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MESSAGE FROM THE IPPS PRESIDENT

Dear IPPS members,

I hope you have had a good summer.

The 14th World Congress on Parasitic Plants took place in Asilomar Conference Center, California from the 25th – 30th June. About 80 participants from around the world attended the meeting, which was excellent both scientifically and socially and the location was beautiful! I would like to thank John Yoder and his team for their hospitality, their hard work and excellent organisation, before and during the meeting, which made it very enjoyable and a great success.

I would also like to thank the scientific committee and the session organisers for their input into the scientific programme and the organisation of the individual sessions. We had excellent keynote, oral and poster presentations as described by Chris Parker in his report (below). It was great to see the rapid progress in all areas of parasitic plant research since the last meeting and it will be fascinating to see how the large volume of information coming from the sequencing of different parasitic plant genomes will advance our understanding of their evolution, ecology, physiology and interactions with their hosts over the next few years. The book of abstracts from the meeting and photographs can be downloaded from the Congress website (http://www.wcpp14.org).

I would particularly like to congratulate all the students and young scientists who gave oral presentations and posters at the meeting; all were of very high quality. As we have done in previous meetings, awards were made for the best student oral and poster presentations. This year the award for the best oral presentation went to Pauline Duriez, INRA, Toulouse, France, for her presentation on the 'Molecular characterization of the major resistance gene OR9 controlling resistance to *O. cumana* in sunflower'. Equal second place went to Emily Beardon, University of Sheffield, for her presentation on the 'Identification of a *Striga* resistance QTL in a rice mapping population' and to Guillaume Brun, University of Nantes, France, for his presentation entitled 'Parasitic and non-parasitic plants share a germination stimulant signaling pathway leading to seed germination through abscisic acid catabolism'.

The judges found it impossible to distinguish between the top three posters so prizes were awarded equally to Magdalena Denysenko-Bennett, Jagiellonian University, Poland, for her poster on 'Horizontal transfer of a plastid sequence from *Cuscuta* to *Orobanche*', Hiroaki Samejima for his poster on the 'Practicality of the suicidal germination approach for controlling *Striga hermonthica* in Sudan, and to Daniel Steele for her poster on 'Exploring the evolutionary origin of haustoria in root parasitic plants'. I would also like to thank the judges, Denneal Jamison-McClung, Duncan Cameron and Philippe Delavault for their hard work!

Finally I would like to highlight the message from Chris Parker about the future of Haustorium. As you know Chris puts a huge amount of work into Haustorium and he hopes to continue to provide the main editorial input into Haustorium for the moment but he won't always be able to do this, so we need to think about options for the future. Chris is asking for offers of assistance, with or without the Literature section. If you are interested in helping Chris put together and edit Haustorium, or have views and ideas about the way forward for Haustorium, please could you contact any one of the editors, or myself so that we can plan for the future.

With very best wishes,
Julie

Julie Scholes, IPPS President (j.scholes@sheffield.ac.uk)

MEETING REPORTS

The 2nd International Congress on Strigolactones (ICS), Turin, Italy.March 27-31, 2017.
The Congress was organized by the University of Turin, which chairs and coordinates **COST Action FA1206 "Stream"** (http://www.cost.eu/COST_Actions/fa/FA1206)**,** a scientific network entirely focused on the study of the biological roles and the applications of strigolactones. About 180 scientists participated in this event. Among them were senior academics and established leaders in the field, young and emerging investigators as well as leading scientists from industry. The symposium programme featured special and plenary lectures, invited lectures, short communications, poster sessions, and exhibitions.

In addition to the presentation and discussion of many new research activities, this was a great occasion to renew the interdisciplinary, collaborative atmosphere in the strigolactone scientific community as well as to set up an inspirational and mind-opening meeting for young scientists. Many younger researchers attended the congress, making new fruitful contacts and strengthening their scientific international network.

Among the different subjects related to strigolactones, parasitic plants were widely discussed and the new research in this field was presented. Subjects relating to parasitic plants included the distribution of canonical and non-canonical strigolactones in the plant kingdom; the development of a germination stimulant for the parasitic plant *Striga*; strigolactone biosynthesis and its regulation; a protein approach towards investigating parasitic plant germination; a study on the germination activity of dehydrocostuslactone derivatives on parasitic weeds; root, plant and fungal metabolites for alternative and biological control of parasitic plants; the *Orobanche cumana* x *O. cernua* genetic system providing insight into the regulation of host specificity in a parasitic plant; OaMAX2 of *Phelipanche aegyptiaca* and *Arabidopsis* AtMAX2 share conserved functions in both development and drought responses; evaluation of germination stimulant activity of the guaianolide lappalone and its derivatives on parasitic weeds. In addition, several posters were presented of relevance to parasitic plants. Relevant papers are listed below.

Most of the presentations are due to be published in a special issue of Journal of Experimental Botany. A book of abstracts is available, to COST Stream members only, at: http://www.strigolactones2017.it/ To see the photo gallery go to http://www.strigolactones2017.it/81/photo-gallery and enter the password: gallery2017

Oral presentations::

Yuichiro Tsuchiya *et al.;* Development of a germination stimulant for a parasitic plant *Striga*.
Daoxin Xie *et al.*; DWARF14 is a non-canonical hormone receptor for strigolactone.
Shinjiro Yamaguchi ; Strigolactone biosynthesis and its regulation.
Koichi Yoneyama *et al.*; Distribition of canonical and non-canonical strigolactones in the plant kingdom.
Lukas Braem *et al.*; A protein approach towards investigating parasitic plant germination.
Cala A. *et al.*; A **s**tudy on the **g**ermination **a**ctivity of **d**ehydrocostuslactone **d**erivatives on **p**arasitic **weeds.**
Antonio Evidente *et al.*; Root plant and fungal metabolites to alternatively and biologically control of parasitic plants.
Hailey Larose *et al.*; The *Orobanche cumana* x *Orobanche cernua* genetic system provides insight into the regulation of host specificity in a parasitic plant.
Weiqiang Li and Lam-Son Phan Tran ; OaMAX2 of *Orobanche aegyptiaca* and *Arabidopsis* AtMAX2 share conserved functions in both development and drought responses.
Rial, C. *et al.*; Evaluation of germination stimulant activity of the guaianolide Lappalone and its derivatives on parasitic weeds.

Posters:

Khan, Z.R. *et al.*; Suicidal germination of *Striga* in the presence of the host plant
Adéla Hýlová *et al.*; Strigolactone-auxin conjugated mimics as germination stimulants for root parasitic weeds.
Marko Kebert *et al.*; Bioactivity profile of metabolites isolated from *Vicia faba* roots parasited by ***Orobanche*** *crenata***.**
Alexandre Lumbroso *et al.* Simplified strigolactams as potent analogues of strigolactones for the seed germination induction of *Orobanche cumana* Wallr.
Emilian Georgescu, Radoslava Matusova *et al.*New affordable strigolactone analogues as active ingredients for plant protection products.
Stefano Pavan *et al.*; Low strigolactone production in a pea line resistant to *Orobanche crenata* is associated with lower expression of two biosynthetic genes.

14th IPPS World Congress on Parasitic Plants. Asilomar Conference Grounds in Pacific Grove California, USA, June 25-30, 2017.

The 14th World Congress on Parasitic Plants was held at the extensive Asilomar Conference Center, a stone's throw from the Pacific Ocean. About 80 delegates gathered on Sunday 25th June and Proceedings ran from Monday 26th to Thursday 29th.

Each section of the programme was introduced by a key-note speaker reviewing their own and others' work on a particular topic. This pattern proved extremely informative. After an introduction from our able host, John Yoder, the first session on 'Genes and genomes' began with Peter McCourt (University of Toronto) setting a challenging pace with an extremely detailed appraisal of the mechanisms involved in the response of plants to strigolactones, using *Arabidopsis* to highlight the role of a/b hydrolases. James Bradley (Sheffield University) compared *Striga asiatia* ecotypes from USA, non-virulent on rice, and from Africa, with varying virulence on rice. Whole genomes were re-sequenced and SNPs identified. Kohki Shimizu (Osaka Prefecture University) reported on patterns of gene expression in the development of vascular differentiation in the haustorium of *Cuscuta japonica* parasitizing soyabean.

A second keynote paper, presented by Stćphanie Muñoz (University of Toulouse) reported an increasing problem from *O. cumana* in sunflower in France since 2007, and described a major collaborative project between France and Spain involving the detailed sequencing of the genome of *O. cumana* (race F), likely to be of value in many aspects of its biology and control. Huei-Jiun Su

(University of Taipei) described the complete, surprisingly reduced, plastome sequences of two species of *Balanophora*. One relevant poster presented described the transcriptome profiling of different developmental stages of *Cynomorium songaricum*

For the session on ‘Parasitic Plant Biology’ Philippe Delavault (Nantes University) presented a keynote paper on the biology of *Phelipanche* and *Orobanche*. Among many other detailed findings, germination of *P. ramosa* by rape-seed is shown to be stimulated, not by strigolactones, but by isothiocyanates from the host roots. These do not stimulate *P. aegyptiaca* or *Orobanche* spp.

Pradeepa Bandaranayake (University of Peradeniya) reported on her studies showing that genes controlling the development of the sticky haustorial hairs of *Triphysaria versicolor* differ from those involved in regular root hair development. Huiting Zhang (Penn State University) reviewed a programme aimed at understanding the genetic changes associated with parasitism, by sequencing the transcriptomes in three genera of Orobanchaceae, with emphasis on those involved in production of pectate lyases. Guillaume Brun (Nantes University) showed that stimulation of seeds of a range of parasitic species by various stimulants always involved up-regulation of an ABA-catabolism gene. Hijiri Fujioka (Kobe University) confirmed that stomata in *Striga hermonthica* are unaffected by ABA. Seed germination was also unaffected by ABA, even though ABA levels increased after GR24 application. Songkui Cui (Nara Institute of Science and Technology) described mutants of *Pheirospermum japonicum* with abnormal elongated haustoria associated with defects in genes transmitting ethylene signalling. One poster described how, as *Santalum album* shows high variability when grown from seed, a micro-propagation protocol has been developed based on the clonal propagation of axillary buds from identified superior genotypes.

The first keynote paper for the session ‘Host resistance’, presented by Satoko Yoshida (Nara Institute of Science and Technology) reviewed a wide range of work on haustorial initiation and attachment, including the derivation of DMBQ from lignins. Emily Beardon (Sheffield University) described the identification of an *S. hermonthica* resistance QTL in a rice mapping population. (Congratulations to Emily on winning best student presentation award for this.) Jim Westwood (Virginia Tech.) discussed the role of jasmonic and salicylic acids in the defence of *Arabidospsis* against pathogens, and the possible ways in which *P. aegyptiaca* may interfere with its defence mechanisms by secretion of certain proteins.

In a further keynote paper, Steven Runo (Kenyatta University) studied a wide range of wild sorghums for their mechanisms of resistance to *S. hermonthica* and the genes involved in their resistance. Pauline Duriez (INRA,Toulouse) narrowed down the location of the *OR7* locus in sunflower showing resistance to *O. cumana* race F, to a small region of chromosome 7 and identified genes with possible relevance. Xavier Grand (BIOGEMMA, France) described a genome-wide association study and bulk segregant analysis to highlight new genomic regions controlling sunflower resistance to *O. cumana*. Posters were also presented relating to variations in strigolactone exudation in pearl millets; resistance in sunflower to *O. cumana* induced by a plant growth regulator; and describing genes in *Arabidopsis* controlling immunity to pathogens, of relevance to response to *P. aegyptiaca*.

For the session ‘Host-Parasite Interactions’, Markus Albert (University of Tübingen) presented a keynote paper on defence-triggering molecules in *C. reflexa* and their recognition in host plants, with particular reference to tomato. Hailey Larose (Virginia Tech.) studied crosses between *O. cernua* and *O. cumana* as a means to identify genes responsible for their differing responses to strigolactones and dehydrocostus lactone. Saima Rashid (Penn. State University) described work with *C. pentagona* suggesting that dodder-derived mRNAs target host mRNAs during parasitism, thus enhancing parasite fitness. Thomas Spallek (RIKEN CSRS) studied the role of cytokinins in the development of vascular connections and host root morphology when *Pheirospermum japonicum* parasitises *Arabidopsis*. Alberto Martin-Sanz (Pineer Hi-Bred, Spain) reported on studies of a population of *O. cumana* race G in southern Spain with greater genetic diversity than other samples of race G. Anna Krupp (University of Hohenheim) studied the penetration of *O. cumana* into roots of sunflower and detected a previously unknown type of resistance reaction. Koh-Ayoki (Osaka University) reported on studies of the apoplastic and symplastic connections between *C. campestris* and *Arabidopsis* and between *P. aegyptiaca* and tomato. Topics of relevant posters included improvement in the methodology of *Cuscuta*-host interactions; the differing success rates of *Triphysaria* parasitizing a range of hosts; the evolutionary origin of haustoria within Orobanchaceae; the interesting phenomenon of self-recognition in root parasitic plants; and the regeneration of haustorial tissue from callus derived from seed explants in *Cynomorium songaricum.* Two relevant posters described the apparent horizontal transfer of a plastid sequence *trnL-trnF* from a *Cuscuta* sp. to *Orobanche rigens*, either directly, or more probably by transfer via a common host species; and studies of *P. aegyptiaca* growing on mutant *Arabidopsis* with varying abnormalities in amino-acid metabolism which did not result in significant differences in parasite growth.

For the session ‘Ecology, Phylogeny and Evolution’ Claude dePamphilis (Penn. State University) presented the key-note paper, discussing horizontal gene transfer in the context of the various ways in which genes have been modified or introduced, as parasitic plants developed haustoria, Peter Toth (Slovak University of Agriculture, Nitra) identified a wide range of volatiles emitted by *Orobanche* and *Phelipanche* spp. including one apparently specific to broomrapes, and also showed how they are surely involved in attracting the fly *Phytomyza orobanchia*. Alex Twyford (University of Edinburgh) had studied the 21 species of *Euphrasia* in UK, grown on many hosts. Genome sequencing showed deep divergence according to ploidy level and high genome homogenisation due to hybridity, with species maintained by few genomic regions. Lytton Musselman (Old Dominion University) described the role of generalist fruit-eating birds in the distribution of *Phoradendron leucocarpum*. Joshua Der (California State University, Fullerton) described a clarification of the phylogeny of Santalales with the help of sequencing of chloroplast, mitochondrial and nuclear ribosomal RNA contigs. Susann Wicke (University of Mủnster) studied the plastid genomes of a range of Orobanchaceae to refine understanding of the transition from photosynthetic to non-photosynthetic physiology. Yasunori Ichihashi (RIKEN CSRS) reported on studies of the LBG (lateral organ boundaries domain) gene and its possible role in haustorium formation. Ai-Rong Li (Kunming Institute of Botany) concluded that the extremely rapid development of *Pedicularis kansuensis* as a weed of pastures in SW China since 2000 could be attributed to a combination of its high genetic diversity, and physiological variability, combined with climate warming and the introduction of susceptible forage grasses without adequate quarantine to control its spread. One relevant poster described distinct changes in sorghum root structure in response to the soil microbiome and suggested this could influence the crop’s susceptibility to *Striga.*

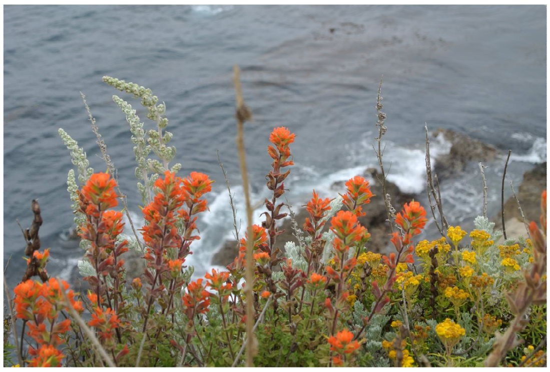
The session on ‘Molecules and Biochemistry’ was introduced by a key-note paper by David Nelson (University of California Riverside) on the evolution of host-triggered germination in parasitic Orobanchaceae with particular reference to the significance of the karrikin bio-synthetic process and the possible ways in which this has been co-opted and adapted genetically by parasitic Orobanchaceae. Shelley Lumba (University of Toronto) compared protein interaction networks in *Arabidopsis* and in *Striga* to determine the extent of evolutionary conservation of germination pathways in parasitic and non-parasitic plants. Harro Bouwmeester (University of Amsterdam) discussed the wide range of strigolactone structures, the specificity in the response of different host species, and the intention to engineer plants with altered strigolactone profiles.

Salim Al-Babili (King Abdullah University) presented a further key-note paper in which he referred to the selection of a line of pearl millet with low-stimulant resistance. He also described the development of a series of methyl phenolactonates with potential to cause suicidal germination of *Striga* in soil. Further he also described a new carotenoid-derived metabolite, zaxinone, which down-regulates the biosynthesis of strigolactone and which could have potential in the control of *Striga.* Alberto Martin-Sanz (Pioneer Hi-Bred) described an inbred sunflower, P1 with resistance to *O. cumana* races E, F and G, based on accumulation of phenolic compounds, controlled by a single dominant gene on chromosome 4, designated $Or_{SII.}$ Weijun Zhou (Zhejiang University) had found over 3500 proteins from contrasting susceptible and *Orobanche*-resistant sunflower varieties. The resistant type showed a range of relevant difference including up-regulation of oxidative phosphorylation, alteration of defence-related proteins and increased biosynthesis of lignins. Relevant posters described the suicidal germination of *S. hermonthica* by aqueous extracts of *Eucalyptus camaldulensis, Euphorbia hirta* and *Faidherbia albida*; also the constituents of *O. aegyptiaca* of interest as medicinal treatments, especially a range of nine new phenylpropanoid glycosides with strong anti-oxidant activities.

Finally, the all-too small session on ‘Control and Management’ was introduced by a key-note paper from Hannan Eisenburg (Newe Ya’ar Research Center) describing the successful development of sophisticated procedures for the control of *O. cumana* in sunflower and *O. aegyptiaca* in carrot based on thermal time models to predict the stage of growth of the parasite before emergence and repeated herbicide applications in conjunction with suitable irrigation techniques. These have led to highly significant yield increases in both target crops. Jos Raaijmaakers (Netherlands Institute of Ecology) described the PROMISE programme, being devised to study all aspects of the interaction of the roots of sorghum and of *Striga,* with the soil micrbiome with the objective of manipulation to improve crop resistance to the parasite. Yaakov Goldwasser (The Hebrew University of Jerusalem) described the successful control of *C. campestris* in chickpea by granular pendimethalin. Ahmet Uludag (Dủzce University) described a severe, new infestation of apricot by *O. aegyptiaca* which was controlled by cultivation and mulching.

A further key-note paper was presented by Jonne Rodenburg (Africa Rice Center) reviewing the increasing importance of rice in Africa and the range of *Striga* species and *Rhamphicarpa fistulosa* causing serious losses in both West and Eastern Africa. Approaches to control have included resistant varieties, especially for *Striga* spp., and a range of agronomic techniques, varying according to cropping system and parasite species. David Sands (Montana State University) described the novel and highly promising approach to control of *S. hermonthica* species, based on the selection of strains of *Striga*-specific *Fusarium oxysporum* (non-toxic, non-GMO) with elevated secretion of leucine, tyrosine and methionine. These are cultured and applied to toothpicks which farmers use to produce an inoculum in boiled rice which is applied to the planting holes. Results with 500 farmers in Kenya have been highly successful. Amit Paporisch (The Hebrew University of Jerulsalem) described trials to help understand the variable performance of sulfosulfuron in the control of *P. aegyptiaca* in tomato, concluding that they were due both to leaching and degradation of the herbicide in the soil. Relevant posters included one showing that a newly developed stimulant MP1 was somewhat more effective than GR24 for stimulating suicidal germination of *S. hermonthica* in soil; experiments with rimsulfuron for control of *P. ramosa* in tomato in Turkey had given inconclusive results; grafting tomato plants for control of *P. ramosa* had given some encouraging results and would be pursued further; in Sudan, a newly developed stimulant T-010 applied at 0.1-1 kg a.i. per ha had shown very promising results in stimulating suicidal germination of *S. hermonthica*.

Field trips were arranged for one afternoon, with a choice of Monterey, nearby large-scale agriculture, or to the Point Lobos Sate Natural Reserve, where the one parasite to be seen was a *Castilleja* sp.



We thank John Yoder and his many colleagues for a thoroughly memorable, enlightening and enjoyable Congress. Thankyou John.

Oral presentations (followed by the name of the presenter if it was not the senior author):

McCourt, P. - Applying chemical biology to probe parasitic plants

Bradley, J. - A comparative genomics approach to investigate the genetic differences between *Striga asiatica* ecotypes

Shimizu, K. *et al.* - Expression of genes involved in vascular differentiation in haustorium of *Cuscuta japonica*

Gouzy, J. *et al.* - The complete genome sequence *of Orobanche cumana* (sunflower broomrape) (Stéphane Muños)

Huei-Jiun Su *et al.* - An extremely reduced and AT-rich plastid genome in the holoparasitic plant *Balanophora*

Delavault. P. *et al.* - The biology of *Phelipance* and *Orobanche*

Bandaranayake, P.C.G. *et al.* - Root hair and haustorial hair development pathways in *Triphysaria versicolor* share some genes but not all

Zhang, H. *et al.* - Functional analyses of parasitism genes in haustoria formation and development

Brun, G. *et al.* - Parasitic and non-parasitic plants share a germination stimulant signaling pathway leading to seed germination through abscisic acid catabolism

Fujioka, H. *et al,* - Stomatal closure and germination in *Striga hermonthica* are not sensitive to abscisic acid

Cui, S. *et al.* - The role of ethylene signaling in the haustorium development in the facultative root parasitic plant *Phtheirospermum japonicum*

Yoshida S. *et al.* - Molecular basis of haustorium formation in parasitic Orobanchaceae

Beardon, E, *et al.* - Identification of a *Striga hermonthica* resistance QTL in a rice mapping population

Clarke, C. *et al.* -Characterization of the *Phelipanche*-host defense interaction (James Westwood)

Runo, S *et al.* - Sorghum resistance and Striga virulence as two sides of the same coin

Duriez, P. *et al.* - Molecular characterization of the major resistance gene OR9 controlling resistance to *O. cumana* in sunflower

Grand, X. *et al.* - Genetic and biological approach to decipher *O. cumana* resistance in sunflower wild relatives

Albert, A. *et al.* - Defense-triggering molecules of *Cuscuta reflexa* and their recognition in host plants

Larose, H. *et al.* - The *Orobanche cumana* x *Orobanche cernua* genetic system provides insight into the regulation of host specificity in a parasitic plant

Shahid S. *et al.* - Examining mobile small RNAs exchanged between the parasitic plant dodder and its host

Spallek, T. *et al.* - Using hypertrophy to study interspecies signaling between parasitic plants and their hosts

Martín-Sanz, A. *et al.* - Increase virulence in sunflower broomrape (*Orobanche cumana* Wallr.) populations from southern Spain is associated with greater genetic diversity

Krupp, A. *et al.* - Histological studies on different interactions of *Orobanche cumana* with its host sunflower
Aoki, K. *et al.* - Apoplastic and symplastic interactions between parasitic plants and host plants
DePamphilis, C. *et al.* – Sorghum resistance and *Striga* virulence as two sides of the same coin.
Tóth, P. *et al.* - Insect plant interaction in broomrapes
Twyford, A. \iet al. - On the nature of species differences in hemiparasitic *Euphrasia*
Flanders, N. *et al.* - The role of generalist avian frugivores in determining the distribution of the mistletoe *Phoradendron leucarpum* (Lytton Musselman)
Der, J.P *et al.* - A phylogenomic analysis of relationships with the sandalwood order (Santalales)
Wicke, S. *et al.* - Integrating nuclear gene data sheds new light on organellar genome evolution in Orobanchaceae
Ichihashi, Y. *et al.* - A potential key factor for the evolution of parasitic plants
Ai-Rong Li *et al.* - What makes *Pedicularis kansuensis* a successful invader?
Nelson, D. and Conn, C.E. - The evolution of host-triggered germination in parasitic Orobanchaceae
Toh, S. *et al.* – How *Striga* wakes up: Elucidating the germination code of *Striga* (Shelley Lumba)
Bouwmeester, H. - The role of strigolactone level and composition on the infection of plants by parasitic plants
Al Babili, S. *et al.* - Combating Striga in pearl millet
Martín-Sanz, A. *et al.* - Post-haustorial resistance based on an increase of phenolic compounds provides a powerful tool to control the parasitic weed broomrape in sunflower
Yang, C. *et al.* - Comparative proteomics of two contrasting sunflower cultivars in responses to parasitic weed *Orobanche cumana* (Weijun Zhou)
Eizenberg, H. - Broomrape (*Phelipanche* and *Orobanche* spp.) management in arid and semi-arid regions: a long story with a happy ending
Raaijmakers, J.M. *et al.* - PROMISE: promoting root microbes for integrated *Striga* eradication
Goldwasser, Y *et al.* - Control of *Cuscuta campestris* in chickpea with granular pendimethalin
Aksoy, E. *et al.* - Broomrape and management in apricot plantations (Ahmet Uludag)
Rodenburg, J. and Bastiaansm L. - Parasitic weed management in rice
Sands, D.C. *et al.* -The application of amino acid inhibition to control parasitic plants
Paporisch, A. *et al.* - Evidence for sulfosulfuron leaching and degradation and its effect on *Phelipanche aegyptiaca* control in tomato

Posters:

Guilin Chen - Comparative transcriptome analysis of genes involved in flavonoid biosynthesis of Cynomorium songaricum Rupr.
Kountche, B.A. - transcriptome and morphological profiling reveal variation in SLS biosynthesisin teo pearl millet lines.
Lerner, F. - Induced resistance of sunflowers against *Orobanche cumana* by plant growth regulators.
Clarke, C. – *Arabidopsis* defense mutants reveal pathways important in host susceptibility to parasitism by *Phelipanche aegyptiaca*
Bernal-Galeano, V. - Optimizing methodology to evaluate *Cuscuta*-host interactions.
Honaas, L. - Risk versus reward: host-dependent parasite mortality rates in the facultative generalist *Tryphysaria versicolor*.
Steele, D.B. and Yoder, J. – Exploring the evolutionary origin of haustoria in root parasitic plants
Wang, Y. and Yoder, J. - Characterization of vegetative self-recognition in pararisic plants.
Yue Xn. - Callus induction and haustorium organogenesis from seed explants of the parasitic plant *Cynomorium songaricum.*
Kawa, D. - Impact of soil microbes on sorghum root architecture and resistance to *Striga hermonthica.*
Djibril, Y. - Suicidal germination of *Striga hermonthica* induced by local plant products in Burkina Faso.
Wang Xiaoqin – Structure, bioactivities and determination of the chemical constituents from *Orobanche aegyptiaca*.
Jamil M. – Towards development of practical applicationmethods of suicidal germination to combat *Striga hermonthica*.
Uludag, A. and Muslu, E.E. – Rimsulfuron chemigation for broomrape control in tomato.
Uremis, I and Yetişir, H – Preliminary tests with grafting for broomrape control.
Samajima, H. – Practicality of the suicidal germination approach for controlling *Striga hermonthica* in Sudan.
Denysenko-Bennett, M.- Horizontal transfer of a plastid sequence from *Cuscuta* to *Orobanche*.
Clermont, C. – A parasite's palate – impact of forms and availability of amino acids on *Phelipanche aegyptiaca* development and metabolism.
Kuluthanga, K.M.A.N. and Bandaranayake – Genetic diversity assessm,ent andmicro-propagation of root parasitic sandalwood (*Santalum album*).

Chis Parker.

AGALINIS FASCICULATA – A NEW PROBLEM IN PINE PLANTATIONS IN S.E. USA

Loblolly pine (*Pinus taeda* L.) is the most widely planted pine species in the southern United States due to its ability to grow well on diverse sites. Parasitic plants can reduce the growth of loblolly pine by attaching to the roots. Over the years, several publications have documented the devastating impact that Seymeria (*Seymeria cassioides* Orobanchaceae) can have on loblolly pine. The related fascicled gerardia or purple false foxglove (*Agalinis fasciculata*) has recently been found at numerous locations in young loblolly pine stands in southern Georgia.

Landowners in the Southeastern United States are planting loblolly pine more than any other pine species because it can be grown on many different soil types and drainages. Also, it responds well to silvicultural inputs such as fertilization. It was estimated that in 2013, over 756 million seedlings of loblolly pine were grown in forest tree nurseries (South and Harper 2016), more than any other pine species.

After planting, diseases and insects can reduce growth. Fusiform rust (*Cronartium fusiforme*), pitch canker (*Fusarium circinatum*), and Nantucket pine tip moth (*Ryacionia frustrana)* can damage loblolly pine growth. Recently, *A. fasciculata* has been observed in some three-year-old loblolly pine plantations causing loss of growth, and occasionally, mortality. In many cases, height is greatly reduced and needles are brown. Often the tree's lower limbs are dead, resulting in the tree's crown receding which further reduces the tree's growth. As genetically uniform stock is usually planted, growth is uniform except in plots infested by *A. fasciculata*. By the third or fourth year of growth, the observed damage to the pines is in striking contrast to uninfested plots.

Loblolly pine impacted by *A. fasciculata*. Photo Alan Wilson,

A. fasciculata is an annual, herbaceous plant that parasitizes several pine species (Musselman and Mann 1979) including loblolly pine, longleaf pine (*P. palustris* Mill.), sand pine (*P. clausa* Chapm. ex Engelm.), slash pine (*P. elliotii* Engelm.), and shortleaf pine (*P. echinata* Mill.). *A. fasciculata* is native to the southeastern United States (Miller and Miller 1999), has showy pink or purple flowers lasting one day, and grows 5 to 6 feet tall by the end of the growing season (Figure Two). It can be easily confused with *A. purpurea* (L.) Pennell, another common species, that often forms large stands in ditches and other moist areas.

Agalinis fasciculata at margin of loblolly pine plantation, Sabine Parish, Louisiana. 5 October 2014

The two species can be separated by the prominent clustered leaves in the axils of the stem leaves in *A. fasciculata* There is also a difference in the types of glands found on the two species though this is often tedious to determine. In the late fall and early winter, both species produce rounded capsules filled with very small seeds.

We are conducting tests on germination to determine the role of light in the germination of *A. fasciculata* seed. We also plan to conduct pot experiments to determine the relative pathogenicity to slash pine (*Pinus elliottii* Engelm.), a native pine species of commercial importance in the American Southeast. Preliminary observations suggest that slash pine may be less susceptible to parasitism than loblolly pine.

After a tract is harvested and before planting, it is common practice to prepare the site using herbicides to control vegetation that will compete with the seedling. It is thought that herbicide rates used to control hardwoods and shrubs are sufficient to control *A. fasciculata*. Since the parasitic plant is an annual, applying the herbicide before flowering, or no later than late August in the Southeastern United States is crucial for the treatment to be effective. Additional work is planned to better understand how to control *A. fasciculata* in loblolly pine plantations.

The parasite obviously thrives in disturbed areas and is often abundant along roadsides, old fields, and pine plantations. It is common throughout much of the southern United States but has never been implicated in damage thquesta volta. !ough this was predicted some years ago (Musselman and Mann, 1978).

Agalinis means remarkable flax, an appropriate name for a remarkable plant.

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Musselman, L.J. and Mann, Jr., W.F. 1979. *Agalinis fasciculata* a native parasitic weed on commercial tree species in the Southeastern United States. American Midland Naturalist 101: 459-464.

South, D.B. and Harper, R.A.. 2016. A decline in timberland continues for several southern yellow pines. Journal of Forestry 114 (2):116-124.

Alan B. Wilson, Research and Development, Rayonier , Yulee, Florida;

Lytton J. Musselman, Old Dominion University, Norfolk, Virginia

PRESS REPORTS

PROMISE Micro-organisms will help African farmers: soil microbes to the rescue

Sorghum is the fifth most important cereal in the world. In sub-Saharan Africa, many farmers rely on this grain for food and feed. But *Striga*, a parasitic weed, can have a devastating impact on crop yield. With an 8-million-dollar grant from the Bill & Melinda Gates Foundation, an international team will now explore the potential of soil microbes to offer crop protection. The Netherlands Institute of Ecology (NIOO-KNAW) is coordinating this 5-year project.

With the world population growing and environmental problems increasing, we're facing a huge challenge to secure our food production. How can we feed so many people in a sustainable way? Fortunately, nature has billions of potential helpers on offer. Microbes are often associated with disease and decay. But the vast majority supports us with essential services, ranging from purifying our water to breaking down toxins and protecting crops against diseases and pests.

In Sub-Saharan Africa, sorghum is a major resource for food and feed. But its production is severely constrained by the parasitic plant *Striga*. Known as 'witch weed', this widespread, purple-flowered beauty feasts on the roots of sorghum and there isn't much smallholder farmers can do. Current research shows that the average yield loss of sorghum in Sub-Saharan Africa due to *Striga* can exceed 50%, aggravating poverty and hunger. But this could be about to change.

NIOO microbial ecologist and project coordinator Jos Raaijmakers is leading an effort to search for new sustainable solutions to this old but growing problem. Over the next five years, an African-American-European research team will do exactly that. The project funded by the Bill & Melinda Gates Foundation has been aptly named PROMISE, which stands for 'Promoting Root Microbes for Integrated *Striga* Eradication'.

'Our goal is to reduce the substantial damage to sorghum caused by *Striga* with the help of micro-organisms,' explains Raaijmakers. 'The PROMISE project will carry out the first step by mapping the potential of micro-organisms present in African soils. Our strength lies in an ecosystem approach, studying the 'teamwork' between microbes, plants, soil characteristics and management practices used by farmers. There is no 'silver bullet' or holy grail: the solution asks for an integrated strategy.' The team consists of scientists from the Netherlands, Ethiopia and the United States. NIOO's research partners are the Ethiopian Institute of Agricultural Research (EIAR,Ethiopia), the company AgBiome and the University of California, Davis (United States), and the Westerdijk Fungal Biodiversity Institute and University of Amsterdam (Netherlands). Together, they will carry out research from lab to greenhouse and field.

Ethiopia was chosen as it is one of the countries where the impact of *Striga* on sorghum is most devastating. For the project to make a lasting contribution to solving the problems of these farmers, it will be vital to improve local research facilities, train local researchers and share knowledge.

So what might an actual solution look like? Raaijmakers: ‘We are thinking in more than one direction. For instance, we hope to protect sorghum plants with micro-organisms that suppress *Striga* infections as well as micro-organisms that can reduce the large number of *Striga* seeds present in the African soils.’ This will take time to develop. ‘We expect the first practical applications in ten years from now.’
For more about the PROMISE project please visit: http://www.promise.nioo.knaw.nl

With more than 300 staff members and students, NIOO is one of the largest research institutes of the Royal Netherlands Academy of Arts and Sciences (KNAW). The institute specialises in water and land ecology. As of 2011, the institute is located in an innovative and sustainable research building in Wageningen, the Netherlands. NIOO has an impressive research history that stretches back 60 years and spans the entire country, and beyond.

Netherlands Institute of Ecology (NIOO-KNAW), 17 March 2017.

Mistletoe complicates forest thinning efforts

Should we save mistletoe for the bluebirds? Or hack away at it to save the ponderosa? And should we sacrifice a 400-year-old tree to help its neighbors? Those perplexing questions dog the Forest Service in its sweeping plan to save the forest by cutting millions of trees on 1.2 million acres — including all of Rim Country and much of the White Mountains of Arizona.

The Forest Service held a public forum in Payson last week in its historic effort to design a healthy, fire-resistant ecosystem, with the help of a reinvented timber industry. The sweeping study follows in the footsteps of an earlier assessment of 600,000 acres, mostly in the Flagstaff area. Only a handful of people showed up to scratch their heads at the complexity of playing God on a forestwide scale. The controversial Four Forest Restoration Initiative continues to struggle for traction, but by 2018 the Forest Service hopes to finish this second Environmental Impact Statement so contractors can ramp up to clearing 50,000 acres of forest every year. But that will require what to do about things like mistletoe — a tree parasite. (*Arceuthobium vaginatum*) It can play a valuable role in the ecosystem, but it can also plague trees in the current, deeply unnatural environment dominated by tree thickets and crown fires.

The Forest Service is now pondering how hard to work on controlling mistletoe infestations. That decision, in turn, could impact a crucial, previous decision to leave almost all of the remaining big, old-growth ponderosa pines alone. Mistletoe feeds on the trees on which it grows. But it also offers up berries savored by many bird species, which in turn eat tree-munching insects like bark beetles. In a healthy forest, the trees shrug off the effects of the mistletoe, which releases mostly futile spores — which drift to the ground without landing on another tree to infect.

Pre-settlement forests were dominated by giant, centuries-old trees. Low-intensity ground fires kept the saplings and debris on the forest floor cleaned up and tree densities down to about 50 per acre. Mistletoe infested trees even grew mutant-looking lower branches, which meant those ground fires would often pick off the infested trees. But then loggers removed most of the big trees. Some estimates suggest only 1-3 percent of the ponderosa pines in the forest now are old-growth trees, although they once dominated the landscape. Then fire suppression and grazing eliminated these frequent, low-intensity ground fires. As a result, vast stretches of forest now have 1,000 trees per acre.

In this new, unnaturally dense forest, the trees struggle to get enough water and nutrients, leaving them vulnerable to mistletoe infestations. Moreover, the mistletoe spores on the big trees drift down to infest thickets of trees below. So now mistletoe represents a potential plague. On average in Rim Country and the White Mountains, 5-10 percent of the trees are infected, according to a Forest Service report on current conditions. However, in about 41 percent of the Rim Country project area the parasite infests 20 and 80 percent of the trees.

So here’s the question: Should the Forest Service tell the 4FRI contractor to take out many of the affected trees in infested areas? The question turns out to be politically charged. The first version of the plan didn’t focus much on mistletoe. But it turns out Rim Country and the White Mountains have higher infection rates than the Flagstaff area, said Scott Russell, 4FRI chief executive officer for the Forest Service. Moreover, so long as mistletoe infests the young trees targeted by the project, the question answers itself. The thinning project will remove the great majority of those small trees — mostly under 16-18 inches in diameter. These young trees grow in thickets on millions of acres.
But things get dicey when the mistletoe infests those surviving, big, old-growth trees. For starters, the mistletoe spores can rain down on a larger area from the upper branches of a 400-year-old ponderosa pine with a 30-inch diameter trunk. But does that matter if loggers remove the tree thickets beneath? Remember, even in the unlikely event the mistletoe actually kills the giant, yellowbelly ponderosa, the dead snag left behind will benefit wildlife for decades. But what if the mistletoe grows in one of the rare clusters of big trees? In that case, the infected trees in

that cluster could eventually infest all the others. Wouldn't it make sense to cut down some of the big, infected trees in that situation?
That's the question the Forest Service faces as it tinkers with the formula for a healthy forest. The question sounds innocent enough — but it's politically explosive. The 4FRI concept has united environmentalists, loggers and local officials behind the idea of thinning small trees and saving old trees. So the whole 4FRI effort is built on the foundation of the 'large tree retention strategy.'
The Forest Service and the anxiously watching environmental groups can easily monitor whether the 4FRI contractor is cutting ponderosas greater than 18 inches in diameter just by looking at the log pile. But once the Forest Service lets the 4FRI contractor cut some of those big trees — enforcing the 'large tree retention strategy' becomes far more difficult. And that's why a humble parasite like mistletoe can complicate the only major project likely to prevent a plague of crown fires on millions of acres in the next 50 years.

Peter Aleshire, EurekAlert AAAS, 21 April, 2017

Mistletoe research may keep you healthy

A new study examines the spread of mistletoe - a parasitic plant - and finds that the plant's success is determined not only by its compatibility with a host tree but also whether or not the plants' fruiting seasons overlap. Knowing what factors are necessary for the parasite to spread may help scientists better understand the variability of other parasitic interactions, including infectious diseases. 'We wanted to address an ongoing debate about the multiple determinants in the spread of parasitic plants,' says Suann Yang, assistant professor of biology at SUNY Geneseo and co-author of the study published in Journal of Ecology. 'But the questions we address also apply to other parasitic relationships, including viruses and bacteria.'

Yang and her collaborators, researchers at The Pennsylvania State University and the Island Ecology and Evolution Research Group (IPNA-CSIC), Spain, conducted the four-year field research project in sections of the University of Puerto Rico's Finca Montaña, a mix of cattle pasture and forest patches.
'For mistletoe, we found that the availability of suitable host species during germination and establishment is most important,' says Marcos Caraballo Ortiz, a biology Ph.D. candidate at Penn State and lead author of the study. 'But, a very close second has to do with the timing of when hosts produce fruit in relation to when mistletoe is fruiting.' Mistletoe seeds are spread by birds who eat the berries' nutritious pulp. Like many fruits, the berries act as a laxative, which allows the seeds to pass through the bird quickly without damage. Birds distribute the seeds for germination - seed rain - when they perch.
'Mistletoe is not like a dandelion - its seeds are not spread randomly by the wind,' Yang says. 'There is a bit more precision needed - and risk - because it relies on birds to bring its seeds to the right host.' For the study, the researchers identified the tree species in several forest fragments and tallied the number of mistletoe plants (*Dendropemon caribaeus*) living on the trees. They found that more mistletoe was found on spiny fiddlewood than on any other tree species. They also found that fiddlewoods (*Citharexylum* spp.) were disproportionately favored by seed-bearing birds over the other main host species, the day-blooming jasmine and white indigo berry. Although these other trees are quite common, less than five percent of the mistletoes were on them.

To investigate the discrepancy between host species, the researchers 'planted' rows of mistletoe seeds on the branches of eleven plant species. Surprisingly, the mistletoe had a very low survival rate on spiny fiddlewood—less than 10 percent compared to other trees where survival rates were higher than 20 percent. Suitability, they found, doesn't explain why so many mistletoes are found on this seemingly 'favorite' host. 'It's extraordinarily hard for the seedlings to survive on this particular host,' Caraballo says. 'But, in the end, we think the majority of the population of mistletoe plants were in these trees because they were 'flooded' with seed rain from the birds.'

Mistletoe seeds 'planted' for the host suitability experiment. Photo: Marcos Caraballo Ortiz

Birds that disperse mistletoe seeds - gray kingbirds and northern mockingbirds, in particular - don't tend to bring them to the best hosts; that's not their goal. Instead, they visit trees that are fruiting and providing food. 'The presence of fruit on the landscape that the birds prefer can be as beneficial to mistletoe as the presence of a compatible host,' says Tomás Carlo, associate professor of biology at Penn State and senior author. 'The fruit of the spiny fiddlewood is one of the top three fruits eaten by gray kingbirds and northern mockingbirds at our study site. 'We found that the eating habits of the birds led them to visit the spiny fiddlewood frequently, and that increased the amount of mistletoe seed that was delivered. This host is filled with the parasitic plant, but it's not because the majority of the mistletoe seedlings survive on them,' Caraballo explains.

'A broader, community ecology approach like ours, that looked beyond plant species, can yield surprising insights. It's important to remember that the relationship of a parasite to one host is not independent of the other species that are interacting with them,' Carlo says. 'Similar to how mistletoe spreads through an environment, there are many emerging diseases, like Zika and Dengue viruses, that spread between hosts by a dispersal agent - mosquitoes, in these cases - whose behavior depends on certain environmental conditions or specific preferences. Paying attention to these factors can help us understand why a parasitic plant or disease appears to favor a particular host.'
This research was supported by the National Science Foundation and the Alfred P. Sloan Foundation. Aarón González Castro and Claude dePamphilis also collaborated on the study. For full text of the article in Journal of Ecology go to:
http://onlinelibrary.wiley.com/doi/10.1111/1365-2745.12795/full
State University of New York at Geneseo, 213 May, 2017.

Virginia Tech researcher part of $14 million NSF program for improved genomic tools

Parasitic plant researcher Jim Westwood is one of eight researchers selected for funding by a new $14 million National Science Foundation grant program that helps scientists develop genomic tools to better understand the structure and function of organisms. Westwood, a professor of plant pathology, physiology, and weed science in the College of Agriculture and Life Sciences, studies how parasitic plants, such as *Cuscuta*, are able to invade their hosts and steal water and food without providing anything in return. Westwoods award will allow him to expand the use of *Cuscuta* as a research model system by developing plant transformation methods to genetically test gene function and providing techniques and tips on growing *Cuscuta* to other scientists. He will also develop instructional materials about the model system to be used at the high school and college levels.

'*Cuscuta* provides a fresh perspective for understanding plant science because its evolution to parasitism has resulted in exaggerated features that push the boundaries of plant capabilities,' writes Westwood, who is also affiliated with Virginia Techs Fralin Life Science Institute. 'For example, *Cuscuta* seedlings can identify host locations and grow toward them, demonstrating an ability to detect and respond to other plants in their environment.'

This summer, Roanoke Valley Governors School for Science and Technology student Madelyn Nichols will assist Westwood with the project, along with other Virginia Tech graduate and undergraduate students. The project is funded for three years. Known specifically as the Enabling Discovery through Genomic Tools program, the award is administered by NSFs Biological Science Directorate, and awardees include researchers from other universities such as Oregon State University, Pennsylvania State University, and Michigan State University. 'EDGE awards can bridge significant gaps in genomic research capabilities,' said James Olds, NSF assistant director for Biological Sciences. 'Every breakthrough made by one of these projects has the potential to lead to many more discoveries, as they will provide valuable new tools for entire fields of science.'

Westwood is an expert in the field of parasitic plants. In 2016, he and a team of researchers determined that parasitic plants use horizontal gene transfer, which is a non-sexual type of transfer that allows them to steal DNA from a host plant. In 2014, he discovered cross-species movement of messenger RNA, a potentially new form of plant communication between parasitic plants and their hosts.

Cuscuta, also known as dodder, is detrimental to crop growth across the world, and new control strategies are desperately needed.

Augusta Free Press, Friday, July 21, 2017.

THESIS

Interaction of arbuscular mycorrihizal fungi (AMF) and herbicides on *Striga hermonthica* (Del.) Benth management. Suha Hassan Ahmed Elhag. Doctor in Environment (Bio pesticides), Sudan Academy of Sciences, February 2017 (Supervisors Abdel-Gabar Eltayeb Babiker and Migdam Elsheikh Abdelgani)

Parasitic weeds of the genus *Striga*, pose a severe problem to agriculture. They inflict significant losses in yields of staple food crops in sub-Saharan Africa where low soil fertility and low-input farming are predominant. The parasites are thus a genuine threat to food security. Furthermore, they are difficult to control by conventional methods. The present work, comprising 4 experiments was undertaken during the period July 2013 to September 2015 at the *Striga* research facilities, the College of Agricultural Studies, Sudan University of Science and

Technology, Shambat, Khartoum North. The objectives of the study were to evaluate the effects of several treatments including nitrogen, as urea. the herbicides triclopyr and chlorsulfuron, *Glomus* sp. arbuscular mycorrhizal fungi (AMF), *Bacillus megaterium* (BMP), a phosphorus releasing bacterium, and phosphorus as (P2O5) in various combinations on *Striga hermonthica* parasitism and sorghum growth. The Sorghum cultivar Wad-Ahmed was used in all experiments. Treatments were arranged in Complete Randomized Design (CRD) with four replicates. Parameters measured were *Striga* emergence, *Striga* dry weight, AMF colonization and selected sorghum growth attributes. In the first experiment, nitrogen alone, applied as urea, suppressed the parasite emergence completely early in the season. Triclopyr at 0.3 and 0.4 kg a.e. ha-1 reduced *Striga* emergence by 20-50% and 58.8% early and late in the season, respectively. Triclopyr at 0.3 kg a.e. ha-1 applied subsequent to nitrogen at 43.8 kg ha-1 caused poor control of the parasite. Triclopyr, nitrogen and their combination increased sorghum height by 9-19, 15-25 and 2-19%. In the second experiment, *Glomus mosseae* reduced *Striga* emergence by over 80%, and *Striga* biomass, at harvest, by 78%. Unrestricted *Striga* growth reduced sorghum height by 43 and 60% at 30 and 45 DAS, respectively. Sorghum infested by *Striga* and inoculated by *G. mosseae)*, on the other hand, displayed 98 and 153% increase in height and 329% in dry weight over the respective *Striga* infested control. In the absence of *Striga, G. mosseae* increased sorghum total dry weight by 6% in comparison to the corresponding *Striga* free control. However, in presence of *Striga,* the fungus increased sorghum dry weight by over 3-fold in comparison to the *Striga*-infested *G. mosseae* free control. In the third experiment, unrestricted *Striga* parasitism reduced sorghum height by 48-54% and dry weight by 73%.
Glomus sp., isolated from an onion field and propagated on Sudan grass (*Sorghum bicolor var. sudanese*) alone, reduced *Striga* emergence by 87-100%, improved sorghum height by 89-115% and sorghum total dry weight by 38%. The bacterium (BMP), alone, 67-103% and 162%, respectively. The combinations *Glomus* sp. and the bacterium further reduced *Striga* emergence by 93-100% and increased sorghum height and total dry weight by 116-139% and 378.6%, respectively.

Supplementation of the combination, *Glomus* sp. and the bacterium, with phosphorus decreased *Striga* infestation by 88-100%, increased sorghum height by 98-125% and total dry weight by 362%. In the fourth experiment, in the untreated infested sorghum *Striga* displayed early emergence and was 16 and 20 plants/pot early in the season (30 and 60 DAS) and 50 and 62 plants/pot late in the season (90 and 120 DAS). Chlorsulfuron at 1.8-3 g a.e. ha-^{1}, alone, reduced *Striga* emergence by 62-79% and 64-72% early and late in the season, respectively and the corresponding reductions in biomass at harvest were 55-74%. *Glomus* sp., alone, reduced *Striga* emergence by 72-100% and the reduction in biomass at harvest was 74%. The combinations chlorsulfuron and *Glomus* sp. reduced *Striga* emergence by 68-100% and 76-83% early and late in the season, respectively and the reductions in *Striga* biomass at harvest were 67-808%. Unrestricted *Striga* parasitism reduced sorghum height, leaf area, number of leaves, leaf chlorophyll contents and sorghum biomass by 20-23, 10-23, 19-25% and 18-56%, respectively in comparison to the *Striga* free control. Chlorsulfuron, alone, increased sorghum height, leaf area, number of leaves, chlorophyll contents and sorghum biomass by 7-53, 15-55%, 21-64 and 29-128% in comparison to the *Striga* infested control, respectively. The corresponding increments for *Glomus* alone were 43-92, 28-51, 67-151 and 61-206%, for the same parameters respectively. The combinations chlorsulfuron and *Glomus*, invariably, resulted in the highest increments in sorghum height, leaf area, number of leaves, chlorophyll contents and biomass. Of all treatments, chlorsulfuron at its lowest rate (1.8 g a.e. ha-^{1}) in combination with *Glomus* sp. resulted in the highest increments in sorghum growth attributes. Further, the herbicide at its lowest rate (1.8 g a.e.ha-^{1}), middle rate (2.4 a.e.ha-^{1}) and highest rate (2.9 a.e.ha-^{1}) reduced mycorrhizal colonization by 6, 18 and 51%, respectively. The results suggest the potentials of several treatments including the herbicide triclopyr when applied subsequent to nitrogen, *Glomus* sp., each, alone and in combinations with BMP and chlorsulfuron at its lowest rate (1.8g a.e.ha-^{1}) as promising candidates for further investigations. Further, the results revealed the suppressive effects of chlorsulfuron at the rate (2.4 g a.e.ha-^{1}) recommended by the Agricultural Research Corporation for *S. hermonthica* control on *Glomus* sp. isolated from an onion field. Moreover, the results indicate the need for further studies on practicability and economic feasibility of these treatments and the possibility of using them as components of integrated packages *for S. hermonthica* management

THE TOOTHPICK PROJECT

Montana State University is conducting research into the application of the biocontrol of weeds. In an effort to expand the use of this effective technology in *Striga* management across Africa, we are selecting scientists from *Striga*-infested countries for an in-depth training in the technology, to take place at Montana State University over 2-3 weeks in early 2018. Thanks to generous support from the Ohrstrom Foundation, full and partial scholarships are available (including airfare).

The technology involves:

1. Fungal isolation;
2. Virulence testing;
3. Metabolic selection of improved virulence (without GMO);
4. Laboratory production of primary inoculum;
5. Field testing on smallholder farms;
6. Coordination with NGO's for distribution to smallholder farmers;
7. Media relationships; and
8. Permits and registration activities.

Working in western Kenya, we have had very positive results with finding, then using metabolic selection, then distributing a technology package of effective biocontrol fungi for control of *Striga hermonthica* on maize. The smallholder farmers in 500 on-farm trials were enthusiastic that they could grow their own biocontrol fungi and increased their maize yields by 42% (short season) and 56% (long season). Please review the report for these trials, funded by a Grand Challenges Exploration grant from the Bill & Melinda Gates Foundation: http://journal.frontiersin.org/article/10.3389/fpls.2016.01121/full.

The fungi (*Fusarium oxysporum*) were host-specific, non-toxigenic, and could be grown (with care) on the farm or as a community effort. We are currently scaling up manufacturing production and distribution in Kenya.

If you and your Institute have an interest in this *Striga* biocontrol technology, please submit an application for a 2-3 week training workshop at Montana State University held in January 2018 (dates to be determined). Fluency in English and/or French is anticipated.

Please fill out this form and send it to toothpickprojectinfo@gmail.com. Please don't hesitate to email if you have any questions about the technology or this training program at any point of the application process.

PARASITIC PLANT LITERATURE

Between us we have a over 20 box files of reprints on (mainly weedy) parasitic plants. Also many theses, proceedings of parasitic weed/plant meetings, and books on parasitic plants. Many of these are inherited from the old Weed Research Organisation and include some very early literature. Anyone interested in all or any such material please contact Chris Parker. There are also many weed floras (non-parasitic) which will eventually be begging a good home.

Chris Parker and Charlie Riches.

HAUSTORIUM – THE FUTURE

Chris Parker hopes to be able to continue providing the main editorial input to Haustorium for some time yet, but there will inevitably come a time that he cannot. There will then almost certainly be a need for extra editorial help, particularly if we are to continue with the systematic Literature coverage that he has provided thus far.

If you value the newsletter, with or without the Literature section, might you be able to offer assistance in the future?

Any offers or suggestions will be very much appreciated.

Editors.

CONGRATULATIONS

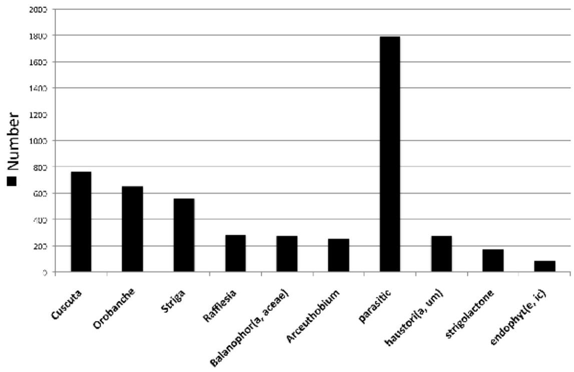
Dr. G.N. Dhanapal, Professor of Agronomy & Scheme Head, AICRP on Weed Management, University of Agricultural Sciences, Bangalore India was conferred Fellow of the National Environmental Science Academy – 206 with National Award; during the National Conference on Food Security and Environmental Challenges in Indian Agriculture held at Chandigarh, India on 19th November, 2016.

CONTROL OF DODDER

For a time lapse video showing field dodder (*Cuscuta campestris*) control by granular pendimethalin, see: https://www.youtube.com/watch?v=Enc5FQgb9K0

REFERENCES FROM HAUSTORIUM IN ENDNOTE FORMAT – A REMINDER

In Haustorium 58 (December 2010) I contributed a short piece describing a literature database I assembled on parasitic plant literature. The commercial software I use is EndNote X7 (Clarivate Analytics, latest version X8). The purpose of this piece is not to promote this software over other equivalent ones but to simply alert parasitic plant researchers that this database is available. The references within Haustorium 33 (July 1998) to present have been imported into EndNote. These along with many others I have assembled over the years make up the 11,000+ references therein. Because in many cases these references contain a summary or abstract, searches for keywords result in a substantial number of useful hits. Of course, using online resources such as Google Scholar provides a much larger base for literature searching; however, the literature compiled by Chris Parker and associates often includes "grey literature" and papers from non-English journals. Such citations are often more difficult to find using conventional search engines. The bargraph below shows the results of searching 10 keywords related to parasitic plants. If you would like this EndNote library, simply email me.



Daniel Nickrent (Southern Illinois University, Carbondale, IL USA) nickrent@plant.siu.edu

FORTHCOMING MEETINGS

Toothpick Project, Biological control workshop, Montana State University, Jan 2018. See above. For more information: toothpickprojectinfo@gmail.com.

18th European Weed Research Society Symposium, 17-21 June 2018, in Ljubljana, Slovenia. Abstracts are due by 17 November 2017. For more information go to: http://www.ewrs2018.org/

GENERAL WEB SITES

For individual web-site papers and reports see LITERATURE

* these websites may need copy and paste.

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

For past and current issues of Haustorium see also: http://www.odu.edu/~lmusselm/haustorium/index.shtmlF or 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 new Frontiers Journal 'Advances in Parasitic Weed Research' see: http://journal.frontiersin.org/researchtopic/3938/advances-in-parasitic-weed-research

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 COST/STREAM 2nd International Congress on Strigolactones, Turin, 2017: see http://www.strigolactones2017.it/ also http://docserver.ingentaconnect.com/deliver/connect/sil/23987073/v2017n3/s12.pdf?expires=1494607838&id=90661481&titleid=72010637&accname=Guest+User&checksum=24E12D672AA923B2BBA21848F17CFFEC

For a description of the PROMISE project (Promoting Root Microbes for Integrated *Striga* Eradication), see: http://promise.nioo.knaw.nl/en/about

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

For past and current issues of Haustorium see also: http://www.odu.edu/~lmusselm/haustorium/index.shtmlF or 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 new Frontiers Journal 'Advances in Parasitic Weed Research' see: http://journal.frontiersin.org/researchtopic/3938/advances-in-parasitic-weed-research

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 COST/STREAM 2nd International Congress on Strigolactones, Turin, 2017: see http://www.strigolactones2017.it/

*For PARASITE - Preparing African Rice Farmers Against Parasitic Weeds in a Changing Environment: see http://www.parasite-project.org/

For the Annotated Checklist of Host Plants of Orobanchaceae, see: http://www.farmalierganes.com/Flora/Angiospermae/Orobanchaceae/Host_Orobanchaceae_Checklist.htm

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 information on future Mistel in derTumortherapie Symposia see: http://www.mistelsymposium.de/deutsch/-mistelsymposien.aspx

For a compilation from the Mistletoes: Pathogens, Keystone Resource, and Medicinal Wonder Meeting in Ashland, Oregon, July, 2016, see: https://storify.com/D0CT0R_Dave/mistletoe-conference

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/sandalwood

For 6th Mistletoe Symposium, Germany, November 2015 see: http://www.sciencedirect.com/science/journal/09447113/22/supp/S1

*For PARASITE - Preparing African Rice Farmers Against Parasitic Weeds in a Changing Environment: see http://www.parasite-project.org/

For the Annotated Checklist of Host Plants of Orobanchaceae, see: http://www.farmalierganes.com/Flora/Angiospermae/Orobanchaceae/Host_Orobanchaceae_Checklist.htm

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For Access Agriculture (click on cereals for videos on *Striga*) see: http://www.accessagriculture.org/ *

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For a compilation from the Mistletoes: Pathogens, Keystone Resource, and Medicinal Wonder Meeting in Ashland, Oregon, July, 2016, see: https://storify.com/D0CT0R_Dave/mistletoe-conference

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

For 6th Mistletoe Symposium, Germany, November 2015 see: http://www.sciencedirect.com/science/journal/09447113/22/supp/S1

LITERATURE

***indicates web-site reference only**

Items in bold selected for special interest

Items in blue relate to therapeutic uses of parasitic Plants

Ahmed, S.H., Abdelgani, M.E. and Babiker, A.G.E. 2016. Effects of arbuscular mycorrhiza fungi and *Striga hermonthica* seed bank size on parasitism and growth of sorghum. In: Köhl, J.and Bardin, M. (eds) Proceedings of the IOBC/WPRS Working Group "Biological and Integrated Control of Plant Pathogens", Berlin, Germany, 12-15 September 2016. [No abstract available]

Aka, A.R., Neuba, D.F.R., Coulibaly, K., N'Guessan, K.F. and Kebe, I.B. 2016. (Inventory and distribution of parasitic and epiphytic plants on cocoa in Côte d'Ivoire.) (in French) Journal of Animal and Plant Sciences (JAPS) 31(2): 5010-5020. [*Tapinanthus bangwensis* and *Phragmanthera capitata* both cause serious damage to cocoa, the first throughout the country, the latter in the E and SE of the country.]

Akinmoladun, A.C., Olowe, J.A., Komolafe, K., Ogundele, J. and Olaleye, M.T. 2016. Antioxidant activity and protective effects of cocoa and kola nut mistletoe (*Globimetula cupulata*) against ischemia/reperfusion injury in Langendorff-perfused rat hearts. Journal of Food and Drug Analysis 24(2): 4417-426. [Concluding that *G. cupulata* protects against ischemia-reperfusion injury in rat hearts via augmenting endogenous antioxidants and significant restoration of altered hemodynamic parameters. In Nigeria.]

Akinnagbe, O.M. and Ikusika, S.F. 2016. Role of household members in kolanut production and marketing in Ekiti State, Nigeria. Journal of Agricultural Extension 20(2): 44-58. [Noting that removal of (unspecified) mistletoe is 100% men’s work.]

Ali, S.R., Sayedul Haque, Mudassar, Versiani, M.A., Shaheen Faizi and Farooq, A.D. 2017. Cytotoxicity and chromosomal aberrations induced by methanolic extract of *Cuscuta reflexa* and its pure compounds on meristematic cells of *Allium* species. Pakistan Journal of Pharmaceutical Sciences 30(2): 521-529. [At 100-10000 µg/ml, a methanolic extract of *C. reflexa* inhibited root growth and reduced the mitotic index in roots of onion.]

Ambi, A.A., Nuru, G.F., Mora, A.T. and Ahmad, A. 2017. Pharmacognostic studies and elemental analysis of the aerial parts of *Cassytha filiformis* Linn. (family: Lauraceae). Journal of Pharmacy and Bioresources 14(1): 88-95. [*C. filiformis* is used traditionally in Nigeria for control of jaundice. Data on morphology and mineral content are presented.]

Amegbor, I.K., Badu-Apraku, B. and Annor, B. 2017. Combining ability and heterotic patterns of extra-early maturing white maize inbreds with genes from *Zea diploperennis* under multiple environments. Euphytica 213(1): 24. [Sixty-three extra-early white maize inbred lines containing genes from *Z. diploperennis* were crossed to four elite testers to obtain 252 single-cross hybrids and evaluated under drought, *Striga hermonthica*-infested, low N and optimal environments in Nigeria. Hybrids TZdEEI 74×TZEEI 13 and TZdEEI 74×TZEEI 29 were selected for further evaluation.]

Ando, M., Kagimoto, T., Kato, S. and Komiyama, A. 2016. (The effects of canopy structure on the distribution of mistletoe (*Viscum album* L. subsp. *coloratum* Kom.) in a deciduous forest.) (in Japanese) Journal of the Japanese Forest Society 98(6): 286-294. [Results indicate that *V. album* ssp. *coloratum* was more abundant on taller and more isolated trees. The main hosts were *Quercus crispula* and *Q. serrata*.]

Anton, G.F., Joita-Pacureanu, M. and Cornea, C.P. 2016. The parasite broomrape (*Orobanche cumana*) in sunflower - identifying sources for genetic resistance. Scientific Bulletin. Series F. Biotechnologies 20: 11-17. [Crossing 6 cultivated sunflower genotypes with 2 wild *Helianthus* species yielded some populations fully resistant to the most virulent races of *O. cumana* in Romania.]

Ashworth, V.E.T.M. 2017. Revisiting phylogenetic relationships in Phoradendreae (Viscaceae): utility of the *trnL-F* region of chloroplast DNA and presence of a homoplasious inversion in the intergenic spacer. Botany 95(3): 247-258. [From 2016 IUFRO Conference. Studies of chloroplast DNA in 8 *Phorodendron* species provided strong support for *P. californicum* as sister to a clade uniting North American species and not as sister to a clade comprising more tropical species. Consistent with results from previous studies using nrDNA, a lineage in the *Phoradendron leucarpum* complex (comprising subsp. *leucarpum* and *macrophyllum*) was strongly supported, but subspecies *tomentosum* was not confidently placed.]

Azrieda, A.R.N., Rahim, S., Salmiah, U., Roszaini, K., Shahlinney, L. and Baharudin, K. 2016. Comparison between graveyard and laboratory test methods to determine natural durability. Timber Technology Bulletin 2016 No.60 pp.8. [Including information on *Scorodocarpus borneensis* (Olacaceae).]

Badr, J.M., Ibrahim, S.R.M. and Abou-Hussein, D.R. 2016. Plicosepalin A, a new antioxidant catechin-gallic acid derivative of inositol from the mistletoe *Plicosepalus curviflorus*. Zeitschrift für Naturforschung. Section C, Biosciences.71(11/12): 375- 380. [Identifying a new catechin-gallic acid derivative of inositol, plicosepalin A (1) [(+) catechin-4'-*O*-(1?-*O*-galloyl-5?-*O*-methyl)-*myo*-inositol] from *P. curviflorus* (Loranthaceae) (host not indicated in abstract) in Saudi Arabia. It exhibited potent free radical scavenging activity and significant activity also against *Staphylococcus aureus* and *Bacillus subtilis*.]

Baltazár, T., Varga, I. and Pejchal, M. 2016. Distribution of European mistletoe (*Viscum album* L.) according to the location of host species in the castle park of lednice, Czech Republic.) (in Hungarian) Erdészettudományi Közlemények 6(1/2):.137-150. [The most frequent hosts were *Acer saccharinum*, *A. sacharum* and *Juglans nigra*, with isolated trees more heavily infested than those in a closer community.]

Bandyopadhyay, S., Krishna, G. and Venu, P. 2016. Failings in holotype deposition of twelve plant names. Indian Journal of Forestry 39(4): 407. [Including reference to *Viscum* spp. but no detail in abstract.]

Baneshi, H., Mohammadi, S. and Basirnia, T. 2016. The effect of pot intercropping of beans and tomato on Egyptian broomrape management and tomato growth indices improvement. Agroecology Journal 12(3): Pe63-Pe68, En69. [Mixed planting of kidney bean with tomato apparently resulted in increased yield of tomato and reduction of *Orobanche aegyptiaca* infestation, but data not quite convincing.]

Bardaro, N., Marcotrigiano, A.R., Bracuto, V., Mazzeo, R., Ricciardi, F., Lotti, C., Pavan, S. and Ricciardi, L. 2016. Genetic analysis of resistance to *Orobanche crenata* (Forsk.) in a pea (*Pisum sativum* L.) low-strigolactone line. Journal of Plant Pathology 98(3): 671-675. [Detailed analysis suggests that the low-stimulant resistance to *O. crenatai* in pea line ROR12 is controlled by a few recessive genes.]

Bastos, I.V.G.A., de Oliveira, T.B., Rodrigues, M.D., Militão, G.C.G., da Silva, T.G., Turatti, I.C.C., Lopes, N.P. and de Melo, S.J. 2017. Use of GC/MS to identify chemical constituents and cytotoxic activity of the leaves of *Phoradendron mucronatum* and *Phoradendron microphyllum* (Viscaceae). Anais da Academia Brasileira de Ciencias 89(2): 991-1001. [Both species, but particularly *P. mucronatum* showed cytotoxic activity against two types of human cancer cells.]

Batieno, B.J., Danquah, E., Tignegre, J.B., Bao Lam Huynh. Drabo, I., Close, T.J., Ofori, K., Roberts, P. and Ouedraogo, T.J. 2016. Application of marker-assisted backcrossing to improve cowpea (*Vigna unguiculata* L. Walp) for drought tolerance. Journal of Plant Breeding and Crop Science 8(12): 273-286. [The study also succeeded in integrating resistance to *Striga gesnerioides* from the resistant parent IT97K-499-35.]

Bezerra, A.N.S., Massing, L.T., de Oliveira, R.B., Mourão, R.H.V. 2017. Standardization and anti-inflammatory activity of aqueous extract of *Psittacanthus plagiophyllus* Eichl. (Loranthaceae). Journal of Ethnopharmacology 202: 234-240. [The study provided evidence to support the traditional use of *P. plagiophyllus* in Brazil to treat gastritis and other inflammatory disorders.]

Brahmi, I., Mabrouk, Y., Brun, G., Delavault, P., Belhadj, O. and Simier, P. 2016. Phenotypical and biochemical characterisation of resistance for parasitic weed (*Orobanche foetida* Poir.) in radiation-mutagenised

mutants of chickpea. Pest Management Science 72(12): 2330-2338. [Among 30 mutants tested for resistance to *O. foetida*, five showed strong resistance, based on combinations of reduced stimulant exudation, presumed cell-wall reinforcement and change in root oxidative status in response to infection.]

Burridge, J.D., Schneider, H.M., Huynh BaoLam, Roberts, P.A., Bucksch, A. and Lynch, J.P. 2017. Genome-wide association mapping and agronomic impact of cowpea root architecture. TAG Theoretical and Applied Genetics 130(2): 419-431. [The study identified 11 quantitative trait loci from manually scored root architecture traits and 21 from root architecture traits phenotyped by DIRT image analysis. Co-localizations were identified between root traits and performance indicators including tolerance to *Striga gesnerioides*.]

Carlquist, S. and Guilliams, C.M. 2017. Distinctive wood anatomy of the root-parasitic family Lennoaceae (Boraginales). IAWA Journal 38(1): 3-12. [The wood of Lennoaceae differs from that in related families in lacking libriform fibres, they also lack rays within the vascular strands, and have markedly elliptical vessel-to-vessel pits without vestures. The 4 species differ from each other in minor xylary features.]

Cernolev, E., Acciu, A., Tabara, O. and Jigau, G. 2016. Agrochemical state of broomrape affected chernozems of central and south region of the Republic of Moldova. Scientific Papers - Series A, Agronomy 59: 39-44. [Reporting very detailed studies of the soils of this region, infested with unspecified *Orobanche* sp. but with no comment in the entire paper regarding any association of soil characteristic with *Orobanche* prevalence. Odd!]

Charnikhova, T.V., Gaus, K., Lumbroso, A., Sanders, M., Vincken, J.P., de Mesmaeker, A., Ruyter-Spira, C.P., Screpanti, C. and Bouwmeester, H.J. 2017. Zealactones. Novel natural strigolactones from maize. Phytochemistry 137: 123-131. [Seven strigolactones were isolated from root exudates of maize, including two diastereomers of methyl (2E,3E)-4-(3,3-dimethyl-5-oxo-2-(prop-1-en-2-yl)tetrahydrofuran-2-yl)-2-(((4-methyl-5-oxo-2,5-dihydrofuran-2-yl)oxy)methylene)but-3-enoate, named zealactone 1a and 1b. The implications of this finding for our view of strigolactones and their biosynthesis are discussed.]

Chen JinYuan, Chen XueLin, Guo NanNan, Ma WenBing, Da QingJing and Zhang HaiXian. 2016. (Difference of parasitic form of *Cynomorium songaricum* and *Cistanche deserticola*.) (in Chinese) Guangxi Zhiwu / Guihaia 36(11): 1312-1317. [Describing some differences between these two species in the way the haustorium penetrates the roots of its hosts but abstract far from clear.]

Chen JinYuan, Chen XueLin, Guo NanNan and Man JiLin. 2017. (New discovery in pattern on nutrient absorption and vegetative propagation of *Cistanche lanzhouensis*.) (in Chinese) Journal of Northwest A & F University - Natural Science Edition 45(3): 192-197. [Describing the vegetative propagation of *C. lanzhouensis*, on its host *Reaumuria soongarica*. Abstract not clear but concluding that the 'vegetative propagate stem of *C. lanzhouensis* had the functions of nutrition absorption and vegetative propagation'.]

Chen Rui, Yang FanLi and Zhang Lin. 2016. (Optimization of extraction technology of total flavonoids from *Taxilli herba* by design-response surface method.Northwest) (in Chinese) Pharmaceutical Journal 31(4): 367-370. [Describing extraction of flavanoids from *Taxillus chinensis*.]

*Chinsembu, K.C. 2016. Ethnobotanical study of plants used in the management of HIV/AIDS-related diseases in Livingstone, southern province, Zambia. Evidence-based Complementary and Alternative Medicine 2016: ID 4238625 (https://www.hindawi.com/journals/ecam/2016/4238625/) [*Ximenia americana* among species used traditionally in treatment of HIV.]

Chuangchot, C., Tattawasart, U., Sripanidkulchai, B., Junlatat, J. and Fangkrathok, N. 2017. Antibacterial and antioxidant activity of *Rafflesia kerrii* extract against multidrug-resistant bacteria. Songklanakarin Journal of Science and Technology 39(2): 163-170. [Extracts of *R. kerrii*, have been used as a folk medicine for the treatment of many diseases and was shown to have good antibacterial activity against a range of pathogens including MRSA.]

Cirocco, R.M., Facelli, J.M. and Watling, J.R. 2017. Does nitrogen affect the interaction between a native hemiparasite and its native or introduced leguminous hosts? New Phytologist 213(2): 812-821. [Results from Australia confirm that *Cassytha pubescens* will have a strong impact on *Ulex europaeus* but not *Acacia paradoxa*, regardless of N levels in the field. Infection reduced root growth of *U. europaeus* and *Rhizobia* root nodulation.]

*Cochavi, A., Rubin, B., Achdari, G. and Eizenberg, H. 2016. Thermal time model for Egyptian broomrape (*Phelipanche aegyptiaca*) parasitism dynamics in carrot (*Daucus carota* L.): field validation. Frontiers in Plant Science 7(Deccember 2016): 1807. (http://journal.frontiersin.org/article/10.3389/fpls.2016.01807/full) [For purposes of predicting the stage of development of *P. aegyptiaca* below ground on carrot a linear model was not adequate but a beta function model and combined model composed of a beta function and a sigmoid curve, were required to predict first *P. aegyptiaca* attachment.]

*Cochavi, A., Rapaport, T., Gndler, T., Karnielei, A., Eizenberg, H., Rachmilovitch, S. and Ephrath, J.E. 2017. Recognition of *Orobanche cumana* below-ground parasitism through physiological and hyper spectral measurements in sunflower (*Helianthus annuus* L.). Frontiers in Plant Science 07 June 2017.

(https://doi.org/10.3389/fpls.2017.00909) [Using visible to-shortwave infrared (VIS-SWIR) hyperspectral imaging, combined with partial least squares regression, it proved possible to detect changes in macro- and micro-nutrient levels in the leaves of sunflower some time before emergence of *O. cumana.* These results could be used to help in the timing of herbicide application.]

Cruz Neto, O., Leal, I.R., Santos, J.C. and Lopes, A.V. 2017. A holoparasitic plant severely reduces the vegetative and reproductive performance of its host plant in the Caatinga, a Brazilian seasonally dry forest. Acta Botanica Brasilica 31(1): 147-152. [Documenting the many ways in which *Cuscuta partita* reduces growth and reproduction of *Zornia diphylla* (Fabaceae), including reduction in pollen viability.]

De Klerk, P., Theuerkauf, M. and Joosten, H. 2017. Vegetation, recent pollen deposition, and distribution of some non-pollen palynomorphs in a degrading ice-wedge polygon mire complex near Pokhodsk (NE Siberia), including size-frequency analyses of pollen attributable to *Betula*. Review of Palaeobotany and Palynology 238: 122-143. [*Pedicularis* among species identified]

Cuevas-Reyes, P., Pérez-López, G., Maldonado-López, Y. and González-Rodríguez, A. 2017. Effects of herbivory and mistletoe infection by *Psittacanthus calyculatus* on nutritional quality and chemical defense of *Quercus deserticola* along Mexican forest fragments. Plant Ecology 218(6): 687-697. [Studying the chemical ecology of the interaction of herbivory and parasitisation by *P. calyculatus* on the host, including the possible role of the mistletoe leading to higher phenol in the host.]

da Silva, J.A.T., Kher, M.M., Soner, D. and Nataraj, M. 2016. Sandalwood spike disease: a brief synthesis. Environmental and Experimental Biology 14(4): 199-204. [A review of sandalwoood spike disease, a phytoplasma related to aster yellows. Tissue culture to derive disease-free clones and transgenic strategies to derive disease-resistant trees may be the only realistic solutions to the problem.]

de Villier, J.A., Reblin, J.S. and Logan, B.A. 2017, Needle properties of host white spruce (*Picea glauca* [Moench] Voss) experiencing eastern dwarf mistletoe (*Arceuthobium pusillum* Peck) infections of differing severity. Botany 95(3): 295-305. [From 2016 IUFRO Conference. Needle size in *P, glauca* distally to the point of infection by *A. pusillum* was reduced at all levels of infestation. Likewise negative carbon isotope ratios, while reduced foliar nitrogen and chlorophyll content, and photosynthetic capacity were depressed only in more severely infected trees.]

Demİrbas, S.and Acar, O. 2017. Physiological and biochemical defense reactions of *Arabidopsis thaliana* to *Phelipanche ramosa* infection and salt stress. Fresenius Environmental Bulletin 26(3): 2277-2284. [Results with *Arabidopsis* parasitised by *P. ramosa* under salt stress demonstrate induction of an antioxidant defence system against *P. ramosa* infection by NaCl treatment.]

*Derbidge, R., Baumgartner, S. and Heusser, P. 2016. Mistletoe berry outline mapping with a path curve. Frontiers in Plant Science 7(November, 2016) 1749. (http://journal.frontiersin.org/article/10.3389/fpls.2016.01749/full) [Describing circadian changes in the outline shape of mistletoe (*Viscum album* ssp. *album*) berries *in vivo* and *in situ* during ripening, under varying environmental conditions, and analysing these using a dynamic form-determining parameter called Lambda (λ). λ , known in projective geometry as a measure for pertinent features of the outline shapes of egg-like forms, so called path curves.]

DiGiovanni, J.P., Wysocki, W.P., Burke, S.V., Duvall, M.R. and Barber, N.A. 2017. The role of hemiparasitic plants: influencing tallgrass prairie quality, diversity, and structure. Restoration Ecology 25(3): 405-413. [*Pedicularis canadensis* and *Comandra umbellata* (Santalaceae) fails to suppress growth of C_4 grasses but may suppress *Chamaecrista fasciculata* and increase species richness.]

Di Na, Wang Jing, Cui Chao, Zheng XiQing and Wang HaiWei. 2017. (Relation between parasitic severity of sunflower broomrape and soil nutrient.) (in Chinese) Journal of Henan Agricultural Sciences 46(1): 83-87. [Sampling soils where infestation of sunflower by *Oobanche cumana* was light, medium or heavy indicated that heavier infestation was associated with slightly higher soil content of N and organic matter, and much higher content of P. A causal effect is suggested but not clear on what grounds. Number of sampling sites is also not indicated in the abstract.]

Ding Yan, Zhang KaiMei, Cang XiaoXin, Sun Hao, Xiao Wei and Zhu JingBo. 2016. (Advance in chemical constituents and biological activity of genus *Cistanche*.) (in Chinese) Journal of Dalian Polytechnic University 35(6): 395-402. [Noting that the chemical constituents of *Cistanche* mainly include phenylethylanoid glycosides (PhGs), benzyl alcohol glycosides, iridoids, lignans and their glycosides, which are believed to regulate the nervous system and anti-fatigue, prevent cerebral ischemia and ischemia-reperfusion. PhGs are the main active components of *Cistanche* playing an important role in regulation of the nervous system.]

Doležal, J., Lehečková, E., Sohar, K. and Altman, J. 2016. Oak decline induced by mistletoe, competition and climate change: a case study from central Europe. Preslia 88(3): 323-346. [Detailed analysis of the results suggest that the decline of *Quercus robur* in the warm, south-eastern part of the Czech Republic is at least partly attributable to infestation by *Loranthus europaeus*.]

Duca, M., Clapco, S. and Port, A. 2016. Analysis of the soil parameters in the context of sunflower infection by *Orobanche cumana* Wallr. Lucrări Științifice, Universitatea de Stiinte Agricole Și Medicină Veterinară

"Ion Ionescu de la Brad" Iaşi, Seria Agronomie 59(1): 49-52. [Frequency of *O. cumana* was positively correclated with humus, negatively with high potassium and showed no correlation with levels of N, P or ammonium.]

Dueholm, B., Bruce, D., Weinstein, P., Semple, S., Møller, B.L. and Weiner, J. 2017. Spatial analysis of root hemiparasitic shrubs and their hosts: a search for spatial signatures of above- and below-ground interactions. Plant Ecology 218(2): 185-196. [Concluding that the root hemiparasitic shrub *Santalum spicatum* prefers growing at distances from neighbouring plants that fulfil resource requirements both below-ground and above-ground; and presenting a hypothesis for the optimal host density and distance to host. In Australia.]

Egbuji, J.V., Ejere, V.C., Ugwu, G.C., Okanya, L.C. and Nnamonu, E.I. 2016. Phytochemical composition and antitrypanosomal activities of aqueous leaf extracts of *Loranthus micranthus* Linn. (Loranthaceae) in rats infected with *Trypanosoma brucei brucei*. Animal Research International 13(2): 2404-2412. [Extracts of '*Loranthus micranthus*' (a name 'not resolved' in major sources – perhaps = *Ileostylus micranthus*) failed to control *Trypanosoma brucei brucei* in rats.]

*Eizenberg, H., Plakhine, D., Ziadne, H., and Graber, E.R. 2017. Non-chemical control of root parasitic weeds with biochar. Frontiers in Plant Science 07 June 2017. (https://doi.org/10.3389/fpls.2017.00939) [Confirming that certain types of biochar, incorporated into the soil at 0.9% by weight adsorbed stimulant exuded from roots of tomato and significantly reduced infection by *Phelipanche aegyptiaca*, effectively alleviating crop damage. No comment on the economics of the large amount of biochar needed to treat soil to adequate dpth.]

Ennami, M., Briache, F.Z., Mansi, J.M., Gaboun, F., Ghaouti, L., Belqadi, L. and Mentag, R. 2017. Genetic diversity of Moroccan *Orobanche crenata* populations revealed by Sequence-Related Amplified Polymorphism markers. Journal of Agricultural Science (Toronto) 9(4): 164-175. [Jaccard's similarity coefficient and Principal Coordinate Analysis (PCoA) showed a clear differentiation among *O. crenata* samples according to the geographical origin of each population of *O. crenata* in Morocco, suggesting the need for multisite screening trials during breeding programs.]

*Felestrino, É.B., Santiago, I.F., Freitas, L.daS., Rosa, L H, Ribeiro, S.P. and Moreira, L.M. 2017. Plant growth promoting bacteria associated with *Langsdorffia hypogaea*-rhizosphere-host biological interface: a neglected model of bacterial prospection. Frontiers in Microbiology 8 (February):172. (http://journal.frontiersin.org/article/10.3389/fmicb.2017.00172/full) [Studies of the rhizosphere biota of *L. hypogaea* (Balanophoraceae) revealed a number of bacteria with potential use as plant growth promoters.]

Filyushin, M.A., Kochieva, E.Z. and Skryabin, K.G. 2017. Polymorphism of the chloroplast gene *rps2* in parasitic plant *Monotropa hypopitys* L. from the European Russian populations. Russian Journal of Genetics 53(3): 400-405. [The complete nucleotide sequence of the chloroplast *rps2* gene is determined and the polymorphism of this gene in 26 *M. hypopitys* accessions from populations in the European part of Russia is analyzed.]

Fontúrbel, F.E., Salazar, D.A. and Medel, R. 2017. Why mistletoes are more aggregated in disturbed forests? The role of differential host mortality. Forest Ecology and Management 394: 13-19. [*Tristerix corymbosus*, which is solely dispersed by the marsupial *Dromiciops gliroides* and parasitizes a wide range of hosts in Chile, proves less persistent in dense forest where its main host is *Pluchea absinthioides*, and more persistent in disturbed forest where it has more favourable hosts, *Aristotelia chilensis* and *Rhaphithamnus spinosus*. Thus its distribution is more dependent on host species than on the activity of the frugivore.]

*Fürst, U., Hegenauer, V., Kaiser, B., Körner, M., Welz, M. and Albert, M. 2016. Parasitic *Cuscuta* factor(s) and the detection by tomato initiates plant defense. Communicative and Integrative Biology 9(6): e1244590. (https://mail.aol.com/webmail-std/en-us/suite) [Identifying a 'Cuscuta Receptor 1' (CuRe1) in tomato which is critical to initiate defence responses against *C. reflexa* such as the production of ethylene or the generation of reactive oxygen species. But also concluding that additional defence mechanisms, or receptors, respectively, are needed to totally fend off the parasite.]

Gatto, M.A., Ippolito, A., Sergio, L. and di Venere, D. 2016. Extracts from wild edible herbs for controlling postharvest rots of fruit and vegetables. Acta Horticulturae 1144: 349-354. [Extracts of *Orobanche crenata* completely inhibited conidial germination of *Monilinia laxa*, *Penicillium digitatum, P. expansum, P. italicum* and *Aspergillus niger* and greatly reduced that of *B. cinerea* and *P. expansum*.]

*Gillespie, M.A.K., Baggesen, N. and Cooper, E.J. 2016. High Arctic flowering phenology and plant-pollinator interactions in response to delayed snow melt and simulated warming. Environmental Research Letters 11(1): 115006. (http://iopscience.iop.org/article/10.1088/1748-9326/11/11/115006/meta) [Studying the effects of the possible predicted increased snow depth and warmer temperatures expected with climate change, on 6 species including *Pedicularis hirsuta* and concluding that, while flowering would be delayed somewhat, the length of flowering season would be largely unchanged. However synchronisation with insects for pollination could become a factor.]

Glatzel, G., Richter, H., Devkota, M.P., Amico, G., Lee SuGwang, Lin RuoZhu, Grabner, M. and Barlow, B.A. 2017. Foliar habit in mistletoe-host associations. Botany 95(3): 219-229. [From 2016 IUFRO Conference.

Discussing the possible reasons why deciduous mistletoes are rare and confined to the northern fringes of Loranthaceae in Eurasia, and to Misodendraceae and the monotypic genus *Desmaria* (Loranthaceae) in southern South America. There are no deciduous mistletoes in the tropics and subtropics.]

Gobena, D., Shimels, M., Rich, P.J., Ruyter-Spira, C., Bouwmeester, H., Kanuganti, S., Mengiste, T. and Ejeta, G. 2017. Mutation in sorghum *LOW GERMINATION STIMULANT 1* alters strigolactones and causes *Striga* resistance. Proceedings of the National Academy of Sciences of the United States of America 114(17): 4471-4476. [The authors describe a mutation in the gene *LGS1* (*LOW GERMINATION STIMULANT 1*), controlling a sulfotransferase, which results in a change in exudation from 5-deoxystrigol to orobanchol which does not stimulate germination of *Striga*, conferring resistance without other side-effect.]

Gómez-Cansino, R., Guzmán-Gutiérrez, S.L., Campos-Lara, M.G., Espitia-Pinzón, C.I. and Reyes-Chilpa, R. 2017. Natural compounds from Mexican medicinal plants as potential drug leads for anti-tuberculosis drugs. Anais da Academia Brasileira de Ciencias 89(1): 31-43. [*Olea europaea* and *Phoradendron robinsoni* among the 63 species reviewed to show high activity against *Mycobacterium tuberculosis*.]

González, A.M.and Sato, H.A. 2016. (Vegetative anatomy of *Lophophytum mirabile* subsp. *bolivianum* (Balanophoraceae) and the effect of its parasitism in the anatomy of the roots of its host *Anadenanthera colubrina* var. *cebil*.) (in Spanish) Anales del Jardín Botánico de Madrid 73(2) unpaginated. [Describing the anatomy of *L. mirabile* subsp. *bolivianum* and its profound effects on the roots of *A. colubrina* var. *cebil,* resulting in the formation of a woody gall and secondary effects on the host timber development.]

González F, Pabón-Mora N. 2017. On the supposed polycotyledony and lack of endosperm in *Psittacanthus* (Loranthaceae). Brittonia 69(2): 176–185. [The authors claim that the pluricotylar condition in *ere*as previously reported by several workers, was erroneous and that instead the cotyledons represent endosperm. No developmental data were provided that would support such a claim. Moreover, anatomical data contradicting their interpretation (e.g. Kuijt 1967, Can. J. Bot.) were ignored. Photos of seedlings in Fig. 1 and the illustration in Fig. 3 represent a mixture of *Psittacanthus* and *Struthanthus*, an error not recognized by the authors, thus all their conclusions must be rejected.]]

González, F., Roldán, F.J. and Pabón-Mora, N. 2016. *Psittacanthus corderoi*, a new species of Loranthaceae from the Colombian Amazonia. Caldasia 38(2): 250-256. [Describing *P. corderoi* from the department of Amazonas, Colombia, similar to *P. lasianthus* from Guyana and Venezuela, but differing by various vegetative and floral traits, including the presence of numerous laciniae to 2 mm long on the outer surface of the petals.]

Grgić, S., Ćosić, J., Rebekić, A. and Vrandečić, K. 2016. Impact of essential oils on mycelial growth of *Botrytis cinerea*.) (in Croatian) Poljoprivreda / Agriculture 22(2): 29-33. [Oil from 'sandalwood' (presumably *Santalum album*) was not among those showing antifungal activity.]

*Grímsson F, Grimm GW, Zetter R. 2017. Evolution of pollen morphology in Loranthaceae. Grana 56:1-101. ([Using previously published DNA data, the authors construct a phylogenetic framework upon which they propose trends in pollen evolution in Loranthaceae. They argue (controversially) that the position of *Nuytsia* (Australia) as sister to the remainder of the family is an analytical artefact and that instead *Tupeia* (New Zealand), with its unusual spheroidal pollen, occupies this position.]

Grímsson, F., Zetter, R., Labandeira, C.C., Engel, M.S. and Wappler, T. 2017. Taxonomic description of *in situ* bee pollen from the middle Eocene of Germany. Grana 56(1): 37-70. [Recording pollen of *Olax* from 40-45 million years ago.]

Gunathilake, K.D.P.P. and Ranaweera, K.K.D.S. 2016. Antioxidative properties of 34 green leafy vegetables. Journal of Functional Foods 26: 176-186. [*Olax zeylanica* among 7 species showing high carotene content, antioxidant activities and polyphenolics compared to other leaf varieties tested.]

Guo YuanHeng, Cao LiLi, Zhao QingSheng, Zhang LiJun, Chen JinJin, Liu BoYan and Zhao Bing. 2016. Preliminary characterizations, antioxidant and hepatoprotective activity of polysaccharide from *Cistanche deserticola*.International Journal of Biological Macromolecules 93(Part A): 678-685.

Hacham, Y., Hershenhorn, J., Dor, E. and Amir, R. 2016. Primary metabolic profiling of Egyptian broomrape (*Phelipanche aegyptiaca*) compared to its host tomato roots. Journal of Plant Physiology 205: 11-19. [GC-MS used to identify 59 metabolites in *P. aegyptiaca* and host tomato. From variations between levels in uninfected and infected host roots and in the parasite it is concluded that *P. aegyptiaca* has its own metabolism that differs significantly in its regulation from that found in its host and that the parasite did not significantly affect the host primary metabolic pathways.]

Hampel, L.D., Cheeptham, N., Flood, N.J. and Friedman, C.R. 2017. Plants, fungi, and freeloaders: examining temporal changes in the "taxonomic richness" of endophytic fungi in the dwarf mistletoe *Arceuthobium americanum* over its growing season. Botany 95(3): 323-335. [From 2016 IUFRO Conference. Distinguishing 48 taxa of endophyte, in *A. americanum,* including *Serpula*, *Alternaria*, and *Tremella* species. The range was generally similar in male and female plants, and tended to increase over the growing season.]

Harati, K., Behr, B., Daigeler, A., Hirsch, T., Jacobsen, F., Renner, M., Harati, A., Wallner, C., Lehnhardt, M. and Becerikli, M. 2017. Curcumin and *Viscum album* extract decrease proliferation and cell viability of soft-tissue sarcoma cells: an in vitro analysis of eight cell lines using real-time monitoring and colorimetric assays. Nutrition and Cancer 69(2): 340-351.

Houngbédji, T., Dessaint, F., Nicolardot, B., Shykoff, J.A. and Gibot-Leclerc, S. 2016. Weed communities of rain-fed lowland rice vary with infestation by *Rhamphicarpa fistulosa*. Acta Oecologica 77: 88-90. [*R fistulosa* attacks weeds in rice as well as rice itself and it may, therefore, influence the competitive balance between rice and its weeds and shape weed community structure.]

Hosseini, A. 2016. (Phenological characteristics of continental mistletoe (*Loranthus europaeus* Jacq.) for its temporal control management.) (in Persian) Iranian Journal of Forest and Poplar Research 24(1): Pe150-Pe161, En162. [Results of study suggested that the optimum timie to remove *L. europaeus* from *Quercus brantii* in western Iran is prior to fruit ripening.]

Hu Liang. 2016. (Diversity and distribution patterns of climbing plants in the Himalayan region.) (in Chinese).Biodiversity Science 24(10: 1105-1116 . [Noting that *Cuscuta* spp. showed an increase from east to west in the Himalayan region.]

Ishida, H., Kuroda, A., and Iwakiri, K. 2016. (Overgrowth of the hemiparasitic plant species *Taxillus yadoriki* (Loranthaceae) and the debilitation of its host trees in a park in Miyazaki City, Miyazaki Prefecture.) (in Japanese) Vegetation Science 33: 15-32. [422 host trees from 27 species were observed with *Lithocarpus edulis* the most common followed by *Quercus serrata*, *Cryptomeria japonica*, and *Eurya japonica*. The degree of debilitation and host death was highest in *L. edulis*.]

Jafari, E., Assadi, M. and Ghanbarian, G.A. 2016. A revision of Cuscutaceae family in Iran. Iranian Journal of Botany 22(1): 23-29. [A key is provided to the 18 *Cuscuta* spp. recognised in Iran, including the one endemic, *C. haussknechtii* ,together with a listing of newly recorded sites and hosts.]

*Jeong JuSeong, Park ChoonHo, Kim InBo, Kim YoungHo, Yoon JaeMin, Kim KwangSoo and Kim JongBae. 2017. Korean mistletoe (*Viscum album coloratum*) extract regulates gene expression related to muscle atrophy and muscle hypertrophy. BMC Complementary and Alternative Medicine 17(68): (21 January 2017). (http://bmccomplementalternmed.biomedcentral.com/articles/10.1186/s12906-017-1575-9) [Concluding that extracts from *V. album* ssp. *coloratum* has beneficial effects on muscle atrophy and muscle hypertrophy.]

Jiang ZhiHui, Wang Jian, Li XinPing and Zhang XiaoYing. 2016. Echinacoside and *Cistanche tubulosa* (Schenk) R. Wight ameliorate bisphenol A-induced testicular and sperm damage in rats through gonad axis regulated steroidogenic enzymes. Journal of Ethnopharmacology 193: 321-328. [*C. tubulosa* extract, and its main active ingredient, echinacoside, each enhanced testosterone biosynthesis, attenuated poor sperm quality and testicular toxicity in rats through up-regulation of steroidogenesis enzymes.]

*Jost, X., Ansel, J.L., Lecellier, G., Raharivelomanana, P. and Butaud, J.F. 2016. Ethnobotanical survey of cosmetic plants used in Marquesas Islands (French Polynesia). Journal of Ethnobiology and Ethnomedicine 12(55): (29 November 2016). (http://ethnobiomed.biomedcentral.com/articles/10.1186/s13002-016-0128-5) [*Santalum insulare* var. *marchionense* among the main species used as cosmetics.]

Jumaat Haji Adam, Mohd Afiq, A.J., Rahmah Mohamed, Nor Azilah, A.W., Syamsurina Arshad, Mohd Paiz Kamaruzaman, Mohd Firdaus, M.R. and Wan KiewLian. 2016. *Rafflesia tuanku-halimii* (Rafflesiaceae), a new species from Peninsular, Malaysia. Sains Malaysiana 45(11): 1589-1595. [Describing *R. tuanku-halimii*, related to *R. azlanii* and *R. sharifah-hapsahiae* by coalesced warts on it lobes but differing in having window covered by almost united rings and these rings almost wholly covering the window.]

Junker, L.V. and Ensminger, I. 2016. Fast detection of leaf pigments and isoprenoids for ecophysiological studies, plant phenotyping and validating remote-sensing of vegetation. Physiologia Plantarum 158(4): 369-381. [Unspecified *Cuscuta* included among species used to validate the technique for rapid analysis of chlorophylls, carotenoids and tocopherols using HPLC.]

Kaisarun Akter, Barnes, E.C., Brophy, J.J., Harrington, D., Elders, Y.C., Vemulpad, S.R. and Jamie, J.F. 2016. Phytochemical profile and antibacterial and antioxidant activities of medicinal plants used by aboriginal people of New South Wales, Australia. Evidence-based Complementary and Alternative Medicine 2016 ID 4683059 (https://www.hindawi.com/journals/ecam/2016/4683059/) [Recording that ***Cassytha*** *glabella* is among plants used traditionally in the treatment of skin disprders and confirming its activity against MRSA.]

Kang DaHee and Kim MinYoung. 2016. Antimicrobial activity of Korean camellia mistletoe (*Korthalsella japonica* (Thunb.) Engl.) extracts. Journal of Applied Pharmaceutical Science 6(10): 226-230. [Finding rather low activity of methanol extracts of *K. japonica* and even less from ethanol extracts against 4 bacteria including *E. coli*.]

Kapila Shekhawat, Rathore, S.S., Anchal Dass, Das, T.K., Gulshan Mahajan and Chauhan, B.S. 2017. Weed menace and management strategies for enhancing oilseed brassicas production in the Indian sub-continent: a review. Crop Protection 96: 245-257. [Including reference to *Orobanche aegyptiaca*.]

Karimmojeni, H., Ehtemam, M.H., Javadimoghadam, S., Shahbazi, S. and Bazrafshan, A.H. 2017. Egyptian broomrape (*Phelipanche aegyptiaca*) response to silicon nutrition in tomato (*Solanum lycopersicum* L.). Archives of Agronomy and Soil Science 63(5): 612-618. [Reporting that application of silicon to tomato significantly delayed infection by *P. aegyptiaca* and reduced the damage caused to the crop.]

Karzhaubekova, Zh.Zh. and Gemejiyeva, N.G. 2016. (The element, amino- and fatty acids composition of *Cistanche salsa* (Orobanchaceae) from Kazakhstan.) (in Russian) Rastitel'nye Resursy 52(3): 424-433. [Determining the macro- and micronutrients, amino- and fatty acids in *C. salsa* occurring on saxaul (*Haloxylon* spp. – Amaranthaceae) and also in the sands of the Zhambyl region of Kazakhstan.]

Khan, Z.R., Midega, C. and Pickett, J.A. 2016. Exploiting chemical ecology for developing novel IPM strategies. In: Peshin, R., Dhawan, A.K., Bano, F. and Risam, K.S. (eds) Proceedings of the Indian Ecological Society International Conference, Sher-e-Kashmir University of Agricultural Sciences and Technology of Jammu, India, 18-20 February 2016 pp.536. [A brief description of the push-pull technology for controlling *Striga*.]

Khosravian-Dehkordi, F., Jamalifar, H., Amin, G.R., Shahverdi, A., Ahmadian attari, M., Mosaed, R., Ahmadi, A.A., Ebrahimpour-Dehkordi, T. and Monsef-Esfahani, H. 2017. (Antimicrobial effect of some medicinal smoke, Iranian traditional medicine.) (in Persian) Journal of Medicinal Plants 16(Suppl.): 10 pp.Pe185-Pe196, Pe197. [Reporting that smoke from *Santalum album* could inhibit *Candida albican, Escherichia coli, Staphylococcus aureuss* and *Bacillus subtilis* in under 11 minutes, A combination with *Cymbopogon schoenanthus* showed additional activity.]

*Kienle, G.S., Mussler, M., Fuchs, D. and Kiene, H. 2016. Intravenous mistletoe treatment in integrative cancer care: a qualitative study exploring the procedures, concepts, and observations of expert doctors.Evidence-based Complementary and Alternative Medicine 2016 ID 4628287. (https://www.hindawi.com/journals/ecam/2016/4628287/) [Reviewing the literature on use of *Vscum album* extracts in cancer care and recommending further research.]

*Kim BoYun, Park HanSol, Kim SoonOk and Kim YoungDong. 2017. Development of microsatellite markers for *Viscum coloratum* (Santalaceae) and their application to wild populations. Applications in Plant Sciences 5(1): 1600102. (http://www.bioone.org/doi/pdf/10.3732/apps.1600102) [Microsatellite primers were developed for *V. coloratum* (Santalaceae), a medicinal plant which has become a potentially threatened species requiring immediate conservation efforts. 124 primer pairs were randomly selected for initial validation, of which 19 yielded polymorphic microsatellite loci, with two to six alleles per locus. The 19 newly developed loci are expected to be useful for studying the population genetics and ecological conservation of *V. coloratum.*]

*Kleinsimon, S., Kauczor, G., Jaeger, S., Eggert, A., Seifert, G. and Delebinski, C. 2017. ViscumTT induces apoptosis and alters IAP expression in osteosarcoma in vitro and has synergistic action when combined with different chemotherapeutic drugs. BMC Complementary and Alternative Medicine 17(26). (https://bmccomplementalternmed.biomedcentral.com/articles/10.1186/s12906-016-1545-7) [Doxorubicin, etoposide and ifosfamide greatly enhanced the apoptosis induced by extracts of *Viscum album*.]

*Ko ByoungSeob, Kang SuNa, Moon BoReum, Ryuk JinAh and Park SunMin. 2016. A 70% ethanol extract of mistletoe rich in betulin, betulinic acid, and oleanolic acid potentiated β-cell function and mass and enhanced hepatic insulin sensitivity. Evidence-based Complementary and Alternative Medicine 2016: ID 7836823 (https://www.hindawi.com/journals/ecam/2016/7836823) [Confirming the potential value of extracts of *Viscum album var. coloratum* against Type 2 diabetes iin rats.]

Kolahkaj, S.F., Alvaninejad, S., Adhami, E. and Fayyaz, P. 2016. (Effect of mistletoe (*Loranthus europaeus*) on some nutrients elements and morphological traits of maple trees leaves (*Acer monspessulanum* Subsp. Cinerascens) in Yasouj forests.) (in Persian) Iranian Journal of Forest and Range Protection Research 14(1): Pe58-Pe67. [Results from analysis of nutrients in *L. europaeus* and the host not clear from abstract, but leaf morphology of *A. monspessulanum* was apparently not affected.]

Konstantinović, B., Blagojević, M., Samardžić, N., Popov, M. and Ljubanović, M. 2016. Weed seed bank in vineyards of north-east hills of Fruška Gora.) (in Serbian) Biljni Lekar (Plant Doctor) 44(4): 343-354. [*Cuscuta campetris* among the species detected.]

Koull, N. and Chehma, A. 2016. Soil characteristics and plant distribution in saline wetlands of Oued Righ, northeastern Algeria. Journal of Arid Land 8(6): 948-959. [Recording *Cistanche tinctoria* among plants around the fringe of the wetland, with lower moisture and salinity.]

Krishnaveni, T., Valliappan, R. and Selvraju, R. 2016. Phytochemical, physicochemical and antibacterial activity of *Loranthus elasticus*. Journal of Chemical and Pharmaceutical Research 8(10): 69-73. [An extract of *L. elasticus* (= *Helicanthes elasticus*) was found to have some anti-bacterial and anti-fungal properties.]

Kruh, L.I., Lahav, T., Abu-Nassar, J., Achdari, G., Salami, R., Freillich, S. and Ali, R. 2017. Host-Parasite-Bacteria Triangle: The Microbiome of the Parasitic Weed *Phelipanche aegyptiaca* and Tomato-*Solanum lycopersicum* (Mill.) as a Host. Frontiers in Plant Science March 2017. (http://journal.frontiersin.org/article/10.3389/fpls.2017.00269/full) [Endophyte communities of *O. aegyptiaca* were significantly different from those of non-parasitized tomato roots but no significant differences were observed between the parasite and its host after parasitization, suggesting the occurrence of bacterial exchange between the two plants. A *Pseudomonas* strain *PhelS10*, originating from the host, suppressed ca. 80% of *P. aegyptiaca* seed germination and significantly reduced parasitism, suggesting potential for exploiting endophytes for control.].

Kucich, D.A. and Wicht, M.M. 2016. South African indigenous fruits - underutilized resource for boosting daily antioxidant intake among local indigent populations? SAJCN - South African Journal of Clinical Nutrition 29(4): 150-156. [Confirming that *Osyris compressa* is a useful source of anti-oxidants.]

Kutyna, I., Malinowska, K. and Malinowski, R. 2016. Soil conditions and plant communities on the summit, the slope and the depression on the edge of West Oder. Folia Pomeranae Universitatis Technologiae Stetinensis, Agricultura, Alimentaria, Piscaria et Zootechnica 328(39/3): 123-158. [Noting the occurrence of *Melampyrum arvense* among the community on the summit of this site in Poland.]

Leal, S.S., Uchôa, V.T., Figuerêdo-Silva, J., Soares, R.B., Mota, D.M., de Alencar, R.C., Maia Filho, A.L.M., Sant'Ana, A.E.G. and Beltrame Junior, M. 2016. (Phonophoresis effectiveness with *Ximenia americana* L. in rats tendon inflammation.) (in Portuguese) Revista Brasileira de Medicina do Esporte 22(5): 355-360. [Confirming that pulsed ultrasound combined with gel from the bark of *X. americana* is an effective therapy to manage chronic inflammation of tendons in rats.]

Lee JaeHyeon, Lyu DongPyo and Kim GabTae. 2016. (A study on the habitat environment and mutualism with ants of genus *Melampyrum*.) (in Korean) Korean Journal of Environment and Ecology 30(2): 139-145. [Recording the weight of elaiosomes as 1.2 mg in *M. roseum* var. *ovalifolium*, 1 mg in *M. setaceum* var. *nakaianum* and 0.8 mg in *M. roseum*. These were growing in south-facing open forest edge with slightly acidic, shallow soil. The main ant species observed were 4 species of Myrmicinae; *Myrmica kotokui*, *M. excelsa*, *Myrmecina nipponica* and *Aphaenogaster japonica*.]

*Lee XinWei, Mohd-Noor Mat-Isa, Nur-Atiqah Mohd-Elias, Mohd Afiq Aizat-Juhari, Goh HoeHan, Dear, P.H., Chow KengSee, Jumaat Haji Adam, Rahmah Mohamed, Mohd Firdaus-Raih and Wan KiewLian. 2016. Perigone lobe transcriptome analysis provides insights into *Rafflesia cantleyi* flower development. PLoS ONE 11(12): e0167958. (http://journals.plos.org/plosone/article?id=10.1371/journal.pone.0167958) [Of the 40 million sequencing reads, 79% of the transcripts had significant matches to annotated sequences in the public protein database and 6,019 transcripts could be mapped to 129 genetic pathways. 52 transcripts with very high expression in the flower transcriptome were identified that provide insights into biological processes that occur during *Rafflesia* flower development.]

Li Jian, Li Mei, Gao XingXiang, Fang Feng and Dong LianHong. 2017. (Biological characteristics of Lubao No. 1 biological control agent (*Colletotrichum gloeosporioides*) and construction of a T-DNA insertional mutant library.) (in Chinese) Acta Prataculturae Sinica 26(1): 142-148. [Luba 1, based on *C, gloeosporiodes* is already active against *Cuscuta chinensis*. *Agrobacterium* mediated transformation was used to create modified strains of *C, gloeosporiodes* with more stable pathogenicity.]

*Li WenJun, Sui XiaoLin, Kuss, P., Liu YanYan, Li AiRong and Guan KaiYun. 2016. Long-distance dispersal after the Last Glacial Maximum (LGM) led to the disjunctive distribution of *Pedicularis kansuensis* (Orobanchaceae) between the Qinghai-Tibetan Plateau and Tianshan region. PLoS ONE 11(11): e0165700. (http://journals.plos.org/plosone/article?id=10.1371/journal.pone.0165700) [Concluding from detailed genetic study that *P. kansuensis* disappeared from the Tianshan region during the last glacial maximum and then recolonised by material from the Qinghai-Tibetan Plateau. The long-distance dispersal across arid land may well have had birds or men as vector.]

Li Xi, Jang TaeSoo, Temsch, E.M., Kato, H., Takayama, K. and Schneeweiss, G.M. 2017. Molecular and karyological data confirm that the enigmatic genus *Platypholis* from Bonin-Islands (SE Japan) is phylogenetically nested within *Orobanche* (Orobanchaceae). Journal of Plant Research 130(2): 273-280. [Chromosome number and molecular phylogenetic analyses of *matK*, *rps2*, ITS, *phyA* and *phyB* conclusively show that *Platypholis* is part of the *Orobanche s. str.* clade, thus this taxon should be referred to as *Orobanche boninsimae*.]

Li Yang, Peng Ying, Wang MengYue, Zhou GuiSheng, Zhang YuLong and Li XiaoBo. 2016. Rapid screening and identification of the differences between metabolites of *Cistanche deserticola* and *C. tubulosa* water extract in rats by UPLC-Q-TOF-MS combined pattern recognition analysis. Journal of Pharmaceutical and Biomedical Analysis 131: 364-372. [The study indicates that phenylethanoid glycosides of both species are mainly metabolized in the gastrointestinal tract of rats The components cistanoside B, C, D, and E exist only in *C. deserticola* and release methylated hydroxytyrosol following metabolism, helping explain the differential therapeutic effect that these two species have on certain diseases.]

Li YuChuan, Fang HaiLing, Wang DingKang, Xiang XiaoDong, Jin Song and Geng KaiYou. 2016. (Adventitious bud induction and multiplication of *Melasma arvense*.) (in Chinese) Guangxi Zhiwu / Guihaia 36(12): 1432-1438. [Describing a successful means of artificial culture of *M. arvense*, valued for its effects on leukemia, cancer, dispersing blood stasis and hemolysis in Yunnan, China.]

Macklin, J. and Parnell, J. 2016. *Dendromyza hiepkoana* sp. nov. from Irian Jaya and *D. staufferi* sp. nov. from Papua New Guinea (Amphorogynaceae).Nordic Journal of Botany 34(2): 169-173. [This work derives from the Ph.D. dissertation of the first author (July 2000) that was a systematic revision of Santalaceae of southeast Asia. The two new species now bring the total for the genus (including Cladomyza) to 21.]

Martínez Quesada, E. 2016. Typification of *Dendrophthora buxifolia* (Viscaceae). Rhodora 118(973): 1-12. [Designating lectotype and epitype for *D. buxifolia*, also, a lectotype for *D. buxifolia* var. *rotundata*, considered as a synonym.]

Li BaoDing. 2017. (Study on flavor development of chicken stewed with *Cistanche deserticola* Ma.) (in Chinese) China Condiment 42(4): 96-98. [Discussing the ways in which *C. deserticola* both enhances flavour and provides health benefits.]

Lim NamJu, Shin JunHo, Kim HyeJin, Lim Yeni, Kim JiYeon, Lee WonJun, Han SooJeong and Kwon Oran. 2017. A combination of Korean mistletoe extract and resistance exercise retarded the decline in muscle mass and strength in the elderly: a randomized controlled trial. Experimental Gerontology 87(No.Part A): 48-56. [Results suggest that a combination of *Viscum album* ssp. *coloratum* and physical exercise was useful in maintining physical fitness in the elderly.]

Lira, J., Caires, C.S. and Fadini, R.F. 2017. Reaching the canopy on the ground: incidence of infection and host-use by mistletoes (Loranthaceae and Viscaceae) on trees felled for timber in Amazonian rainforests. Plant Ecology 218(3): 251-263. [19 host tree species were studied, on which the following mistletoes were recorded: (Loranthaceae) *Oryctanthus alveolatus; O .florulentus, Passovia pedunculata, Psittacanthus carnosus, P.eucalyptifolius, Struthanthus phillyreoides* and (Viscaceae):, *Dendrophthora warmingii, Phoradendron mucronatum, P. obtusissimum P. racemosum* and *P. inaequidentatum. Passovia* and *Struthanthus* were the genera most commonly found. *D. warmingii* and *P. obtusissimum* parasitized only *Vochysia maxima* and *Parkia multijuga* respectively. Viscaceae tended to have narrower host range than Loranthaceae.. Infections were unexpectedly commoner in closed forest than in open forest.]

Liu RiLin, Mei ZhongHai, Xie WenYuan, Lin Jian, Ji BiHao and Zhang FengYao. 2016. (Investigations on rage (rare) and endangered plants in Jingning Wangdongyang and Dayanghu Nature Reserves.) (in Chinese) Journal of Zhejiang Forestry Science and Technology 36(4): 68-74. [Including mention of the ‘critically endangered’ *Pedicularis kiangsiensis*.]

Ma YongQing. 2017. (Using allelopathy and trap crops to eliminate soil bank of broomrape seed.) (in Chiense) Zhongguo Shengtai Nongye Xuebao / Chinese Journal of Eco-Agriculture 25(1): 27-35. [Noting that *Orobanche cumana* on sunflower is mainly distributed in the northern regions of Shaanxi, Hebei, Xinjiang, Shanxi, Inner Mongolia and also in Northeast China. *O. aegyptiaca* is mainly distributed in Xinjiang and causes heavy damage to tomatoes and potatoes. Reporting useful results from trap cropping with ‘wheat, corn, cotton, soybean, etc.’, but no detail in abstract.]

Maazou, A.R.S., Qiu Ju, Mu JianYu and Liu ZhiZhai. 2017. Utilization of wild relatives for maize (*Zea mays* L.) improvement. African Journal of Plant Science 11(5): 105-113. [Reviewing the use and potential of wild relatives of maize, teosintes and *Tripsacum* spp., to enhance resistance to a range of stresses, including *Striga* spp.]

Masi, M., Cimmino, A., Boari, A., Tuzi, A., Zonno, M.C., Baroncelli, R., Vurro, M. and Evidente, A. 2017. Colletochlorins E and F, new phytotoxic tetrasubstituted pyran-2-one and dihydrobenzofuran, isolated from *Colletotrichum higginsianum* with potential herbicidal activity. Journal of Agricultural and Food Chemistry 65(6): 1124-1130. [The new compounds show inhibition of *Phelipanche ramosa* germination.]

Macklin, J. and Parnell, J. 2016. *Dendromyza hiepkoana* sp. nov. from Irian Jaya and *D. staufferi* sp. nov. from Papua New Guinea (Amphorogynaceae). Nordic Journal of Botany 34(2): 169-173. [This work derives from the Ph.D. dissertation of the first author (July 2000) that was a systematic revision of Santalaceae of southeast Asia. The two new species now bring the total for the genus (including *Cladomyza*) to 21.]

Marciniuk, P., Marciniuk, J., Sychut-Czapla, E., Oklejewicz, K. and Wolanin, M. 2016. (Meadows of the *Molinietalia* order as a refugium of rare plant species in the Nadbużański Landscape Park (E Poland).) (in Polish) Fragmenta Floristica et Geobotanica Polonica 23(1): 73-81. [Including *Melampyrum cristatum* and *Pedicularis palustris*.among species critically endangered by changing land use.]

Mari, A., Ciocarlan, A., Aiello, N., Scartezzini, F., Pizza, C. and D'Ambrosio, M. 2017. Research survey on iridoid and phenylethanoid glycosides among seven populations of *Euphrasia rostkoviana* Hayne from the Alps. Phytochemistry 137: 72-80. [A detailed study of the chemical diversity among 7 populations of *E. rostkoviana*, widely used in the treatment of eye disorders, in northern Italy, including the description of two newly recorded phenylethanoid glycosides. The levels of the latter were much more variable across populations that the iridoids.]

Marinov-Serafimov, P., Golubinova, I., Kalinova, S., Yanev, M. and Ilieva, A. 2017. Allelopathic activity of some parasitic weeds. Bulgarian Journal of Agricultural Science 23(2): 219-226. [Water extracts of *Cuscuta epithymum*, *C. campestris*. *Phelipanche ramosa* and *P. mutelii* at 0.4 to

12.8% inhibited germination of letuce seeds – *Phelipanche* spp. more stongly than *Cuscuta* spp.]

Martínez Quesada, E. 2016. Typification of *Dendrophthora buxifolia* (Viscaceae). Rhodora 118(973): 1-12. [A lectotype and epitype are designated for *D. buxifolia*, also, a lectotype for *D. buxifolia* var. *rotundata*, considered as a synonym.]

Mathiasen, R.L., Kenaley, S.C. and Daugherty, C.M. 2016. A morphometric analysis of *Arceuthobium campylopodum* and *Arceuthobium divaricatum* (Viscaceae). Aliso 34(1/2): 9-23. [Confirming and describing the morphological differences which support the separation of *A. divaricatum,* which parasitises only pinyon pines (*Pinus* subsection *Cembroides*), from *A. campylopodium* which parasitises *Pinus ponderosa* and *P. jeffreyi* A 'recent taxonomic treatment' had proposed merging them under *A. campyopodium.*]

Matthies, D. 2017. Interactions between a root hemiparasite and 27 different hosts: growth, biomass allocation and plant architecture. Perspectives in Plant Ecology, Evolution and Systematics 24: 118-137. [A very detailed study confirming that forbs and legumes are better hosts for *Melampyrum arvense* than grasses and that the root mass of the parasite was much lower on a 'good' host than on a poor one. Differences in damage between similarly good hosts indicated that not only resistance but also tolerance may be important for host responses to parasitism. Other detailed results suggest significant differences from those found for the related model hemiparasite *Rhinanthus;* thus hemiparasite - host species interactions may be parasite-specific.]

Matulovic, F.M. and Oshiro, L.M.Y. 2016. (Use of essential oils as anaesthetic for handling prawn *Litopenaeus schmitti* and *Farfantepenaeus brasiliensis*.) (in Portuguese) Revista Acadêmica: Ciência Animal 14: 57-68. [Oil of *Santalum* spp. may be of value as an 'optimizer transport agent' in conjuncytion with clove oil in anaesthesia of prawns.]

*Mbuvi, D.A., Masiga, C.W., Kuria, E., Masanga, J., Wamalwa, M., Mohamed, A., Odeny, D.A., Hamza, N., Timko, M.P. and Runo, S. 2017. Novel sources of witchweed (*Striga*) resistance from wild sorghum accessions. Frontiers in Plant Science 8(February) 116. (http://journal.frontiersin.org/article/10.3389/fpls.2017.00116/full) [Three wild sorghum accessions, WSA-1, WSE-1, and WSA-2) proved more resistant to *Striga* than N.13, preventing penetration of the endodermis or showing a hypersensitive rsonse.]

Mbwando, A., Lungu, D.M., Tryphone, G.M. and Tembo, L. 2016. Nature of resistance of cowpea *Alectra vogelii* infestation. African Crop Science Journal 24(4): 389-395. [Crossing involving 7 genotypes of cowpea indicated both additive and non-additive gene actions in the expression of resistance to *A. vogelii* indicating that introgression of a desirable trait in an elite genotype would involve careful crossing with a resistance genotype, accompanied by selection in the advanced population.]

Meng ShengXi and Huo QingPing. 2016. (Research progress in the effects of effective constituents in Herba Cistanche on functions of nervous system.) (in Chinese) Chinese Journal of Information on Traditional Chinese Medicine 23(10): 123-126. [A review of the constituents of *Cistanche* species believed to be involved in the inhibition of neuronal apoptosis, reduction of ischemic brain injury, treatment of Alzheimer's disease, Parkinson's disease, vascular dementia, and improvement in the function of learning and memory.]

*Meng YongJie. Shuai HaiWei Luo XiaoFeng Chen Feng Zhou WenGuan Yang WenYu and Shu Kai. 2017. Karrikins: regulators involved in phytohormone signaling networks during seed germination and seedling development. Frontiers in Plant Science 8(January):2021. .(http://journal.frontiersin.org/article/10.3389/fpls.2016.02021/full) [A general discussion.]

Miao MingSan, Wang Tan, Li Yan, Li Min, Guo Lin and Zhang Ying. 2016. Effect of *Cynomorium* flavonoids on mouse model of perimenopausal depression. Bangladesh Journal of Pharmacology 11(Special Issue): S31-S35. [Confirming that flavonoids from unspecified *Cynomorium* sp. have significant effects on mice with perimenopausal depression.]

Midega, C.A.O., Wasonga, C.J., Hooper, A.M., Pickett, J.A. and Khan, Z.R. 2017. Drought-tolerant *Desmodium* species effectively suppress parasitic striga weed and improve cereal grain yields in western Kenya. Crop Protection 98: 94-101. [To ensure more consistent results from *Desmodium* spp. in the push-pull system for control of *Striga*, a range of *Desmodium* spp were screened for drought stress tolerance, and *D. incanum* and *D. ramosissimum* found to give good results.]

Mkounga, P., Maza, H.L.D., Ouahouo, B.M.W., Tyon, L.N., Ishikawa, H., Nishino, H. and Nkengfack, A.E. 2016. New lupan-type triterpenoids. Zeitschrift für Naturforschung. Section C, Biosciences 71(11/12): 381-386. [The triterpernoid derivatives, named globimetulin A B and C, were isolated from *Globimetula dinklagei* (Loranthaceae), growing on cassava in Cameroon. They showed no anti-bacterial activity.]

Molnár, A. and Végvári, Z. 2017. Bioclimatic constraints of European mistletoe *Viscum album* at its southern distribution limit at past and present temporal scales, Pannonian Basin, Hungary. Climate Research 71(3): 237-248. [Concluding that the factors controlling the southern extent of *V. album* in Hungary were the temperature and aridity in July.]

Mrema, E., Shimelis, H., Laing, M. and Bucheyeki, T. 2017. Farmers' perceptions of sorghum production constraints and *Striga* control practices in semi-arid areas of Tanzania. International Journal of Pest Management 63(2): 146-156. [A detailed socio-economic study in NW Tanzania, where both *S. hermonthica* and *S. asiatica* are

of greatest concern to farmers. No really effective control measures are being used and the problem continues to become worse. Some supposedly resistant varieties have been used to a limited extent, but do not perform well under heavy *Striga* infestations.]

Mrema, E., Shimelis, H., Laing, M. and Bucheyeki, T. 2017. Screening of sorghum genotypes for resistance to *Striga hermonthica* and *S. asiatica* and compatibility with *Fusarium oxysporum* f.sp. *strigae*. Acta Agriculturæ Scandinavica, Section B - Soil & Plant Science 67(5): 395-404. [Reporting the selection of 25 promising sorghum lines with useful *Striga* resistance and compatibility with *F. oxysporum* for biologicval control.]

Mudrák, O., Bello, F.de, Doležal, J. and Lepš, J. 2016. Changes in the functional trait composition and diversity of meadow communities induced by *Rhinanthus minor* L. Folia Geobotanica 51(1): 1-11. [Species favoured by *R. minor* were those with low competitive ability, while those that were tall, clonal species without a taproot were mainly suppressed. Community weighted means, and functional diversity of grasses were not affected.]

Muhammad Riaz, Aishah Bilal, Ali, M.S., Itrat Fatima, Amir Faisal, Sherkheli, M.A. and Adnan Asghar. 2017. Natural products from *Cuscuta reflexa* Roxb. with antiproliferation activities in HCT116 colorectal cell lines. Natural Product Research 31(5): 583-587. [Among 4 compounds isolated from *C. reflexa,* 1-*O*-*p*-hydroxycinnamoyldlucose showed the most promising antiproliferative activity against HCT116 colorectal cancer cell lines,]

Mustarichie, R., Warya, S., Saptarini, N.M. and Musfiroh, I. 2016. Acute and subchronic toxicities of Indonesian mistletoes *Dendrophthoe pentandra* L. (Miq.) ethanol extract. Journal of Applied Pharmaceutical Science 6(9): 109-114. [Results suggest the ethanol extract of *D. pentandra,* used in Indonesia for a wide range of ailments, has low toxicity in mice and rats but is not recommended to be used for a long period.]

Nativ, N., Hacham, Y., Herscenhorn, J., Dor and E Amir, R. 2017. Metabolic investigation of *Phelipanche aegyptiaca* reveals significant changes during developmental stages and in its different organs. Frontiers in Plant Science April, 2007. (http://journal.frontiersin.org/article/10.3389/fpls.2017.00491/full) [Primary metabolic and lipid profiling of *P. aegyptiaca* using GC-MS analysis, showed relatively small changes through developmental stages. There were, hoewever, nore distinct differences when comparing different parts of the plant.]

Ndeinoma, A. and Wiersum, K.F. 2017. Diversity of governance arrangements for indigenous natural products in communal areas of Namibia. Forests, Trees and Livelihoods 26(2): 124-141. [*Ximenia* spp. among natural products discussed.]

Neto Junior, J.deC.S., Estevão, L.R.deM., Baratella-Evêncio, L., Vieira, M.G.F., Simões, R.S., Florencio-Silva, R., Evêncio-Luz, L. and Evêncio Neto, J. 2017. Mast cell concentration and skin wound contraction in rats treated with *Ximenia americana L*. Acta Cirurgica Brasileira 32(2): 148-156. [Confirming the value of a 10% extract of *X. americana* in wound healing.]

Nickrent, D.L. 2016. Ximeniaceae, Schoepfiaceae, Comandraceae, Thesiaceae, Cervantesiaceae, Santalaceae, Viscaceae. In: Flora North America Editorial Committee (eds.), Flora North America, Volume 12, Oxford University Press, New York. pp. 404-440. [This treatment of the sandalwood order (Santalales) for North America north of Mexico includes 40 taxa in 24 species of which three are introductions (*Santalum album, Thesium ramosum,* and *Viscum album*).]

Nickrent, D.L. and Musselman, L.J.. 2017. Parasitic plants. Chapter 17, In: Ownley, B.H. and Trigiano, R.N. (eds.) Plant Pathology: Concepts and Laboratory Exercises, 3rd. Ed., CRC Press, Boca Raton. pp. 277-288 [The chapter has a general introduction to parasitic plants but is mainly focused on the use of *Cuscuta* as a model parasitic plant. Four laboratory exercises are outlined dealing with morphology and anatomy, seed germination and seedling behavior, growth, twining and attachment of dodder stems and demonstration of how *Cuscuta* acts as a physiological sink for host nutrients.]

Niu MeiYun, Cheng QingWei, Zhang YueYa, Zhang XinHua and Ma GuoHua. 2017. (Comparison of several RNA extracting methods from heartwood of *Santalum album.*) (in Chinese) Journal of Tropical and Subtropical Botany 25(1): 20-25. An [improved CTAB method and guanidine isothiocyanate-SDS method were effective methods to extract total RNA from heartwood of *S. album.*]

Ongachi, W., Onwonga, R., Nyanganga, H. and Okry, F. 2017. Compararive analysis of Video Mediated Learning and Farmer Field School approach on adoption of Striga control technologies in Western Kenya. International Journal of Agricultural Extension 5(1): 1-10. [Video Mediated Learning proved somewhat superior to Farmer Field Schools as a means of training farmers in technologies for contol of *Strga*, but best results were obtained with a combination of the two.]

*Ouédraogo, P., Bationo, B.A., Sanou, J., Traoré, S., Barry, S., Dayamba, S.D., Bayala, J., Ouédraogo, M., Soeters, S. and Thiombiano, A. 2017. Uses and vulnerability of ligneous species exploited by local population of northern Burkina Faso in their adaptation strategies to changing environments. Agriculture and Food Security 6(15):(1 May 2017). (https://agricultureandfoodsecurity.biomedcentral.com/articles/10.1186/s40066-017-0090-z) [Noting that *Ximenia americana*, previously used as food and medicinally has been greatly reduced by drought.]

Ohikhena, F.U., Wintola, O.A. and Afolayan, A.J. 2016. Toxicity assessment of different solvent extracts of the medicinal plant, *Phragmanthera capitata* (Sprengel) Balle on brine shrimp (*Artemia salina*). International

Journal of Pharmacology 12(7): 701-710. [Extracts of the leaves of *P. capitata* growing on rubber trees showed minimal toxicity to brine shrimp.]

Olivares Tormo, A. 2017. (Juniper disease in the Natural Parks of Penyagolosa Massif, and Puebla de San Miguel (Valencia, Spain).) (in Spanish) Flora Montiberica 66: 124-130. [Reporting a massive infection of *Juniperus communis* and *J. oxycedrus* by *Arceuthobium oxycedri* that is producing a high mortality of junipers in the High Mountains of Natural Parks in Valencia.]

*Olsen, S. and Krause, K. 2017. Activity of xyloglucan endotransglucosylases/hydrolases suggests a role during host invasion by the parasitic plant *Cuscuta reflexa*.PLoS ONE 12(4): e0176754. (http://journals.plos.org/plosone/article?id=10.1371/journal.pone.0176754)

Omoigui, L.O., Kamara, A.Y., Alunyo, G.I., Bello, L.L., Oluoch, M., Timko, M.P. and Boukar, O. 2017. Identification of new sources of resistance to *Striga gesnerioides* in cowpea *Vigna unguiculata* accessions. Genetic Resources and Crop Evolution 64(5): 901-911. [Screening of 194 accessions at IITA, revealed two new lines, Tvu-1272 and Tvu-16514, with hypersensitive resistance to race 3 of *S. gesnerioides*, sharing the molecular marker SSR1 with variety B.301, but genetically distinct from it.]

*Ortiz, C., Morales, L., Sastre, M., Haskins, W.E. and Matta, J. 2016. Cytotoxicity and genotoxicity assessment of sandalwood essential oil in human breast cell lines MCF-7 and MCF-10A. Evidence-based Complementary and Alternative Medicine 2016 pp. Article ID 3696232. (https://www.hindawi.com/journals/ecam/2016/3696232/) [Providing the first evidence that oil from *Santalum* spp. is genotoxic and capable of inducing DNA single- and double-strand breaks in breast adenocarcinoma (MCF-7) cells.].

Ozberk, F., Ozberk, I., Yucel, A., Mecca, I. and Altundal, S. 2016. *Orobanche* (*Orobanche* spp.) and *Phelipanche* (*Phelipanche* spp.) in lentil (*Lens culinaris* Medic.): impacts on yield, quality and marketing prices. In: Kovačević, D. (ed.) Proceedings, pp. 1514-1522. [Lentil in Turkey is seriously damaged by *O. crenata* in some regions and by *P. ramosa* and *P. aegyptiaca* in others. Quality and price per kg were not affected but the study confirmed severe economic losses due to yield reductions of 51 to 98%.]

Page, T., Doran, J., Tate, H., Dore, D., Tabi, M., Sethy, M., Lee, D., Huth, J. and Graham, V. 2016. Development and delivery of germplasm for sandalwood and whitewood in Vanuatu and northern Australia. Final Report for FST/2008/010. Australian Centre for International Agricultural Research (ACIAR): 63 pp. [Summarising projects to advance seed orchard programs, create advanced progeny trials, establish gene resource populations, and develop demonstration plots to guide current and prospective growers in key regions.]

Pavan, S.. Schiavulli, A., Marcotrigiano, A.R., Bardaro, N., Bracuto, V., Ricciardi, F., Charnikhova, T., Lotti, C., Bouwmeester, H. and Ricciardi, L. 2016. Characterization of low-strigolactone germplasm in pea (*Pisum sativum* L.) resistant to crenate broomrape (*Orobanche crenata* Forsk.). Molecular Plant-Microbe Interactions 29(10):743-749.[Describing the selection of a pea line highly resistant to *O. crenata*, with reduced strigolactone exudation , suitable for use in a breeding programme.]

Peng Fang, Xu Rong, Wang Xia, Xu ChangQing, Liu TongNing and Chen Jun. 2016. Effect of the steaming process on quality of postharvest *Cistanche deserticola* for medicinal use during sun drying. Biological & Pharmaceutical Bulletin 39(12): 2066-2070. [Results suggest that steaming is effective in enhancing the appearance and quality and the concentration of some bioactive compounds in ‘Cistanches Herba’.]

*Peng WenHuang, Chen YiWen, Lee MengShiou, Chang WenTe, Tsai JenChieh, Lin YingChih and Lin MingKuem. 2016. Hepatoprotective effect of *Cuscuta campestris* Yunck. whole plant on carbon tetrachloride induced chronic liver injury in mice. International Journal of Molecular Sciences 17(12): 2056. (http://www.mdpi.com/1422-0067/17/12/2056/htm) [Confirming that a *C. campestris* whole-plant extract possesses a hepatoprotective activity to ameliorate chronic liver injury, apparently due to a decrease in malondialdehyde level by increasing the activities of antioxidant enzymes such as SOD, GPx and GRd.]

Pérez-Crespo, M.J., Lara, C. and Ornelas, J.F. 2016. Uncorrelated mistletoe infection patterns and mating success with local host specialization in *Psittacanthus calyculatus* (Loranthaceae). Evolutionary Ecology 30(6): 1061-1080. [Describing studies with *P. calyculatus* (Loranthaceae) on native hosts *Alnus acuminata*, *Quercus crassipes* and *Salix bonplandiana* and the non-native *Populus alba,* and concluding that non-random mating could contribute to local genetic structuring of mistletoe populations.]

*Pérez-de-Luque, A., Flores, F. and Rubiales, D. 2016. Differences in crenate broomrape parasitism dynamics on three legume crops using a thermal time model. Frontiers in Plant Science 7(December 2016): 1910. (http://journal.frontiersin.org/article/10.3389/fpls.2016.01910/full) [Studies on the rate of development of *O. crenata* on faba bean, grass pea and lentil confirmed that there are differences in parasite virulence on the different host species. There is a sigmoidal relation between thermal time and parasite development and such relation will show the differences in parasite development between hosts. The results are of potentuial value in the timing of herbicide application.]

*Péron, T.. Candat, A., Montiel, G., Veronesi, C., Macherel, D., Delavault, P. and Simier, P. 2017. New insights into phloem unloading and expression of sucrose transporters in vegetative sinks of the parasitic plant *Phelipanche ramosa l.* (Pomel). Frontiers in Plant Science 8(January): 2048.. (http://journal.frontiersin.org/article/10.3389/fpls.2016.02048/full) [The plant-parasitic plant interaction is a interesting model to study sink-source relationship and phloem unloading. The application of the fluorescent symplastic tracer, carboxyfluorescein (CF) derived from carboxyfluorescein diacetate (CFDA), to the leaves of the host plant (*Brassica napus*) showed direct phloem connections at the host-parasite interface. cDNAs encoding sucrose transporters were isolated from the parasitic plant *P. ramosa* and their transient expression was characterized.]

Petrova, S.E. and Pavlenko, E.V. 2017. (Biology and morpho-anatomical peculiarities of *Pedicularis sceptrum-carolinum* (Scrophulariaceae) in the Khibiny Foothills.) (in Russian) Botanicheskiĭ Zhurnal 102(4): 526-539. [*P. sceptrum-carolinum* parasitises *Equisetum fluviatile*, *Betula alba* and *Salix glauca* but apparently fails to make full attachment to other hosts. It fails to mature without a host. Leaves have water-excreting glands.]

Pietrzak, W., Nowak, R., Gawlik-Dziki, U., Lemieszek, M.K. and Rzeski, W. 2017. LC-ESI-MS/MS identification of biologically active phenolic compounds in mistletoe berry extracts from different host trees. Molecules 22(4): 624. [The highest content of phenolic acids was found in *V. album* berries from *Populus nigra* and highest flavonoid aglycones in those from *Tilia cordata*. Extracts decreased proliferation of human colon adenocarcinoma cells line LS180.

Piwowarczyk, R., Kwolek, D., Góralski, G., Denysenko, M., Joachimiak, A.J. and Aleksanyan, A. 2017. First report of the holoparasitic flowering plant *Cistanche armena* on Caspian manna (*Alhagi maurorum*) in Armenia. Plant Disease 101(3): 512.

Piwowarczyk, R., Pedraja, Ó.S. and Moral, G.M. 2017. *Phelipanche sevanensis* (Orobanchaceae): a new species from the Caucasus, and nomenclatural notes on similar species. Phytotaxa 292(3): 231-242. [Describing *P. sevanensis* from Armenia where it parasitises *Heracleum trachyloma*, a Caucasian endemic. It is closest to *P. heldreichii*. Also providing nomenclatural notes on *P. coelestis*, *P. hohenackeri*, *P. persica* and *P. simplex*.]

Popoola, T.D., Awodele, O., Omisanya, A., Obi, N., Umezinwa, C. and Fatokun, A.A. 2016. Three indigenous plants used in anti-cancer remedies, *Garcinia kola* Heckel (stem bark), *Uvaria chamae* P. Beauv. (root) and *Olax subscorpioidea* Oliv. (root) show analgesic and anti-inflammatory activities in animal models. Journal of Ethnopharmacology 194: 440-449.

Pritchard, K.R., Hagar, J.C. and Shaw, D.C. 2017. Oak mistletoe (*Phoradendron villosum*) is linked to microhabitat availability and avian diversity in Oregon white oak (*Quercus garryana*) woodlands. Botany 95(3): 283-294. [From 2016 IUFRO Conference. Concluding that maintaining some *P.villosum* in *Q, garryana* is desirable in terms of supporting bird species richness. In particular, *P. villosum* is an important food for Western Bluebird (*Sialia mexicana*) and other wildlife in late autumn and early winter.]

Punia, S.S. 2016. Effectiveness of different measures on control of *Orobanche aegyptiaca* in Indian mustard. Agricultural Research Journal 53(2): 276-279. [Various treatments with pendimethalin, triasulfuron, sulfosulfuron, castor cake and neem cake failed to provide adequate control of *O. aegyptiaca* in mustard, but glyphosate at 25 ga/ha (+1% ammonium sulphate) applied at 25 and 55 days after sowing gave good control and increased yields.]

Quan JiShu, Wang YuJiao, Yin JiFeng, Gao Feng and Yin XueZhe. 2016. (Inhibitory effect of polysaccharides from *Boschniakia rossica* on oxidative stress in HepG2 cells.) (in Chinese) Food Research and Development 37(11): 6-9. [An extract of *B. rossica* had an inhibitory effect on oxidative stress induced by H_2O_2 in HepG2 cells, and could relieve the oxidative damage of HepG2 cells.]

Quang Vuong Le, Tennakoon, K.U., Metali, F., Lim, L.B.L. and Bolin, J.F. 2016. Host specific variation in photosynthesis of an obligate xylem-tapping mistletoe *Dendrophthoe curvata* in a Bornean heath forest. Nordic Journal of Botany 34(2): 235-243. [Describing a range of differences in photosynthesis and other metabolic activities in *D. curvata* parasitising 4 different host trees in Brunei Darussalam. Host and parasite photosynthesis were similar when the host was *Acacia auriculiformis*. Parasite photosynthesis was lower than that of *Vitex pinnata* and higher than that of *Andira inermis* and *Mangifera indica*.]

Ramírez-Fischer, F.J., Benyamini, D. and Vargas, H.A. 2016. An endangered hemiparasitic shrub is the only host plant of the little-known neotropical hairstreak *Strymon flavaria* (Lepidoptera: Lycaenidae) in the arid Andes. Journal of Insect Conservation 20(5): 923-928. [Confirming that the sole food plant for the larvae of *S. flavaria* in Chile is *Krameria lappacea*.]

Ramón, P. de la Cruz, M., Zavala, I. and Zavala, M.A. 2016. Factors influencing the dispersion of *Arceuthobium oxycedri* in Central Spain: evaluation with a new null model for marked point patterns. Forest Pathology 46(6): 610-621. [Concluding that spread of *A. oxycedri* on *Juniperus oxycedrus* depends not only on explosive dispersal but must also involve some transport on birds or small mammals.]

Rîşnoveanu, L., Joiţa-Păcureanu, M. and Gabriel Anton, F. 2016. Broomrape (*Orobanche cumana* Wallr.), the most important parasite in sunflower crop in Romania. Lucrări Ştiinţifice, Universitatea de Stiinte Agricole Şi Medicină Veterinară "Ion Ionescu de la Brad" Iaşi, Seria Agronomie 59(2): 209-212. [Reviewing the importance of *O. cumana* in Romania and the development of cultivars with dominant genes for resistance to races A, B, C, D, E and F. Hybrids having resistance to new populations more virulent than race F have been produced by incorporating genes of resistance from wild *Helianthus* species. But results are complicated by at least three different new populations in the country.]

Ritter, S.M., Hoffman, C.M., Ex, S.A. and Stewart, J.E. 2017. Impacts of lodgepole pine dwarf mistletoe (*Arceuthobium americanum*) infestation on stand structure and fuel load in lodgepole pine dominated forests in central Colorado. Botany 95(3): 307-321.[From 2016 IUFRO Conference. Confirming the assumption that dwarf mistletoe increases surface fuel loading in lodgepole pine communities, but also suggesting that stands infested by *A. americanum* have reduced amounts of available canopy fuel.]

Rivera, D., Verde, A., Obón, C., Alcaraz, F., Moreno, C., Egea, T., Fajardo, J., Palazón, J.A., Valdés, A., Signorini, M.A. and Bruschi, P. 2017. Is there nothing new under the sun? The influence of herbals and pharmacopoeias on ethnobotanical traditions in Albacete (Spain). Journal of Ethnopharmacology 195: 117. [Reviewing the content of the Albacete tariff of medicines of 1526 and analyzing the origin and influences of medicinal traditional knowledge in the region of Albacete, Spain. Including mention of *Santalum album*.]

Rodenburg, J., Cissoko, M., Kayongo, N., Dieng, I., Bisikwa, J., Irakiza, R., Masoka, I., Midega, C.A.O. and Scholes, J. 2017. Genetic variation and host–parasite specificity of *Striga* resistance and tolerance in rice: the need for predictive breeding. New Phytologist 214(3): 1267-1280. [A detailed study of the complex interactions between *Striga* spp. (*S. hermonthica* in Kenya and Uganda and *S. asiatica* in Tanzania) and a range of rice varieties, confirming that resistance and tolerance are quite independent characters. Results support the need for predictive breeding strategies based on knowledge of host resistance/tolerance and parasite virulence.]

*Rolland, M., Dupuy, A., Pelleray, A. and Delavault, P. 2016. Molecular identification of broomrape species from a single seed by High Resolution Melting analysis. Frontiers in Plant Science 7(December, 2016): 1838 . (http://journal.frontiersin.org/article/10.3389/fpls.2016.01838/full) [Describing a High Resolution Melting assay based on *trn*L and *rbc*L plastidial genes amplification, by which single seeds of the 8 most important *Orobanche* and *Phelipanche* species can be distinguished from other species but not from each other, with 90% accuracy.]

Roszaini, K., Salmiah, U., Rahim, S., Azrieda, A.R.N. and Baharudin, K. 2016. Natural durability of twenty two Malaysian commercial timbers.Timber Technology Bulletin No. 61: pp.12. [Including information on *Scorodocarpus borneensis* (Olacaceae).]

Roux, A. 2016. Orobanches and some other plants devoid of chlorophyll.) (in French) Bulletin Mycologique et Botanique Dauphiné-Savoie 56(223): 35-51. [A general review, also covering non-photosynthetic *Orchidaceae* and *Ericaeae*.]

*Rubiales, D., Rojas-Molina, M.M. and Sillero, J.C. 2016. Characterization of resistance mechanisms in faba bean (*Vicia faba*) against Broomrape species (*Orobanche* and *Phelipanche* spp.). Frontiers in Plant Science 7(November, 2016): 1747. (http://journal.frontiersin.org/article/10.3389/fpls.2016.01747/full) [Reporting on rhizotrons studies to determine resistance components in faba bean accessions against *O. crenata*, *O. foetida* var. *broteri* and *P. aegyptiaca*, and the non-virulent *P. ramosa* and *O. foetida* var. *foetida* Most resistance showed up as necrosis after attachment. Cv baraca showed at least partial resistance to all parasite samples. The two non-virulent differed from all others in showing 'negative tropism' - (and/or lack of positive chemotropism, providing some long-overdue reminder of the importance of this factor in parasitic weed biology).]

Sánchez-Gómez, P., Jiménez, J.F., Cánovas, J.L., Catalán, A., López-Donate, J.A., del Río, J. and Vera Pérez, J.B. 2016. (New floristic records for the province of Albacete and Granada.) (in Spanish) Anales de Biología 38: 109-114. [Including *Orobanche arenaria* partasitising *Artemisia campestris* subsp. *glutinosa*.]

Sanchez-Puerta, M.V., García, L E., Wohlfeiler, J. and Ceriotti, L.F. 2017. Unparalleled replacement of native mitochondrial genes by foreign homologs in a holoparasitic plant. New Phytologist 214(1): 376-387. [In a large-scale mitochondrial genomic study of the holoparasitic plant *Lophophytum mirabile* (Balanophoraceae) the unprecedented acquisition of host-derived mitochondrial genes was revealed, representing 80% of the protein-coding gene content. The genome consists of 54 circular-mapping chromosomes, 25 of which carry no intact genes. The use of host-derived genes may have a positive effect on the host-parasite relationship, but could also be the result of non-adaptive forces.]

Sandner, T.M. and Matthies, D. 2017. Interactions of inbreeding and stress by poor host quality in a root hemiparasite. Annals of Botany 119(1): 143-150. [In studies on *Rhinanthus alectorolophus* in Germany results contradict the common assumption that inbreeding depression is generally higher in more stressful environments. In addition, they support the importance of diverse host communities for hemiparasitic plants.]

Santhosh Poojary, Rao, C.V. and Venkatesh, K.H. 2017. *Scleropyrum pentandrum* (Dennst.) mabb - oil as a feedstock for biodiesel production - engine performance and emission studies. International Journal of Green Energy 14(3): 279-288. [The seeds of *S. pentandrum* (Santalaceae), growing in India, are rich in non-edible oils which prove to be quite suitable as biodiesel.]

Santos, J.C., Nascimento, A.R.T., Marzinek, J., Leiner, N. and Oliveira, P.E. 2017. Distribution, host plants and floral biology of the root holoparasite *Langsdorffia hypogaea* in the Brazilian savanna. Flora (Jena) 226: 65-71 [This holoparasite showed an aggregated distribution in patches, similar sex ratio and abundance between populations, and a generalist host preference (over 20 species). Both male and female inflorescences produce relatively dilute nectar from bracts that is collected by generalist insects and apparently a corvid bird (*Cyanocorax cyanopogon*).]

Sarić-Krsmanović, M., Božić, D., Radivojević, L., Umiljendić, J.G. and Vrbničanin, S. 2016. Impact of field dodder (*Cuscuta campestris* Yunk.) on physiological and anatomical changes in untreated and herbicide-treated alfalfa plants. Pesticidi i Fitomedicina 31(3/4): 115-120. [Recording pigments (chlorophyll *a*, chlorophyll *b*, total carotenoids) and a wide range of anatomical features in alfalfa plants with or without *C. campestris* treated with imazethapyr or not. Plants infested by *C. campestris* had lower values of most anatomical parameters, compared to noninfested or herbicide-treated plants.]

Sayad, E., Boshkar, E. and Gholami, S. 2017. Different role of host and habitat features in determining spatial distribution of mistletoe infection. Forest Ecology and Management .384: 323-330. [Detailing the distribution of *Loranthus europaeus* in (unspecified) oak forest in western Iran. 23% of trees were infected and it appears that the first infections occur in the middle crown from which there is spread to lower branches.]

Scalon, M.C., dos Reis, S.A. and Rossatto, D.R. 2017. Shifting from acquisitive to conservative: the effects of *Phoradendron affine* (Santalaceae) infection in leaf morpho-physiological traits of a Neotropical tree species. Australian Journal of Botany 65(1): 31-37. .[Leaves of *Handroanthus chrysotrichus*, parasitised by *Phoradendron affine* were scleromorphic and showed stronger water-use control (less negative water potential) than host leaves from uninfected branches.]

Scalon, M.C., Wright, I.J. and Franco, A.C. 2017. To recycle or steal? Nutrient resorption in Australian and Brazilian mistletoes from three low-phosphorus sites. Oikos 126(1): 32-39. [Mistletoes studied in Brazil included *Passovia ovata, Psittacanthus robustus,*and *P. crassifolium*, and at 2 sites in Australia *Amyema sanguinea, A. miquelii, A. congener, Dendrophthe odontocalyx, D. vitellina, Decaisnina signata* and*, Muellerina eucalyptoides*. There was little evidence of N, Ca or Mg resorption, but, on average ca. 30% of P and ca. 20% of K were resorbed prior to leaf fall.]

Schneider, A.C. 2016. Resurrection of the genus *Aphyllon* for New World broomrapes (Orobanche s.l., Orobanchaceae). PhytoKeys 75: 107-118. [Based on molecular phylogenetic studies, all species in the monophyletic clade of New World broomrapes (*Orobanche* sects. *Gymnocaulis* and *Nothaphyllon*) are placed in the genus *Aphyllon* resulting in 21 new combinations.]

*Semenchuk, P.R., Gillespie, M.A.K., Rumpf, S.B., Baggesen, N., Elberling, B. and Cooper, E.J. 2016. High Arctic plant phenology is determined by snowmelt patterns but duration of phenological periods is fixed: an example of periodicity. Environmental Research Letters 11(12): 125006. (http://iopscience.iop.org/article/10.1088/1748-9326/11/12/125006/meta) [The study involved *Pedicularis hirsuta* one of the 8 commonest species in the study area.]

Shaw, D.C. and Agne, M.C. 2017. Fire and dwarf mistletoe (Viscaceae: *Arceuthobium* species) in western North America: contrasting *Arceuthobium tsugense* and *Arceuthobium americanum.* Botany 95(3): 231-246. [From 2016 IUFRO Conference. Discussing the role of fire in the ecology of *A. americanum* on lodgepole pine and *A. tsugense* on western hemlock.]

Shaw, D.C. and Shamoun, S.F. 2017. 2016 IUFRO Conference: Mistletoes: Pathogens, Keystone Resource, and Medicinal Wonder, Ashland, Oregon, USA, 18-21 July 2016. Botany 95(3): 211-356. [Introducing this special issue of Botany, incorporating the procedings of the IUFRO Conference reviewed in Haustorium 70.]

Shehu, S., Ibrahim, G., Iliyasu, U., Shehu, S., Nuhu, A. and Abubakar, M.S. 2016. Evaluation of antiulcer activity of aqueous ethanol extract of *Thesium viride* on ethanol and aspirin induced models in rats. Bayero Journal of Pure and Applied Sciences 9(2): 82-85. [*T. viride* is used in treatment of ulcers and jaundice in Nigeria. Confirming that an aqueous ethanol extract contained flavonoids, anthraquinones, glycosides and alkaloids, and finding activity against induced ulcers in rats without significant toxicity.]

Sheldrake, M., Rosenstock, N.P., Revillini, D., Olsson, P.A., Wright, S.J. and Turner, B.L. 2017. A phosphorus threshold for mycoheterotrophic plants in tropical forests. Proceedings of the Royal Society of London. Series B, Biological Sciences 284(1848): 20162093. [A survey in Panama showed that mycoheterotrophs were entirely absent when soil exchangeable concentrations of P exceeded 2 mg P kg^{-1}. Laboratory studies confirmed that the abundance of AM fungi was greatly reduced above 2 mg P kg^{-1}.]

Shilo, T., Rubin, B., Plakhine, D., Gal, S., Amir, R., Hacham, Y., Wolf, S. and Eizenberg, H. 2017. Secondary effects of glyphosate action in *Phelipanche aegyptiaca*: inhibition of solute transport from the host plant to the parasite. 2017(8): 255. (https://www.ncbi.nlm.nih.gov/pmc/articles/PMC5326802/) [Confirming that, in addition to inhibiting the synthesis of aromatic amino acids in the parasite, *P. aegyptiaca,,* glyphosate additionally inhibits the translocation of phloem-mobile solutes to the parasite.]

Schötterl, S., Hübner, M., Armento, A., Veninga, V., Wirsik, N.M., Bernatz, S., Lentzen, H., Mittelbronn, M. and Naumann, U. 2017. Viscumins functionally modulate cell motility-associated gene expression. International Journal of Oncology 50(2): 684-696. [Demonstrating that the *Viscum album* extract Iscador Qu and the lectins

Aviscumine and ML-1 applied to glioma cells differentially modulate the expression of genes involved in the regulation of cell migration and invasion, including processes modulating cell architecture and cell adhesion, suggesting potential in the treatment of invasively growing tumors such as glioblastomas.]

Siddiqui, M.S., Memon, A.A., Shahabuddin Memon and Baloch, S.G. 2017. *Cuscuta reflexa* as a rich source of bioactive phenolic compounds. Journal of Herbs, Spices & Medicinal Plants 23(2): 157-168. [Among 16 phenolic compounds identified, caffeic and *p*-coumaric acids were the dominant constituents in both flowers and stem of *C. reflexa*. The radical scavenging potential and total phenolics content were greater in the stem than flowers, while total flavonoids and tannins were more prominent in flowers.]

Shettar, A.K. and Vedamurthy, A.B. 2017. Evaluation of *in-vitro* anthelmintic activity of *Ximenia americana*, *Hopea ponga* and *Vitex leucoxylon*. Pharmacognosy Journal 9(3): 367-371. [Confirming anthelmic activity of chlorophorm extracts of *X. americana*.]

Singh, S.R., Phurailatpam, A.K., Lyngdoh, N. and Pandey, A.K. 2016. *Loranthus ligustrinus* - a causal factor for Khasi mandarin (*Citrus reticulata* Balnco.) decline in Arunachal Pradesh. Asian Journal of Horticulture 11(2): 368-372. [*L. ligustrinus* (= *Helixanthera ligustrina* according to the abstract but = *Tripodanthus acutifolius* according to The Plant List) is seriously dmagaing khasi mandarin oranges in Arubnachal Pradesh and spreading. Trees may be killed in 5-6 years. Seeds are dispersed by plain flowerpecker and fire breasted flowerpecker.]

*Skippington, E., Barkman, T.J., Rice, D.W. and Palmer, J.D. 2017. Comparative mitogenomics indicates respiratory competence in parasitic *Viscum* despite loss of complex I and extreme sequence divergence, and reveals horizontal gene transfer and remarkable variation in genome size. BMC Plant Biology 17(49): (21 February 2017). (http://bmcplantbiol.biomedcentral.com/articles/10.1186/s12870-017-0992-8) [Aerobically respiring eukaryotes usually contain four respiratory-chain complexes (complexes I-IV) and an ATP synthase (complex V). The first loss of complex I in any multicellular eukaryote was recently reported in two hemiparasitic aerial mistletoes, *V. scurruloideum* and *V. album*. Interestingly, the study of *V. album* postulated that mitochondrial genes encoding all ribosomal RNAs and proteins of all respiratory complexes are either absent or pseudogenes, suggesting that the mitogenome and oxidative respiration may not be functional in this plant.]

Soriano, I. and Guàrdia, R. 2016. (Names of inaccurately attributed taxa to José Planellas Giralt (1820-1888).) (in Spanish) Acta Botanica Malacitana 41: 339-341. [Including the name *Orobanche caerulea* presumably mis-applied to *O. amethystea*.]

Sotek, Z., Stasińska, M., Malinowski, R., Meller, E., Grzejszczak, G. and Kurnicki, B. 2016. Distribution and habitat properties of *Carex pulicaris* and *Pedicularis sylvatica* at their range margin in NW Poland. Acta Societatis Botanicorum Poloniae 85(3): 3507. [*P. sylvatica,* associated with the phytocoenoses *Nardo-Juncetum squarrosi* and *Molinio-Arrhenatheretea*, is increasingly uncommon in NW Poland, due to worsening habitat conditions (insufficient moisture, eutrophication), expansion of competitive plant species and land abandonment.]

Suaza-Gaviria, V., González, F. and Pabón-Mora, N. 2017. Comparative inflorescence development in selected Andean Santalales. American Journal of Botany 104(1): 24-38. Suaza-Gaviria, V., González, F. and Pabón-Mora, N. 2017. Comparative inflorescence development in selected Andean Santalales. American Journal of Botany 104(1): 24-38. [Concluding that all inflorescence types in Santalales can be derived from a dichasium. This paper suffers from 1) insufficient (biased) taxon sampling, 2) misidentification of taxa, 3) misleading and superfluous terminology, 4) failure to apply proper methodology to address the issue of plesiomorphic inflorescence type in the order. For Phoradendreae (Viscaceae), the authors 1) doubt that flowers arise from an intercalary meristem, 2) provide no anatomical evidence supporting the dichasium as the inflorescence type and 3) do not explain how uniseriate, biseriate, and multiseriate inflorescences types can be derived from a dichasium.]

Sucharzewska, E., Marczakiewicz, M. and Ejdys, E. 2016. *Puccinia passerinii* (Pucciniales) on *Thesium ebracteatum* in the Biebrza National Park - new data on its distribution in Central Europe. Acta Mycologica 51(2): 1083. [Describing *Puccinia passerinii* on *Thesium ebracteatum* a rare plant strictly protected in Poland.]

Şumălan, R.M., Sumalan, R.L., Copolovici, L., Ciulca, S., Yvin, J.C. and Ciulca, A. 2016. Research on sunflower oil quality in the case of *Orobanche cumana* attack. Research Journal of Agricultural Science 48(3): 34-38. Noting that *O. cumana* affects sunflower mostly in South-Eastern part of the Romania, especially in Buzau, Tulcea and Constanta counties. Comparison of oil from infected and uninfected plants showed that, in the varieties studied, there was no change in palmitic and stearic acid contents, but oleic and linoleic acids were increased.]

Sun LingLing, Ma Lu, Bu DengPan, Xu JianChu, Liu ShiJie and He MeiYing. 2017. (Effects of *Scleropyrum wallichianum* oil on *in vitro* rumen fermentation characteristics and fatty acid composition.) (in Chinese) Chinese Journal of Animal Nutrition 29(3): 1074-1081. ['Under the conditions of the present study, the levels of 1%, 2% and 3% *S. wallichianum* (Santalaceae) oil can increase the contents of unsaturated fatty acids and the concentrations of volatile fatty acids, and the level of 3% has the best effect.']

Sun Ting, Xu YuXing, Zhang DaLe, Zhuang HuiFu, Wu JianQiang and Sun GuiLing. 2016. An acyltransferase gene that putatively functions in anthocyanin modification was horizontally transferred from Fabaceae into the genus *Cuscuta*. Plant Diversity 38(3): 149-155. [Confirming gene transfer from unspecified Fabaceae to *C, australis* and to '*C, pentagona'*.]

Sun Yue, Li Biao and Guo ShunXing. 2017. (Research progress of saprophytic orchids. (in Chinese) Guangxi Zhiwu / Guihaia 37(2): 191-203. [An in-depth review of the saprophytic orchids (81 species in 23 genera) in China and their mycoheterotrophic habit.]

Sundararaj, R., Vimala, D. and Wilson, J.J. 2016. New record of scales and mealybugs (Hemiptera: Coccoidea) infesting sandalwood (*Santalum album* Linn.) in agroforestry conditions. Entomon 41(4): 347-350. [Recording infestation of *S. album* by 31 species of scales and mealybugs. Of these, seven are new records on *S. album*. No details in abstract.]

Susatya, A., Hidayati, S.N., Kamarudin Mat-Salleh and Mahyuni, R. 2017. Ramenta morphology and its variations in *Rafflesia* (Rafflesiaceae). Flora (Jena) 230: 39-46. [Characterising 5 tpes of ramentae, hair-like structures, and their value in the classification of 18 species of *Rafflesia* in Indonesia.]

Svubova, R., Lukacova, Z., Kastier, P. and Blehova, A. 2017. New aspects of dodder-tobacco interactions during haustorium development. Acta Physiologiae Plantarum 39(3): 66. [Noting that the haustorium of *Cuscuta eauropaea* exuded de-esterified pectins, which serve as a cementing material, while there was a dramatic increase in peroxidase activity and other changes in isoenzymes composition in the stems of tobacco attacked by the parasite.]

Tang XiaoXin, Li YanXun, Chen Ting, Sun Wei, Liu Jie, Yi Yin and Zhang Chao. 2017. (The current situation and utilization prospect of *Pedicularis resupinata* in Guizhou Province.) (in Chinese) Genomics and Applied Biology 36(4): 1682-1685. [Discussing the distribution of the 'beautiful' *P. resupinata* and its 'utilisation', but for what purpose not clear from abstract.]

Tanruean, K., Kaewnarin, K., Suwannarach, N. and Lumyong, S. 2017. Comparative evaluation of phytochemicals, and antidiabetic and antioxidant activities of *Cuscuta reflexa* grown on different hosts in northern Thailand. Natural Product Communications 12(1): 51-54. [The assumed active metabolites in *C. reflexa* varied only moderately according to the hosts it was growing on, with some indication that highest antidiabetic and antioxidant activity was in the parasite growing on *Coccinia grandis* compared with that growing on *Ficus racemosa* and *Samanea saman*.]

Teixeira-Costa, L., Coelho, F.M. and Ceccantini, G.C.T. 2017. Comparative phenology of mistletoes shows effect of different host species and temporal niche partitioning. Botany 95(3): 271-282. [From 2016 IUFRO Conference. Studying the contrasting phenologies of *Struthanthus martianus* and of *S. flexicaulis* in relation to those of their host trees – whether deciduous or evergreen, concluding that these species show niche partitioning to avoid competition and emphasising the uniqueness of each host-mistletoe relationship.]

Tepe, I., Celebİ, S.Z., Kaya, I. and Ozkan, R.Y. 2017. Control of smoothseed alfalfa dodder (*Cuscuta approximata*) in alfalfa (*Medicago sativa*). International Journal of Agriculture and Biology 19(1): 199-203. [In a field trial in Turkey, pre-emergence imazethaphyr, and pre- and post-emergence imazamox, each applied in the first season suppressed *C. approximata* in lucerne during the first year , but the effect decreased in the following years and the treatments reduced crop yield in the third year.].

Trabelsi, I., Abbes, Z., Amri, M. and Kharrat, M. 2016. Study of some resistance mechanisms to *Orobanche* spp. infestation in faba bean (*Vicia faba* L.) breeding lines in Tunisia. Plant Production Science 19(4): 562-573. [Seven breeding lines were compared with the susceptible Badi, and found to have partial resistance to both *O. foetida* and *O. crenata*, associated with reduced stimulant exudation. Lines L6 and L7 were least affected. L5 was more parasitised but yielded better, suggesting tolerance.]

Trunschke, J. and Stöcklin, J. 2017. Plasticity of flower longevity in alpine plants is increased in populations from high elevation compared to low elevation populations. Alpine Botany 127(1): 41-51. [A *Euphrasia* species was involved in the study, but sadly the abstract does not indicate how it reacted.]

Vasundhara, M., Nuthan, D., Rao, G.G.E. and Priyanka, R. 2017. Screening and profiling of sandal seeds collected from provenances of Karnataka. Current Trends in Biotechnology and Pharmacy 11(1): 53-59. [Showing that *Santalum album*, being increasingly cultivated in Karnataka, is superior to *S. spicatum* as a source of xymenynic (= santalbic) acid, an oil used as an ingredient of skin creams.]

van Wyk, B.E. and Gorelik, B. 2017. The history and ethnobotany of Cape herbal teas. South African Journal of Botany 110: 18-38. [Including unspecified *Viscum* and *Thesium* spp. among species used as herbal teas.]

Vijay, C.R., Thriveni, M.C. and Shivamurthy, G.R. 2017. Seed surface micro morphological features of the holoparasitic angiosperm *Aeginetia* spp. (Orobanchaceae) in South India. Proceedings of the Indian National Science Academy 83(1): 197-201. [Detailing differences in the seed sculpturing of *Aeginetia pedunculata*, *A. sessilis* and *A. indica* , and noting these as a useful means to distinguish between the otherwiise morphologically similar *A. pedunculata* and *A. sessilis*.]

Vitelli, J.S., Williams, A.M., Riding, N., Chamberlain, A.A., Austin, P. and Stampa, D. 2016. Operation witch hunt: conjuring eradication of the parasitic red witchweed plant with trickery and potions. In: Randall, R., Lloyd, S.

and Borger, C. (eds) 20th Australasian Weeds Conference, Perth, Western Australia, 11-15 September 2016: 292-295. [In a trial aiming to determine effective eradication of *Striga asiatica* seeds from the soil in the area of Queensland where it affects sugar cane, after 6 months a sorghum catch crop gave the greatestt reduction in seed viability, followed by the fumigants dazomat and ethylene. It is estimated that the seed bank could be exhausted in 3 years.]

Vurro, M., Pérez-de-Luque, A. and Eizenberg, H. 2017. Parasitic Weeds. In: Hatcher, P.E. and Froud-Williams (eds.) Weed Research: Expanding Horizons, 1st Edition. John Wiley & Sons, Ltd: 313-353. [A general review covering the problems of parasitic weeds in Europe, their distribution, biology, management and control, including the possibilities of microbial toxins, precision agriculture and nano-technology.]

*Wan Zakaria, W.N.F., Ahmad Puad, A.S., Geri, C., Zainudin, R. and Latiff, A. 2016. *Tetrastigma diepenhorstii* (Miq.) Latiff (Vitaceae), a new host of *Rafflesia tuan-mudae* Becc. (Rafflesiaceae) in Borneo. Journal of Botany 2016. Article ID 3952323. (https://www.hindawi.com/journals/jb/2016/3952323/) [This paper reports a host range extension for *R. tuan-mudae* but also steps into the complex taxonomic and nomenclatural issue surrounding these host plants. Two important publications were omitted (Veldkamp 2008, 2009); if consulted, the name *T. rafflesiae* should have been corrected to *T. coriaceum*. The introduction uses an outdated concept of Rafflesiaceae (broad sense, circa Flora Malesiana 1997).]

Wang Dan, Cao SiShuo, Kang Hua, Du Jun, Kuang Rong and Li MinJie. 2016. (Acute and sub-chronic toxicity of *Ginkgo biloba* and *Cistanche tubulosa* formula on rats.) (in Chinese) Northwest Pharmaceutical Journal 31(6): 599-604. [Concluding that *C. tubulosa* formula is a non-toxic product up to 15 g/kg over 90 days in rats.]

*Wang DeYi, Wang Qiang, Wang YingLi, Xiang XiaoGuo, Huang LuQi and Jin XiaoHua. 2017. Evaluation of DNA barcodes in *Codonopsis* (Campanulaceae) and in some large angiosperm plant genera. PLoS ONE 12(2):.e0170286 . (http://journals.plos.org/plosone/article?id=10.1371/journal.pone.0170286) [Sequences of ITS and matK, rbcL, trnH-psbA were generated for 35 species (140 individuals) of *Codonopsis* and the ability of these barcoding loci evaluated for this genus. Sequences from 7 other large genera were obtained from Genbank, including *Pedicularis* 88 species (328 samples). A combination of ITS and matK performed best.]

Wang HongJuan, Li WeiTao, Liu YaNan, Yang FuSheng and Wang XiaoQuan. 2017. Resolving interspecific relationships within evolutionarily young lineages using RNA-seq data: an example from *Pedicularis* section *Cyathophora* (Orobanchaceae). Molecular Phylogenetics and Evolution 107: 345-355. [RNA-seq was applied to section *Cyathophora* (7 taxa, 4 species) to test whether different orthologous groups (OGs) can be combined for inferring phylogenies. The results showed that all OGs can be concatenated for phylogenomic reconstruction and interspecific relationships can be robustly inferred when ≥20 single-/low-copy nuclear genes or 25 OGs are used.]

Wang Jia, Baskin, J.M., Baskin, C.C., Liu GuoFang, Yang XueJun and Huang ZhenYing. 2017. Seed dormancy and germination of the medicinal holoparasitic plant *Cistanche deserticola* from the cold desert of northwest China. Plant Physiology and Biochemistry 115: 279-285. [Germination of *C. deserticola* takes at least 60 days to germinate. The highest germination (54.4%) was for seeds incubated in a 10^{-5} M solution of fluridone in darkness in spring that had overwintered on the soil surface in the natural habitat. Apparently, breaking of physiological dormancy occurs first and then the embryo grows to a critical length (0.44 mm) without differentiation into organs prior to seed germination.]

Wang YaJiao, Ji LiJing, Li QiuSheng, Wang LianSheng, Xiao Ying and Kong LingXiao. 2016. Isolation and identification of multifunction bio-control agent *Fusarium* against *Orobanche cernua*.) (in Chinese) Chinese Journal of Biological Control 32(6): 788-793. [Of 20 strains of *Fusarium* tested, 4 proved safe to crops and strain Br-2 (probably *F. oxysporum*) promoted the growth of tobacco, pepper and watermelon, and also had the best control effect on *O. cernua*. Seed germination was reduced by 72%, and heights of tobacco, pepper and watermelon increased 123%, 62% and 29%, respectively.]

Wang ZhiQiang, Hwang SeungHwan, Quispe, Y.N.G., Arce, P.H.G. and Lim SoonSung. 2017. Investigation of the antioxidant and aldose reductase inhibitory activities of extracts from Peruvian tea plant infusions. Food Chemistry 231: 222-230. [Concluding that a locally used tea infusion of a *Phoradendron* sp. can have useful functions as an antioxidant, aldose reductase inhibitor and anti-inflammatory agent.]

Waser, N.M., Price, M.V., Casco, G., Diaz, M., Morales, A.L. and Solverson, J. 2017. Effects of road dust on the pollination and reproduction of wildflowers. International Journal of Plant Sciences 178(2): 85-93. [Noting that 4 species including *Castilleja sulphurea* growing 1-2 m from a road received substantially more dust and less pollen than those growing 40-50 m away. But seed set was not necessarily affected. Possible mechanisms discussed.]

Watson, D.M. 2017. On tropical mistletoes: tractable models for evolutionary ecology, ecosystem function, and phytochemistry. Botany 95(3): 211-217. [From 2016 IUFRO Conference. Confirming the role of tropical mistletoes as facilitators for plant communities and keystone resources for animal assemblages. Further suggesting that tropical mistletoes offer many opportunities for further research and represent models

useful in addressing unanswered questions in biology. A good review of research on mistletoe pollination, seed dispersal, and host-range.]

Watson, D.M., Milner, K.V. and Leigh, A. 2017. Novel application of species richness estimators to predict the host range of parasites. International Journal for Parasitology 47(1): 31-39. [Using 3 mistletoe species *Amyema lucasii*, dependent on a single host species, *Amyema quandang*, dependent on hosts in one genus, and *Lysiana exocarpi*, dependent on many genera across multiple families, to assess a results-based stopping rule (stop sampling bioregion once observed host richness exceeds 80% of the host richness predicted using the Abundance-based Coverage Estimator) to predict host range.]

Wei JianTeng, Hu QingPing, Wang NingLi, Liu YeWei, Pei Dong and Di DuoLong. 2017. Evaluation and application of a novel quantitative antioxidant activity assay based on cellular metabolomics. Chromatographia 80(4): 617-627. [Describing a novel quantitative antioxidant activity assay based on cellular metabolomics, which is used to confirm useful antioxidant activity in flavanoids from *Cynomorium songaricum*]

*Wei ShuGen, Ma XiaoJun, Pan LiMei, Miao JianHua, Fu JiNe, Bai LongHua, Zhang ZhongLian, Guan YanHong, Mo ChangMing, Huang Hao and Chen MaoShan. 2017. Transcriptome analysis of *Taxillus chinensis* (*DC.*) danser seeds in response to water loss. PLoS ONE 12(1): e0169177. (http://journals.plos.org/plosone/article?id=10.1371/journal.pone.0169177) [Detailed study of the transcriptome of *Taxillus chinensis* (used in Chinese medicine) providing 'insights into the gene regulations of 'loranthus' seeds in response to water loss and expand our current understanding of drought tolerance and germination of seeds.']

Wiesenborn, W.D. 2016. Conspecific pollen on insects visiting female flowers on the oak parasite *Phoradendron coryae* (Viscaceae). Western North American Naturalist 76(3): 265-274. [*P. coryae,* parasitizing *Quercus turbinella,* appeared to be pollinated mostly by *Attalus futilis* beetles due to their apparent abundance and by *Liohippelates* flies due to their relatively high pollen loads.]

Wilson, C.A. and Calvin, C.L. 2017. Metadata provide insights on patterns of epiparasitism in mistletoes (Santalales), an overlooked topic in forest biology. Botany 95(3): 259-269. [From 2016 IUFRO Conference. A detailed review of epiparasitism in mistleotes. Most hosts of epiparasites are Loranthaceae, while the epiparasites are mostly Viscaceae. 27 may be obligate epiparasites. There are none on Misodendraceae and few on Santalaceae. In *Phacellaria* (Amphorogynaceae) all species are obligate epiparasites, mainly on Loranthaceae.]

Wołkowycki, D. and Pawlikowski, P.2016. (Threatened and legally protected species of vascular plants of the Romincka Forest (NE Poland).) (in Polish) Fragmenta Floristica et Geobotanica Polonica 23(1): 13-28. [Including *Orobanche pallidiflora.*]

Xiao ZhiYe, Hutang GeRan, Wang SiHai, Zhao Neng, Chen ZhongHua, Yuan XiaoLong, Zheng Ke and Wang Yi. 2017. (Study on the antimicrobial activity from the crude extracts of roots of *Malania oleifera* Chun et Lee.) (in Chinese) Journal of West China Forestry Science 46(2): 68-73. [Root extrtacts of *M. oleifera* had antibacterial activity against *Bacillus cereus*, *Staphylococcus haemolyticus* and *Streptcoccus agalactiae*.]

*Wolter, J., Lantuit, H., Fritz, M., Macias-Fauria, M., Myers-Smith, I. and Herzschuh, U. 2016. Vegetation composition and shrub extent on the Yukon coast, Canada, are strongly linked to ice-wedge polygon degradation. Polar Research 35: 27489. (http://www.tandfonline.com/doi/pdf/10.3402/polar.v35.27489?needAccess=true) [Noting that wetland and aquatic species, including *Pedicularis sudetica*, grow in low-lying centres of polygons and in troughs between polygons. Warming conditions are likely to see increased competition from shrubs.]

Xia Bo, Liu LiYing, Zhang QingHe, Han FuZhong, Luo YouQing and Tian ChengMing. 2017. Impact of *Arceuthobium sichuanense* infection on needles and current-year shoots of *Picea crassifolia and Picea purpurea* in Qinghai Province, China. European Journal of Plant Pathology 147(4): 845-854. [Results demonstrated that *P. purpurea* may suffer more negative effects induced by *A. sichuanense* infections at needle and branch levels than *P. crassifolia*.]

Xu, D.S., Zhang, Y.Y., Zhao, J.X. and Zhao, J. 2016. First report of broomrape wilt caused by *Plectosphaerella cucumerina* in Inner Mongolia, China. Plant Disease 100 (12): 2538. [Recorded on *Orobanche cumana*.]

*Xu XiaoXue, Zhang ZhuanZhuan, Wang WenPing, Yao HuiQin and Ma XueQin. 2017. Therapeutic effect of cistanoside A on bone metabolism of ovariectomized mice. Molecules 22(2): 197. [http://www.mdpi.com/1420-3049/22/2/197/htm} [Finding that cistanoside A from *Cistanche deserticola*, by down-regulating TRAF6, coordinates the inhibition of NF-κB and stimulation of PI3K/Akt pathways to promote bone formation and prevent bone resorption, confirming its potential as a promising agent for the treatment of osteoporosis.]

Yan HongYu, Hu JiaLin, Bi Lei, Zhang Yuan, Yang Fei and Yang Guan'e. 2016. (Effects of *Loranthus tanakae* extracts on growth of *Rhodopseudanonas palustris*.) (in Chinese) Zhongguo Weishengtaxixue Zazhi / Chinese Journal of Microecology 28(9): 1002-1004. [The growth of the photosynthetic bacteria *R. palustris* was promoted at low concentrations of *L. tanakae* extracts, but inhibited at high concentrations.]

Yang LiYuan, Lin Jun, Zhou Bin, Liu YanGang and Zhu BaoQuan. 2017. Activity of compounds from *Taxillus sutchuenensis* as inhibitors of HCV NS3 serine protease. Natural Product Research 31(4): 487-491. [Concluding that flavonoids and diarylheptanoids were responsible for the anti-hepatitis C virus activity in the traditional Chinese medicinal, *T. sutchuenensis* and that these inhibitors might serve as potential candidate of anti-HCV agents.]

Yan Yu, Song QingQing, Chen XiaoJia, Li Jun, Li Peng, Wang YiTao, Liu TongXiang, Song YueLin and Tu PengFei. 2017. Simultaneous determination of components with wide polarity and content ranges in *Cistanche tubulosa* using serially coupled reverse phase-hydrophilic interaction chromatography-tandem mass spectrometry. Journal of Chromatography, A 1501: 39-50. [Devising methodology contributing to in-depth quality evaluation of *C. tubulosa* and for understanding the metabolome of plants.]

Yang XingYu, Liu HuanFang, Wei ShouXing, Qin XinDao, Chen Shi and Ma GuoHua. 2017. (Ontogenesis of vascular tissue in haustoria of *Santalum album* L.) (in Chinese) Journal of Tropical and Subtropical Botany 25(1): 13-19. [Before invasion, the vascular tissues of the haustorium of *S. album* are located at the base of the haustorium without apical differentiation. After invasion, it started to differentiate and connect into the host roots with an absorption function. The vascular tissues contained only xylem without phloem.]

Ye WenBin, Fan Liang, Wang Yu, Huang ZhaoHui, Zhao QingFang, Guo ShouJun and Zhou ZiJuan. 2017. (The protection mechanism of *Viscum coloratum* (Kom.) Nakai f.. *lutescens kitag* fruit polysaccharides on acute alcoholic liver injury in mice.) (in Chinese) Journal of Anhui Agricultural University 44(2): 218-223. [Confirming some useful activity from *V. coloratum* in protecting mice from acute alcoholic liver injury.]

Ye XiaoXin, Chen Jie, McErlean, C.S.P., Zhang Meng, Yu Rui, and Ma YongQing. 2017. The potential of foxtail millet as a trap crop for sunflower broomrape. Acta Physiologiae Plantarum 39(1): 1. [Exudates from *Setaria italica* stimulated germination of *O. cumana in vitro* (germination slightly increased by P, greatly reduced by N), and field trials showed a rotation with the millet substantially reduced infestation and increased sunflower yields.]

Ye XiaoXin, Zhang Meng, Dong ShuQi and Ma YongQing. 2017. Conditioning duration and agents involved in broomrape seeds responding to germination stimulants. Plant Growth Regulation 81(2): 221-230. [Laboratory studies showed that GA_3 could substitute for the usual 4-10 day conditioning period required by both *Orobanche cumana* and *O. aegyptiaca*. It also stimulated germination of the latter at 100 µM of GA_3 but not of *O. cumana*. Both species germinated, to slightly differing levels, in response to strigol, GR24, tobacco root exudates, dehydrocostus lactones and maize root exudates.]

Yin XueZhe, Piao Long, Jin AiHua, Gao Feng and Quan JiShu. 2016. (Anti-angiogenic effect of iridoid glucosides from *Boschniakia rossica* in H_{22}-bearing mice.) (in Chinese) Food Research and Development 37(14): 1-4. [Iridoid glucoside from *B. rossica* exhibited anti-angiogenic effect against H_{22} hepatoma cells in mice, and its mechanism was probably related to down-regulation of HIF-1α and VEGF proteins.]

Yohannes, T., Ngugi, K., Ariga, E., Abraha, T., Yao, N., Asami, P. and Ahonsi, M. 2016. Genotypic variation for low striga germination stimulation in sorghum "*Sorghum bicolor* (L.) Moench" landraces from Eritrea. American Journal of Plant Sciences 7(17): 2470-2482. [Laboratory study identifying lines EG830, EG1076, EG473, EG 1261 and EG546 as having low stimulant exudation.]

Yohannes, T., Ngugi, K., Ariga, E., Ahonsi, M., Yao, N. and Abraha, T. 2017. A diagnostic appraisal of sorghum farming in Striga endemic areas of Eritrea. Journal of Agricultural Science (Toronto) 9(5): 133-141. [In a survey of *Striga hermonthicxa*-infested areas of Eritrea, *Striga* was second only to drought as the most serious constraint to sorghum yields. The crop varieties most widely selected for these conditions were 31 landraces.]

*Yoo JaeMyung, Yang JuHye, Kim YoungSoo, Cho WonKyung and Ma JinYeul. 2016. Inhibitory effect of *Loranthus parasiticus* on IgE-mediated allergic responses in RBL-2H3 cells. Mediators of Inflammation 2016: Article ID 8742562. (https://www.hindawi.com/journals/mi/2016/8742562/) [Results suggest that the phenolic compounds or flavonoids contained in *L. parasiticus* (= *Scurrulka parasitica*) may be associated with antiallergic activity.]

Yoo JaeMyung, Yang JuHye, Kim YoungSoo, Yang HyeJin, Cho WonKyung and Ma JinYeul. 2017. Inhibitory effects of *Viscum coloratum* extract on IgE/antigen-activated mast cells and mast cell-derived inflammatory mediator-activated chondrocytes. Molecules 22(1): 37. (http://www.mdpi.com/1420-3049/22/1/37/htm) [Concluding that extracts of *V. coloratum* possess both anti-allergic and anti-osteoarthritic properties such that they could be considered a new herbal drug for anti-allergic and anti-osteoarthritic therapy.].

Zamaloa, M.del C. and Fernández, C.A. 2016. Pollen morphology and fossil record of the feathery mistletoe family Misodendraceae. Grana 55(4): 278-285. [SEM and LM were used to examine pollen from 7 of the 8 species of *Misodendrum*. Cluster analysis of pollen characters differentiates two groups (subgenera *Angelopogon* and *Misodendrum*) consistent with a previous molecular and morphological study. Fossil pollen from Miocene clustered (using UPGMA) with subgenus *Angelopogon* whereas Eocene Misodendraceae were dissimilar to all extant *Misodendrum*.]

Zare, G. and Dönmez, A.A. 2016. Fruit and seed morphology of the tribe Orobancheae (Orobanchaceae) genera in Turkey and its taxonomic significance. Nordic Journal of Botany 34(2): 178-190. [Describing four different patterns in anticlinal and periclinal walls - smooth, perforate, microfibrillar and granulate. The first corresponds to the genus *Cistanche* and *Orobanche anatolica*, whereas types II, III and IV were found in *Diphelypaea*, *Orobanche* and *Phelipanche*, respectively.]

Zhang Le, Zhao YunShan, Wang, Z.A., Wei KunHua, Qiu Bin, Zhang ChunHong, Wang-Müller, Q.Y. andLi MinHui . 2016. The genus *Boschniakia* in China: an ethnopharmacological and phytochemical review. Journal of Ethnopharmacology 194: 987-1004. [Reviewing literature on *B. rossica* and *B. himalaica* which have long been used in traditional Chinese medicine for their multiple therapeutic uses related to enhanced renal function, erectile dysfunction, defaecate and hepatoprotective. They are also used as dietary supplements in wine, cosmetics, and other healthy food.]

Zhang WieJie, Huang Jing, Wang Wei, Li Qian, Chen Yao, Feng WeiWei, Zheng DaHeng, Zhao Ting, Mao GuangHua, Yang LiuQing and Wu XiangYang. 2016. Extraction, purification, characterization and antioxidant activities of polysaccharides from *Cistanche tubulosa*. International Journal of Biological Macromolecules 93(Part A: 448-458. [The results suggested that ultrasonic-cellulase-assisted extraction is an effective method for *C. tubulosa* polysaccharide extraction. The extracts showed appreciable antioxidant activity.]

Zhang XinHua, Zhao JieTang, da Silva, J.A.T. and Ma GuoHua. 2016. In vitro plant regeneration from nodal segments of the spontaneous F1 hybrid *Santalum yasi* × *S. album* and its parents *S. album* and *S. yasi*. Trees: Structure and Function 30(6): 1983-1994.

Ziegler, D.J. and Friedman, C.R. 2017. Morphology and stomatal density of developing *Arceuthobium americanum* (lodgepole pine dwarf mistletoe) fruit: a qualitative and quantitative analysis using environmental scanning electron microscopy. Botany 95(3): 347-356. [From 2016 IUFRO Conference. A detailed SEM study of the fruit of *A. americanum,* as it matured over two seasons after fertilization. Also the branching pattern of the shoots which tended to change from opposite decussate to verticillate as the plants aged.]

(NB. Congratulations to Dylan Ziegler on becoming Valedictorian for the Department of Science, Thompson Rivers University, for these and other studies on *Arceuthobium.* See: http://cfjctoday.com/article/574728/tru-science-graduate-stands-out-study-invasive-species-destroying-forests)

Ziegler, D.J. and Friedman, C.R. 2017. Vegetative and floral development in the pistillate plant of *Arceuthobium americanum* (lodgepole pine dwarf mistletoe): an environmental scanning electron microscopy study of its phenology and shoot organization. Botany 95(3): 337-346. [From 2016 IUFRO Conference. A detailed description of the development of shoots, flowera and fruit of *A. americanum* on *Pinus contorta.*]

Zubair Ahmed, Singh, J.B., Parveen Lehana and Dutt, H.C. 2016. Evaluating fate of *Viscum articulatum* on *Quercus baloot* using multivariate quadratic surface based function predictive model. In: Peshin, R., Dhawan, A.K., Bano, F. and Risam, K.S. (eds) Proceedings of the Indian Ecological Society International Conference, Sher-e-Kashmir University of Agricultural Sciences and Technology of Jammu, India, 18-20 February 2016 pp.489. (Showing that the main factor in favour of *V. articulatum* paraitising *Q. baloot* in northern India is a western slope which is moist.]

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