari, M. 2012. Transcriptomic analysis of *Sporisorium reilianum* in response to the strigolactone analogue GR24. Phytopathologia Mediterranea 51(2): 283-291. [Noting a temporary increase in respiration in the spores of the maize head smut pathogen *Sporisorium reilianum* on exposure to GR24.]

Sabra, A.H. and Haidar, M.A. 2012. Invasive weed mapping of Lebanon. Journal of Agricultural Science and Technology, B 2(9): 1010-1015. [Reporting on the mapping of native and non-native invasive species, including *Orobanche ramosa* and *Cuscuta* spp. (species not determined) and 6 others, and noting that the most serious are these two plus *Sorghum halepense*.]

St Jack, D., Hesterman, D.C. and Guzzomi, A.L. 2013. Precision metering of *Santalum spicatum* (Australian Sandalwood) seeds. Biosystems Engineering 115(2): 171-183. [Testing a wide range of devices for sowing seeds of *S. spicatum*.]

Sandler, H.A. 2013. Response of four cranberry varieties to delayed applications of dichlobenil. Weed Technology 27(1): 108-112. [Confirming that mid-season applications of diclobenil are safe for cranberry and improve control of unspecified 'dodder ' – presumably *Cuscuta gronovii*.]

Sangu, P.K., Sharma, B.K., Narayana Ala. 2012. Review on the pharmacological concepts of the Vranahara drugs W.S.R to Madhava dravyaguna. International Journal of Ayurvedic and Herbal Medicine 2(3): 530-540. [Including reference to *Dendrophthoe falcata*.]

Sangüesa-Barreda, G., Linares, J.C. and Camarero, J.J. 2013. Drought and mistletoe reduce growth and water-use efficiency of Scots pine. Forest Ecology and Management 296: 64-73. [Recording damaging combined effects from drought and *Viscum album* on *Pinus sylestris* in Spain, and concluding that these effects are unlikely to be compensated for by higher levels of CO_2.]

Santos, S.O. and Alves, M. 2013. Taxonomic synopsis of the family Lauraceae north in the Atlantic Forest Brazilian. Revista Brasileira de Biociências 11(1): 14-28. [Including information on one *Cassytha* sp. (unspecified in abstract).]

Saric-Krsmanovic, M. and Dobrikovic, D. 2012. (Dodder and its control in sugar beet.) (in Serbian) Biljni Lekar (Plant Doctor) 40(5): 400-406. [Describing increasing infestation of lucerne, clovers and sugar beet by unspecified *Cuscuta* spp. Also describing damage effects and methods of control used in sugar beet.]

Satyendra Garg Patil, U.K. and Shrivastava, T.P. 2012.Wound healing potential of *Viscum articulum* Brm., an ethnomedicinal plant of Sikkim on rat. International Journal of Phytochemistry & Pharmacology 2(3): 138-142. [Confirming improved wound healing in rats in response to extracts of *V. articulatum*.]

Sawyer, B. 2013. Sandalwood (*Santalum spicatum*) establishment in the semi-arid and arid regions of Western Australia. Rangeland Journal 35(1): 109-115. [Studies aimed at encouraging the growth of *S. spicatum* concluded that a minimum of 264 mm rainfall per year, and breaking soil crusts were needed.]

Scheer, R., *et al.* (Eds) 2013. Die Mistel in der Tumortherapie 3 – Aktueller Stand der Forschung und klinische Anwendung**,** 2013 Scheer, Susanne Alban, Hans Becker, Wolfgang Blaschek, Fritz H. Kemper, Wolfgang Kreis, Harald Matthes, Heinz Schilcher, Rainer Stange. 502 Seiten mit zahlreichen farbigen Abbildungen ISBN 978-3-86864-032-8, Essen. [See under New Books above.]

Scheunert, A., Fleischmann, A., Olano-Marín, C., Bräuchler, C. and Heubl, G. 2012. Phylogeny of tribe Rhinantheae (Orobanchaceae) with a focus on biogeography, cytology and re-examination of generic concepts. Taxon 61(6): 1269-1285. [This phylogenetic analysis of ITS and chloroplast regions of tribe Rhinantheae helped untangle several issues regarding generic boundaries. From this study, several new nomenclatural combinations were made.]

Schmidt, S. and Raven, J.A. 2013. The mixotrophic nature of photosynthetic plants. Functional Plant Biology 40(5): 425-438. [A general review of the topic with reference to parasitic plants and with particular discussion of mixotrophy in the context of nitrogen and phosphorus nutrition drawing parallels between algae and plants.]

Sedayu, A. and Sumadijaya, A. 2012. Host specificity and characteristics of *Viscum ovalifolium* in Pulau Dua mangrove, Banten, Indonesia. Hayati Journal of Biosciences 19(4): 177-182. [*V. ovalifolium* occurred on only two host species, *Excoecaria agallocha* and *Thespesia populnea*, among 11 potential hosts in the study area. *Dicaeum trochileum* identified as the probable bird seed disperser.]

Sekar, D.R.S., Buvaneswaran, C. and Sornappan, P. 2012. Lemon (*Citrus limon*) as a new host plant to sandal (*Santalum album*) tree. Indian Forester 138(9): 858-859. [Confirming lemon as a suitable host for *S. album*. No comment on health of lemon.]

Seyyedi, M., Moghaddam, P.R., Shahriari, R., Azad, M. and Rezaei, E.E. 2013. Allelopathic potential of sunflower and caster bean on germination properties of dodder (*Cuscuta compestris*). African Journal of Agricultural Research 8(7): 601-607. [Various residues of sunflower and castor bean reduced germination of *C. campestris* in Petri dishes, but usual problems of interpreting practical significance.]

Shang, Z.H. and Xu, S.G. 2012. Allelopathic testing of *Pedicularis kansuensis* (Scrophulariaceae) on seed germination and seedling growth of two native grasses in the Tibetan plateau. Phyton (Buenos Aires) 81: 75-79. [Suggesting that *P. kansuensis* may have allelopathic effects but high concentrations needed.]

Shang ZhanHuan, Yang ShiHai, Shi JianJun, Wang YanLong and Long RuiJun. 2013. Seed rain and its relationship with above-ground vegetation of degraded *Kobresia* meadows. Journal of Plant Research 126(1): 63-72. [*Pedicularis kansuensis* among species contributing to the degradation of *Kobresia* meadows.]

Sharma Shikha and Kaur Amrinder. 2013. *Cuscuta reflexa* Roxb. a parasitic plant in Ayurveda. International Journal of Pharmaceutical Research and Bio-Science 2(2): 180-190. [Reviewing the history of the medicinal uses of *C. reflexa* in India.]

Shavvon, R.S., Mehrvarz, S.S. and Golmohammadi, N. 2012. Evidence from micromorphology and gross morphology of the genus *Loranthus* (Loranthaceae) in Iran. Turkish Journal of Botany 36(6): 655-666. [A comparative study of *L europaeus* and *L. grewingkii,* a species known only from Iran, both growing on host trees including *Quercus infectoria*, *Acer monspessulanum*, and *Armeniaca vulgaris*. Describing a range of characters distinguishing the two including differences in wax crystalloid structures, seed surface structure and other morphological features.]

Shaw, D.C. and Mathiasen, R.L., 2013. Forest diseases caused by higher parasitic plants: mistletoes. In: Gonthier, P. and Nicolotti, G. (eds) Infectious forest diseases, Wallingford, UK: CAB International pp. 97-114. [A useful chapter reviewing mistletoe problems in forestry, providing information on symptom detection, infection biology, dispersal and pollination, management strategies and tactics, which include exclusion, eradication, protection (using a physical barrier, herbicides, shading and fertilizer application), genetic resistance, cultural, biological and integrated methods of control. Mistletoe genera are tabulated, indicating host groups seriously affected and the regions where economic losses occur.]

Shindrova, P. and Penchev, E. 2012. Race composition and distribution of broomrape (*Orobanche cumana* Wallr.) in Bulgaria during 2007-2011. Helia 35(57): 87-93. [Reviewing the races of *O. cumana* occurring in Bulgaria. Races E and G are now the commonest with E tending to decrease while G increases. Race F is only sporadic and of little concertn. Race H is localised but considered a threat.]

Silveira, L.H.C., Rezende, A.V. do Vale, A.T. 2013. Moisture content and basic wood density of nine commercial Amazonian tree species. Acta Amazonica 43(2): 179-184. [Including information on *Minquartia guianensis*.]

Singer, M.C. and McBride, C.S. 2012. Geographic mosaics of species' association: a definition and an example driven by plant-insect phenological synchrony. Ecology 93(12): 2658-2673. {Involving the interactions of the butterfly *Euphydryas editha* and its hosts, the perennial *Pedicularis semibarbata* and the annual *Collinsia torreyi*.]

Singh, C.K., Raj, S.R., Patil, V.R., Jaiswal, P.S. and Subhash, N. 2013. Plant regeneration from leaf explants of mature sandalwood (*Santalum album* L.) trees under *in vitro* conditions. In Vitro Cellular & Developmental Biology – Plant 49(2): 216-222. [Describing a range of media in which rooting and growth from leaf explants could be succesfully achieved.]

Skoglund, J. 2013. (Strong increase of *Viscum album* at its northern Swedish limit.) (in Swedish) Svensk Botanisk Tidskrift 107(1): 28-41. [Recording an increase in numbers of *V. album* from 139 in 16

host trees in 1952 to 4561 in 887 trees in 2009, mainly in *Malus, Tilia, Populus* and *Sorbus,* attributed to higher temperatures, favourable urban conditions and suitable host trees.]

Snytnikova, O.A., Tsentalovich, Yu.P., Stefanova, N.A., Fursova, A.Zh., Kaptein, R., Sagdeev, R.Z. and Kolosova, N.G. 2012. The therapeutic effect of mitochondria-targeted antioxidant SkQ1 and *Cistanche deserticola* is associated with increased levels of tryptophan and kynurenine in the rat lens. Doklady Biochemistry and Biophysics 447(1): 300-303. [Treatment with *C. deserticola* helped slow down development of cataract.]

Soliman, M.M., Soheir, A.M., Nagat, G.A,; Raslan, M.A. and Mohamed, F. 2012. Screening chickpea (*Cicer arietinum*) for resistance to crenate broomrape (*Orobanche crenata* Forsk.) in middle Egypt. Advances in Environmental Biology 6(10): 2714-2719. [From screening of 30 accessions with further work on 13. Of these, F98-73C, F00-72C and F01-52C performed best under *O. crenata* infestation.]

Soomers, H., Karssenberg, D., Verhoeven, J.T.A., Verweij, P.A. and Wassen, M.J. 2013. The effect of habitat fragmentation and abiotic factors on fen plant occurrence. Biodiversity and Conservation 22(2): 405-424. [Including observations on the influence of habitat edge on *Pedicularis palustris*.]

Sowa, I., Wójciak-Kosior, M. and Kocjan, R. 2012. The content of some trace elements in selected medicinal plants collected in the province of Lublin. Acta Scientiarum Polonorum - Hortorum Cultus 11(6): 15-22. [‘*Euphrasia herba’* (based on *Euphrasia rostkoviana*) showed relatively high levels of zinc.]

Sri Harsha, P.S.C. and Khan, M.I. 2013. Cyanidin-3-glucoside, nutritionally important constituents and *in vitro* antioxidant activities of *Santalum album* L. berries. Food Research International 50(1): 275-281.

Stoyanov, K. and Hristeva, T. 2013. (The trophic plasticity of genus phelipanche pomel (orobanchaceae) in Bulgaria.) (in Bulgarian) Journal of Central European Agriculture 14(1): 203-213. [Surveying the non-crop hosts of 5 *Phelipanche* spp. in Bulgaria, noting that *P. ramosa, P. mutelii,* and *P. oxyloba* in Section Phelipanche have wide host ranges, while *P. arenaria* and *P. purpurea* in Section Arenariae have narrow host ranges.]

Sumita Acharjee and Sarmah, B.K. 2013. Biotechnologically generating 'super chickpea' for food and nutritional security. Plant Science 207: 108-116. [Describing advanced techniques for breeding chickpea with multiple characters including resistance to *Orobanche* spp.]

Sun Kai Zhao Chen, Chen XiangFeng, Kim HyeKyung, Choi BoRam, Huang YiRan and Park JongKwan. 2013. *Ex vivo* relaxation effect of *Cuscuta chinensis* extract on rabbit corpus cavernosum. Asian Journal of Andrology 15(1): 134-137. [An extract of *C. chinensis* exerts a relaxing effect on penile cavernous tissue may improve erectile dysfunction.]

Sun ShiGuo, Huang ShuangQuan and Guo YouHao. 2013. Pollinator shift to managed honeybees enhances reproductive output in a bumblebee-pollinated plant. Plant Systematics and Evolution 299(1): 139-150. [Confirming that honey bees were at least as successful as the native bumble bees for pollination of *Pedicularis densispica* where they have been introduced to areas of China.]

Subasinghe, U., Gamage, M. and Hettiarachchi, D.S. 2013. Essential oil content and composition of Indian sandalwood (*Santalum album*) in Sri Lanka. Journal of Forestry Research 24(1): 127-130.

Svensson, B. and Carlsson, B. 2013. (Protecting early-flowering Euphrasia on Gotland, southeast Sweden.) (in Swedish) Svensk Botanisk Tidskrift 107(1): 42-51. [Discussing management practices favourable to the maintenance of the endangered *Euphrasia stricta* vars. s*uecica* and *tenuis*, including spring raking and leaving cut hay on the field.]

Symonds, C. 2012. A new species of mistletoe inhabiting plant bug from Western Australia: *Hypseloecus schuhi* (Heteroptera: Miridae: Phylinae). Entomologica Americana 118(1/4): 185-191. [Describing the new species *H. schuhi* from specimens collected on *Amyema nestor*.]

Tănase, M. and Moise, C. 2012. Dodders (*Cuscuta* spp.): skin repose, seed germination and pre-parasitic life. Journal of Horticulture, Forestry and Biotechnology 16(3): 89-92. [Reviewing the increased occurrence of *Cuscuta* spp. (*C. trifolii, C. epithymum* and *C. campestris*) in Romania on *Trifolium, Lotus* and *Medicago* spp. and discussing the germination of (unspecified) seed to concentrated sulphuric acid after 15-25 minutes exposure only.]

Tănase, M., Sand, C. and Ciortea, G. 2012. The economic impact of cuscuta: damages and usages. Revista Economica, 2012, Suppl. 6, 45-49. [A general review of *Cuscuta* spp. including discussion

of the significance of wild hosts; also their medicinal and other uses.]

Tănase, M., Stanciu, M., Moise, C. and Gheorghe, M. 2012. Ecological and economic impact of dodder species (*Cuscuta* spp. Convolvulaceae) on pratological ecosystems. Journal of Horticulture, Forestry and Biotechnology 16(3): 93-97. [Further comment on the importance of *Cuscuta* spp. on a very wide range of crops in Romania but especially affecting 20% of lucerne and red clover crops with losses estimated to be at least 20 M. RON (5 M Euro).]

Tao JiaYi, Zhao Jun, Zhao Ying, Cui YanMei and Fang WeiShuo. 2012. BACE inhibitory flavanones from *Balanophora involucrata* Hook. f. Fitoterapia 83(8): 1386-1390.

Tarfa, F.D., Amos, S., Temple, V.J., Ochekpe, N.A. and Gamaniel, K.S. 2012. Hypoglycemic effects of the aqueous extract of African Mistletoe, *Tapinanthus sesselifolius* (P. Beauv) van Tiegh (Loranthaceae). International Journal of Biological and Chemical Sciences 6(1) 408-414. [Confirming that *T. sessilifolius* contains substances that may be useful in treatment of diabetes giving a scientific basis for its use in herbal traditional medicine as an antidiabetic agent.]

Temel, N., Eymïrlï, S., Aksoy, E., Arslan, F. and Tetïk, Ö. 2012. (Determination of optimum sowing date and the cultivar to control broomrape (*Orobanche aegyptiaca* Pers. and *O. crenata* Forsk.) in lentil (*Lens culinaris* Medic.).) (in Turkish) Yüzüncü Yil Üniversitesi Journal of Agricultural Sciences 22(2): 99-107. [Concluding that delayed sowing of 'early' varieties of lentil would be optimal for crop yield and reduction of *Orobanche* infestation.]

Těšitel, J. and Tesařová, M. 2013. Ultrastructure of hydathode trichomes of hemiparasitic *Rhinanthus alectorolophus* and *Odontites vernus*: how important is their role in physiology and evolution of parasitism in Orobanchaceae? Plant Biology 15(1): 119-125. [A detailed description of hydathode (=hydrathode?) trichomes in *R. alectrolophus* and *O. vernus*, confirmation of their active excretion of water, and discussion of their significance in the evolution of hemiparasitism. With reference also to *Lathraea*.]

Thorat, K.S., Suryawanshi, D.B. and Ban, S.H. 2012. Technological gap in adoption of recommended cultivation practices of mango growers and constraints faced by them. Mysore Journal of Agricultural Sciences 46(1): 160-163. [Recording 26% of farmers ignorant of the 'Amar *Loranthus* cutter' (presumably a device for pruning mistletoe) in Maharashtra, India.]

Thriveni, M.C., Shivamurthy, G.R., Amruthesh, K.N., Vijay, C.R. and Sadanand, K.B. 2013. A new species of *Viscum* (Viscaceae) from Bandipur, Karnataka State, India. Journal of Systematics and Evolution 51(2): 224. [Describing the morphology and distribution of a new species, *V. bandipurense.*]

Tiwari, J.K., Gairola, A. and Tiwari, P. 2012. Pollen analysis of some honey samples from district Uttarakashi in Garhwal Himalaya, India. Asian Journal of Experimental Biological Sciences 3(4): 778-784. *Loranthus pulverulenta* (= *Scurrula pulverulenta*) among important sources of pollen in honey.]

Torbaghan, M.E., Raoufinezhad, G.R. and Torbaghan, M.E. 2012. Effects of nitrogen and irrigation interval on broomrape (*Orbanche aegyptiaca* 4(6): 126-135. [In glasshouse trials in Iran, high nitrogen and frequent irrigation gave lowest *O. aegyptiaca* and highest cucumber yield.]

Traoré, M., Belo, H., Ousmane, B., Souaré, T. and Ouattara, T.G. 2012. Community soil resources management for sub-Saharan West Africa: case study of the Gourma region in Burkina Faso. Journal of Agricultural Science and Technology A 2(1): 24-39. {A survey of farmers' opinions on soil fertility and management, suggested infestation by *Striga hermonthica* to be a major factor on most farms.]

Thuncharoen, W., Chulasiri, M., Nilwarangkoon, S., Nakamura, Y. and Watanapokasin, R. 2013. Apoptotic induction of skin cancer cell death by plant extracts. Journal of the Medical Association of Thailand 96(Supplement 1): 60-64. [Including data for extracts of *Rafflesia kerrii*.]

Umoh, U.F., Ekpo, B.A.J., Bala, D.N., Udobang, J.A., Cocobassey, M. and Etim, E.I. 2011. Phytochemical and comparative antidiabetic studies of leaf extracts of *Viscum album* from different plant hosts. International Journal of Biological and Chemical Sciences 5(4): 1448-1454. [Noting that the degree of lowering of blood glucose in diabetic rats by extracts of a Nigerian mistletoe (referred to, incorrectly as '*V. album*') depended on the host species. There are also differences between short-term and longer-term activity, not clear from abstract.]

Urso, V., Signorini, M.A., Bruschi, P. 2013. Survey of the ethnobotanical uses of *Ximenia americana* L.

(*mumpeke*) among rural communities in South Angola. Journal of Medicinal Plants Research 7(1): 7-18. [A survey suggested that the main uses of *X. americana* were as oil extracted from seeds as a cosmetic for body and hair care and as a medicinal remedy to prevent varicose veins.]

Varga, I., Nagy, V., Baltazár, T., Mátyás, K.K., Poczai, P. and Molnár, I. 2012. (Study of the efficiency of different systemic herbicides against European mistletoe (*Viscum album*) and their antifungal activity against hyperparasitic mistletoe fungus.) (in Hungarian) Növényvédelem 48(11): 507-517. [Testing 2,4-D, glyphosate and metsulfuron-methyl on *V. album* infecting *Acer campestre*. 2,4-D was effective but damaged the host. The fungus *Phaeobotriosphaeria visci* is of interest as a biocontrol agent.]

Vipan Guleria. 2013. Analysis of plant, host and management relationships for sandalwood (*Santalum album*) cultivation in new subtropical locality of hill region of Indian Himalayas. Indian Forester 139(1): 53-57. [Best growth of *S. album,* achieved with *Dalbergia sissoo* as host. Two other leguminous hosts, *Acacia catechu* and *Leucaena leucocephala* were superior to the non-legume *Morus alba.*]

Vrancken, J., Brochmann, C. and Wesselingh, R.A. 2012. A European phylogeography of *Rhinanthus minor* compared to *Rhinanthus angustifolius*: unexpected splits and signs of hybridization. Ecology and Evolution 2(7): 1531-1548. [A study on the phylogeny of *Rhinanthus* showing unexpected molecular variability relative to geographical distribution and the possibility of a new, cryptic, species.]

Wagner, M., Peyton, J., Heard, M.S., Bullock, J.M. and Pywell, R.F. 2011. Effects of Yellow-rattle (*Rhinanthus minor*) establishment on the vegetation of species-poor grassland. Aspects of Applied Biology 108: 59-66. [Although *R. minor* has been promoted as a means of increasing species richness in grassland, this study suggests this may not always be so.]

*Wambugu, P.W., Mathenge, P.W., Auma, E.O. and van Rheenen, H.A. 2012. Constraints to on-farm maize (*Zea mays* L.) seed production in Western Kenya: plant growth and yield. ISRN Agronomy, 2012: Article ID 153412. (http://www.hindawi.com/isrn/agronomy/2012/153412/) [A factorial study with 2 maize varieties, 2 times of harvest and 2 levels of nitrogen, on a range of farms, concluded that nitrogen contributed most to increased yield and seed quality under *Striga hermonthica*-infested conditons.]

Wang FengXia, Zhang Ji and Gao YiXia, Wang YunPu. 2012. (Purification and characterization of polysaccharide CSP-D1 isolated from *Cynomorium songaricum* Rupr.) (in Chinese) Food Research and Development 33(9): 45-49.

Wang JiangNing, Li XiaoRong and Gao Lei.2013. Study on extraction process of tannins from Semen Cuscutae and their anti-papilloma activity. African Journal of Traditional, Complementary and Alternative Medicines 10(3): 469-474. [Relating to the seeds of unspecified *Cuscuta* spp.]

Wang Zhong, Ma YongQing, Jia JinNan, Dong ShuQi, and Ye XiaoXin. 2013. Allelopathic effect of potato on *Orabanche aegyptiaca* Pers. seed germination. Zhongguo Shengtai Nongye Xuebao / Chinese Journal of Eco-Agriculture 21(3) 333-339. [Noting that *O. aegyptiaca* is a national-class quarantine species in China, seriously harmful to melons and other economic crops, and confirming that potato stimulates germination of *O. aegyptiaca* and could be useful a trap crop. Some varieties better than others.]

Waters, M.T. and Smith, S.M. 2013. KAI2- and MAX2-mediated responses to karrikins and strigolactones are largely independent of HY5 in *Arabidopsis* seedlings. Molecular Plant 6(1): 63-75. [Further discussion of the modes of action of strigolactones, karrikins and butenolides (cf. Flematti *et al.,* above).]

Watson, D.M. 2013. The relative contribution of specialists and generalists to mistletoe dispersal: insights from a neotropical rain forest. Biotropica 45(2): 195-202. [Observation of 23 different bird species feeding on fruits of *Oryctanthus occidentalis* suggested that while 'mistletoe specialists' were important in intensifying infestations, generalist and opportunist feeders may be more important in long-distance dispersal.]

Wen QiongWen. 2012. (Experimental study of pruning of six forest vegetables in Yuanjiang county.) (in Chinese) Journal of West China Forestry Science 41(3): 106-109. [Including information on germination of *Melientha longistaminata* (Opiliaceae) and its rooting in response to growth regulators.]

Wood, J.R., Wilmshurst, J.M., Worthy, T.H., Holzapfel, A.S. and Cooper, A. 2012. A lost link between a flightless parrot and a parasitic plant and

the potential role of coprolites in conservation paleobiology. Conservation Biology 26(6): 1091-1099. [In New Zealand the only known pollinator for the cryptic root-parasite *Dactylanthus taylorii* (Balanophoraceae) is the lesser short-tailed bat (*Mystacina tuberculata*) but fossil faeces show that it was almost certainly previously vistited by kakapo (*Strigops habroptilus*) a large, nocturnal, flightless parrot, with which it no longer overlaps. Suggesting that the two should be brought together on a predator-free offshore island to the benefit of both.]

Werthmann, P.G., Sträter, G., Friesland, H. and Kienle, G.S. 2013. Durable response of cutaneous squamous cell carcinoma following high-dose peri-lesional injections of *Viscum album* extracts - a case report. Phytomedicine 20(3/4): 324-327. [Describing a single case where application of *V. album* extract cured a skin cancer.]

William, J.G., Hella, J.P. and Mwatawala, M.W. 2012. Ex-ante economic impact assessment of green manure technology in maize production systems in Tanzania. Research on Humanities and Social Sciences 2(9): 47-58. [Suggesting economic benefit from the use of intercropping maize with green manure crops as a means of reducing the problem from *Striga* spp.]

*Xi, Z.X., Wang YuGuo, Bradley, R.K., Sugumaran, M., Marx, C.J., Rest, J.S. and Davis, C.C. 2013. Massive mitochondrial gene transfer in a parasitic flowering plant clade. PLoS Genetics 9(2): e1003265. (http://rd.springer.com/article/10.1007/s10265-012-0521-7) [Lateral gene transfer has been known for some time in the Rafflesiaceae, these authors report large scale transfer of the host mitochondrial genome, contra genes.]

Xie ShiAn and 11 others. 2013. A new flavanol from *Cynomorium songaricum*. Journal of Asian Natural Products Research 15(4): 413-416. [Songarin A from *C. songaricum* displayed a protective effect against D-galactosamine-induced HepG2 damage.]

Xie XiaoNan, Yoneyama, K., Kisugi, T., Uchida, K., Ito, S., Akiyama, K., Hayashi, H., Yokota, T., Nomura, T. and Yoneyama, K. 2013. Confirming stereochemical structures of strigolactones produced by rice and tobacco. Molecular Plant 6(1): 153-163. [Describing the differing spectra of strigolactones in tobacco and rice.]

Xu DaPing, Lu JunKun, Liu XiaoJin, Zhang NingNan and Yang ZengJiang, 2012. Mixed plantation of *Santalum album* and *Dalbergia odorifera* in China. In: Sim Heok-Choh, Syuqiyah Abdul Hamid and Li Mei (eds) Asia and the Pacific Workshop: Multinational and transboundary conservation of valuable and endangered forest tree species. Extended abstracts from the workshop held in Guangzhou, China, 5-7 December 2011. IUFRO World Series 30: 17-18.

Yagame, T. and Yamato, M. 2013. Mycoheterotrophic growth of *Cephalanthera falcata* (Orchidaceae) in tripartite symbioses with Thelephoraceae fungi and *Quercus serrata* (Fagaceae) in pot culture condition. Journal of Plant Research 126(2): 215-222. [Confirming that, although green, the orchid *Cephalanthera falcata* benefits from tripartite symbioses with Thelephoraceae fungi and *Quercus serrata*.]

Yagi, S., Drouart, N., Bourgaud, F., Henry, M., Chapleur, Y. and Laurain-Mattar, D. 2013. Antioxidant and antiglycation properties of *Hydnora johannis* roots. South African Journal of Botany 84(1): 124-127. [Results suggest the potential value of *H. johannis* extracts in the treatment of diabetes.]

Yan Chong and Liu HongJu and Lin Li. 2013. Simultaneous determination of vitexin and isovitexin in rat plasma after oral administration of *Santalum album* L. leaves extract by liquid chromatography tandem mass spectrometry. Biomedical Chromatography 27(2): 228-232.

Yang LingJian, Yang Yang, Xia Li, Sang Bai, Wang ShiXiang, Yu Jie, Lan Wei and Zheng XiaoHui. 2012. (Effect of *Santalum album* on the pharmacokinetics of *Choerospondias axillary* fruit in qi-stagnancy and blood stasis rats.) (in Chinese) China Journal of Traditional Chinese Medicine and Pharmacy 27(12): 3189-3192.

Yang XiangYun, Cai Jie, Zhang Ting, Du Yan, Wang, H., Wang, Y.H., Yang, Z.L. and Li, D.Z. 2012. (The potential contribution of plant DNA barcoding and iFlora to plant germplasm conservation.) (in Chinese) Plant Diversity and Resources 34(6): 539-545. [Noting the use of DNA bar-coding in the identification of *Pedicularis* spp. in China.]

Yang ZhenYa Lu DanYi, Yao Shun, Zhang RongRong, Jian ZhengJin and Ma ZhiGuo. 2013. Chemical fingerprint and quantitative analysis of *Cistanche deserticola* by HPLC-DAD-ESI-MS. Journal of Food and Drug Analysis 21(1): 50-57.

Yonli, D., Traore, H., van Mourik, T.A., Hess, D.E., Sereme, P. and Sankara, P. 2011. Integrated control

of *Striga hermonthica* (Del.) Benth. in Burkina Faso through host plant resistance, biocontrol and fertilizers. International Journal of Biological and Chemical Sciences 5(5): 1860-1870. [Indicating modest economic benefits from a combination of improved sorghum variety, a *Fusarium*-based biocontrol, and urea fertilization for control of *S. hermonthica* in sorghum in Burkina Faso.

Yoo JiYoung, An HyoSun, Kim InBo, Kim KyuDae, Kim YoungHoon, Song TaeJun and Kim JongBae. 2013. Isolation and partial characterization of heparin-binding protein from Korean mistletoe (*Viscum album coloratum*). Journal of Medicinal Plants Research 7(6): 234-242. [Suggesting that heparin-binding protein fractions from *V. album coloratum* may have anti-cancer activity as well as the lectins.]

Yoshida, S. and Shirasu, K. 2012. Plants that attack plants: molecular elucidation of plant parasitism. Current Opinion in Plant Biology 15(6) 708-713. [A general review of parasitic plants and progress in the use of molecular techniques.]

Yousefi, A.R., Jamshidi, K., Oveisi, M., Karimojeni, H. and Pouryosef, M. 2013. First report of *Orobanche purpurea* on *Achillea wilhelmsii* in Iran. Plant Disease 97(5): 694.

*Zhang Wei, Ma YongQing, Wang Zhong, Ye XiaoXin and Shui JunFeng 2013. Some soybean cultivars have ability to induce germination of sunflower broomrape. PLoS ONE 8: 3pp. e59715. (http://www.plosone.org/article/info%3Adoi%2F10.1371%2Fjournal.pone.0059715) [Confirming soyabeans could be used as a trap crop for *Orobanche cumana*.]

*Zhang, Y.T. and 12 others. 2013. Evolution of a horizontally acquired legume gene, albumin 1, in the parasitic plant *Phelipanche aegyptiaca* and related species. BMC Evolutionary Biology 13: 48pp. (http://www.biomedcentral.com/content/pdf/1471-2148-13-48.pdf) [Another report of lateral gene transfer in a parasite, this time with albumin 1 to *P. aegyptiaca.*]

Zhang Yi, Wu ChunHua, Guo LingLing, Chen Yue, Han LiFeng, Liu ErWei, Gao XiuMei and Wang Tao. 2013. Triglyceride accumulation inhibitory effects of phenylpropanoid glycosides from *Boschniakia rossica* Fedtsch et Flerov. Fitoterapia 85: 69-75.

Zhao KuiJun Liang LiJuan, Bi Dan, Dong TingXia and Tsim WahKeung. 2012. Determination of galactitol in Cistanche deserticola and Cistanche tubulosa by HPLC-ELSD. Chinese Journal of Information on Traditional Chinese Medicine 19(8): 52-54.

Zhao XiaoHui, Han Fa, Li YuLin, Zhou GuoYing and Yue HuiLan. 2013/ Semi-preparative separation and purification of three flavonoids from *Pedicularis longiflora* var. *tubiformis* (Klotzsch) P. C. Tsoong by HSCCC. Journal of Liquid Chromatography & Related Technologies 36(13): 1751-1761.

Zheng Lei, Cui XuSheng, Wu Yan, Zhai ZhiXi and Guo YuHai. 2013. (Relationship between the seed yield of *Cistanche deserticola* and the age of *Haloxylon ammodendron*.) (in Chinese) Journal of China Agricultural University 18(2): 100-104. [Confirming that the seed yield of *C. deserticola* increased as the age of the host tree *H. ammodendron* increased from 3 to 6 years old.]

Zheng Lei, Wu Yan, Cui XuSheng, Zhai ZhiXi and Guo YuHai. 2013. (Study on the capsule and seed development of *Cistanche deserticola*.) (in Chinese) Journal of China Agricultural University 18(3): 68-72. [A detailed recording of the progress of capsule and seed development, concluding that seeds gave optimum germination when harvested 35 days from onset of flowering.

Zofou, D., Tene, M., Ngemenya, M.N., Tane, P. and Titanji, V.P.K. 2011. *In vitro* antiplasmodial activity and cytotoxicity of extracts of selected medicinal plants used by traditional healers of Western Cameroon. Malaria Research and Treatment, 2011: Article ID 561342. (http://www.hindawi.com/journals/mrt/2011/561342/) [Results justify the use *Coula edulis* (Olacaceae) in malaria treatment by traditional healers of Western Cameroon.]

Zucca, P., Rosa, A., Tuberoso, C.I.G., Piras, A. Rinaldi, A.C., Sanjust, E., Dessì, M.A. and Rescigno, A. 2013. Evaluation of antioxidant potential of "Maltese mushroom" (*Cynomorium coccineum*) by means of multiple chemical and biological assays. Nutrients 5(1): 149-161. [Confirming significant anti-oxidant activity in extracts of *C. coccineaum*, supporting its reputation as a medicinal plant along Mediterranean coasts.]

Zwanenburg, B. and Pospíšil, T. m 2013. Structure and activity of strigolactones: new plant hormones with a rich future. Molecular Plant 6(1): 38-62. [A wide-ranging and detailed review of the chemistry, synthesis and mode of action of the strigolactones; also the particular structure-activity involved in the 3 functions of strigolactones, in

germination stimulation, branching of AM fungi, and branching in higher plants, each of these involving different perception systems. Also emphasising the importance of stereochemistry.]

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