HAUSTORIUM

Parasitic Plants Newsletter
ISSN 1944-6969
Official Organ of the International Parasitic Plant Society
(http://www.parasiticplants.org/)

December 2018 **Number 75**

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MESSAGE FROM THE IPPS PRESIDENT

Dear IPPS Members,

I wish you all a very Happy New Year and lots of success with your parasitic plant research!

This year we have the 15th World Congress on Parasitic Plants, which will take place in Amsterdam from June 30th – July 5th. The venue looks fantastic and the meeting is a great opportunity to see friends and to network. Prof. Harro Bouwmeester is the local organizer and Registration and Abstract submission are now open on the WCPP-15 website (https://www.wcpp2019.org/program/). Please note that early registration at a reduced price is available until the 28th February so please register as soon as possible!

We have an exciting program of talks and poster presentations that cover different aspects of parasitic plant biology. There will be seven sessions including Host Plant Resistance, Genes and Genomes, Ecology, Phylogeny and Evolution, Molecules and Biochemistry, Control and Management, Parasitic Plant Biology and Parasitic plant-host interactions, so there's something for everyone! There will also be a conference tour (to be announced) and conference dinner.

On other matters, we are due to elect a new Editor for the IPPS Executive committee shortly, as Prof. Hinanit Koltai has now completed four years as Editor. I would like to take this opportunity thank Hinanit very much, for all the work she has done on the committee on behalf of the IPPS, it is much appreciated. I will send information to all IPPS members about the election of a new Editor in the next few weeks.

I look forward to seeing everyone in Amsterdam in June.

Best wishes,

Julie Scholes, IPPS President
J.Scholes@Sheffield.ac.uk

MEETING REPORTS

2nd International Congress on Strigolactones, Turin, Italy, 27th–31st March 2017

The Second International Congress on Strigolactones was held in Turin (Italy) on 27th-30th March 2017. The meeting was organized in the framework of the COST Action FA1206 'Strigolactones: biological roles and applications'. The meeting, organized by Prof Cristina Prandi, Chair of the Action FA1206 (University of Turin, Department of Chemistry) and Local Organizer, was held at Cavallerizza Reale in Turin.

The meeting was arranged into the following 7 sessions. Posters were displayed during the whole event.

Session 1. Strigolactones: perception and transport

In this session, new findings regarding Strigolactone signaling were presented, including new insight into D14 receptor, an ancestral role f, or D14 and KAI2 in signalling pathways, the activity and role of the Strigolactone transporter PDR1 under phosphate poor conditions, and new insight into the evolution of Strigolactone signaling.

Presentations:

Paola Bonfante, University of Torino, Italy - 'Strigolactones cross the kingdoms: plants, mycorrhizal fungi and bacteria'

Daoxin Xie, Tsinghua University, China - 'DWARF14 is a non-canonical hormone receptor for strigolactone'

Junko Kyozuka, Tohoku University, Japan - 'Analysis of ancestral role of D14/KAI2 signaling pathway'

Lorenzo Borghi, University of Zurich, Switzerland - 'The strigolactone transporter PDR1 regulates plant biomass production on phosphate-poor soil'

Tom Bennett, University of Leeds, UK - 'The evolution of Strigolactone signalling'

Weiqiang Li - 'OaMAX2 of *Orobanche aegyptiaca* and Arabidopsis AtMAX2 share conserved functions in both development and drought responses'

Kaori Yoneyama, RIKEN Center for Sustainable Resource Science, JAPAN - 'Biochemical characterization of MAX1 orthologs involved in strigolactone biosynthesis'

Elena Sanchez, CSIC, Cordoba, Spain - 'Control of DWARF14 stability in Arabidopsis thaliana'

Session 2. Strigolactones and microbiota

In this session new insight into the tight interactions between SLs released in the rhizosphere and their effects on the soil microbiota have been presented. A special focus was dedicated to the effects of SLs on AMF with emphasis on the recent progresses in the identification of SLs receptor in fungi.

Presentations:

Caroline Gutjahr, LMU Munich, Germany - 'KARRIKIN signaling in arbuscular mycorrhiza development. Design and use of profluorescent probes'

Michael H. Walter, Leibniz Institute of Plant Biochemistry, Germany - 'Strigolactone levels in mycorrhizal roots of dicots are determined by carotenoid pre-cursor supply driven by phytoene synthase 3'

Eloise Foo, University of Tasmania, AUSTRALIA - 'Determining the site of action of Strigolactones during nodulation'

Juan Antonio López-Ráez, CSIC, Cordoba, Spain - 'Role of strigolactones in the Rhizobium-legume symbiosis: effect on bacterial motility and regulation by nodulation'

Valentina Fiorilli, University of Torino, Italy – 'Looking for genes encoding strigolactones receptors in fungi'

Rocío Pineda-Martos, University of Huelva, Spain - 'Chemotropic sensing responses of fungal biocontrol agents to Strigolactones. The three-player system: host-parasite-Fusarium'

Piotr Rozpadek, Jagiellonian University, Poland - 'Strigolactone is necessary for the establishment of a beneficial interaction between *Arabidopsis thaliana* and *Mucor* sp.'

In Sun Yoon, National Institute of Agricultural Sciences, Republic of Korea - 'OsTCP6 is a positive regulator of tiller formation in rice and involved in the transcriptional activation of cell cycle genes'

Session 3. Strigolactones as plant hormones

In this session new insight into Strigolactone biosynthesis and transport were given. New biosynthesis components that result with different newly identified precursors and end products were presented, as well as new findings regarding the plasma membrane localization of a Strigolactone transporter.

Presentations:

Ottoline Leyser, University of Cambridge, UK - 'Auxin, Strigolactone and the control of shoot branching'

Lam-Son Tran, RIKEN Center for Sustainable Resource Science, Japan - 'Strigolactones: function and potential crosstalk with cytokinins in drought response'

Kaori Yoneyama, Utsunomiya University, Japan - 'Biochemical characterization of lateral branching oxidoreductase involved in strigolactone biosynthesis'

Christine Beveridge, University of Queensland, Australia - 'Shoot branching. Role of Strigolactones and interactions with other signals'

Markus Geisler, University of Fribourg, Switzerland - 'TWISTED DWARF1 integrates auxin and strigolactone actions on plant development'

Guo-Wei Liu, University of Zurich, Switzerland - 'The phytohormone strigolactone regulates the maintenance of hypodermal passage cells and Mg2+ uptake'

Francesca Cardinale, University of Turin, Italy - 'Strigolactones are crucial for miR156 inducibility by drought in tomato'

Session 4. Chemistry of Strigolactones

This session was dedicated to new synthetic sequences leading to natural and synthetic Strigolactones. Impressive progresses have been made to enantioselective synthesis as enantiopure compounds are needed to evaluate biological effects directly related to Strigolactones and not to karrikins.

Presentations:

Tadao Asami, University of Tokyo - 'Chemical regulation of strigolactone functions'

François-Didier Boyer, Institut Jean-Pierre Bourgin, INRA, France - 'Mechanism of Strigolactone reception in vascular plants. Design and use of profluorescent probes'

Francisco Antonio Macìas Dominguez, University of Cadiz, Spain - 'Natural products as source for new Strigolactones mimics'

Salim Al Babili, King Abdullah University of Science and Technology, Saudi Arabia - 'A negative regulator of Strigolactone biosynthesis and efficient Strigolactone analogs'

Christopher McErlean, University of Sidney, Australia - 'Synthetic strategies to aryl Strigolactones'

José Maria González Molinillo, University of Cadiz, Spain - 'Preparation and activity evaluation of Eudesmanestrigolactones from Costunolide'

Sofie Goormachtig, Ghent Uinversity, Belgium - 'Strigolactone signaling through the eye of the mass spectrometer'
Carlos Rial Cumbrera, University of Cadiz, Spain - 'Evaluation of germination stimulant activity of the guaianolide Lappalone and its derivatives on parasitic weeds'
Salar Torabi, University of Munich, Germany - 'Karrikin signaling in Lotus japonicas'

Session 5. Strigolactones: perception and signalling

In this session the role of SLs as seeds germination inducers of parasitic plants has been evaluated and new progresses in this field have been presented by the speakers. The exploitation of SLs as a tool to combat parasitic weeds infestation has been discussed.

Presentations:
Shinjiro Yamaguchi, Tohoku University, Japan - 'Strigolactone biosynthesis and its regulation'
Sandrine Bonhomme, CNRS, Université Paris-Saclay, France - 'Strigolactone signaling pathway evolution - inputs of *Physcomitrella patens* mutants'
Samy Carbonnel, LMU Munich, Germany - 'Characterization of Karrikin and Strigolactone signaling in the legume *Lotus japonicus*'
Laura Ravazzolo, Univrsity of Padova - 'Strigolactones involvement in maize root response to nitrate fluctuations'
Yuichiro Tsuchiya, Nagoya University, Japan - 'Development of a germination stimulant for a parasitic plant *Striga*'
Attila Végh, Centre for Agricultural Research, Hungary - 'Comprehensive analysis of DWARF14-LIKE2 (DLK2) reveals its role in seedling light responses'

Session 6. Strigolactones and germination

In this session, a number of speeches dealing with the roles of Strigolactones and related compounds on the germination processes of parasitic plants were grouped. (Many of the presentations in this and the following session which were included in Journal of Experimental Botany, are briefly reviewed in included in the Literature section below.)

Presentations:
David Nelson, University of California, USA - 'Roles and regulation of the SMXL/D53 family'
Mark Waters, University of Western Australia - 'Diversity in KARRIKIN receptor proteins. What can we learn beyond *Arabidopsis*?'
Steven M. Smith, University of Tazmania, Australia - 'KARRIKIN signalling increases the sensitivity of *Arabidopsis* seed germination to osmotic stress'
Philippe Delavault, University of Nantes, France - 'Parasitic and non-parasitic plants share a Strigolactone signaling pathway leading to seed germination through abscisic acid catabolism'
Harro Bouwmeester, University of Amsterdam, The Netherlands - 'Structural diversity in Strigolactones: biosynthesis and significance'
Antonio Evidente, Università di Napoli Federico II, Italy - 'Root plant and fungal metabolites to alternatively and biologically Lukas Braem - 'A protein approach towards investigating parasitic plant germination'
Lukas Braem - VIB, Belgium – "A protein approach towards investigating parasitic plant germination"
Evgenia Dor - 'Characterization of the Carotenoid Cleavage Dioxygenase 7 (CCD7) chickpea mutant'

Session 7. New challenges for Strigolactones

In this session, unforeseen and unprecedented SLs role and effects have been presented. Non canonical Strigolactones have been shown to be as effective as canonical SLs. Antitumoral activity of SLs analogues has been presented by Dr. Yarden, USA.

Presentations:
Koichi Yoneyama, Utsunomiya University, Japan - 'Distribution of canonical and non-canonical strigolactones in the plant kingdom'
Claudio Screpanti, Syngenta Crop Protection, Switzaerland - 'Strigolactones and their potential role in modern agriculture'
Antonio Cala Peralta, University of Cadiz, Spain - 'A Study on the germination activity of Dehydrocostuslactone derivatives on parasitic weeds'
Hailey Larose, Virginia Tech, USA - 'The *Orobanche cumana* x *Orobanche cernua* genetic system provides insight into the regulation of host specificity in a parasitic plant'
Ronit Yarden, Georgetown University, USA - 'The anti-tumorigenic activities of Strigolactone analogs'

Closing lecture

Binne Zwanenburg, Radboud Univerrsity, The Netherlands - 'Strigolactones: new plant hormones on the move'

4th International Symposium on Broomrape in Sunflower, Bucharest, Romania, July 2-4, 2018.

This symposium was the fourth specific symposium on broomrape in sunflower after those held in Turkey 2008, Moldova 2011 and Spain 2014. It was organized by the National Agricultural Research and Development Institute of Fundulea and the University of Agronomic Sciences and Veterinary Medicine of Bucharest, with the ISA, under the coordination of Maria Pacureanu, and attracted 203 participants from 17 countries including those most concerned by the infestations of *Orobanche cumana* on sunflower and/or research on this topics - Central and Eastern Europe, Spain, Turkey, Israel, Iran, Karakhstan and China - were present. About two thirds of the participants were from private companies and one third from public research and universities, reflecting the importance of such events for the coordination of research and innovation.
27 oral presentations and 26 posters were presented, organized in the following four sessions, offering a quite complete overview of the diversity of the work on sunflower broomrape. The symposium ended with a workshop on the creation of an International Consortium on Sunflower broomrape resistance and was followed by a field trip to the Braila Research Station and Soare Constantin Society, in Constanta area.

Biology and genetics of *Orobanche cumana*:
Philippe Delavault (University of Nantes) explained the interest of the focus on the germination process in the perspective to implement biocontrol methods of the *Orobanche*. Using a transciptomic approach applied to *P. ramosa*, they showed that the germination stimulants produced by the host plant, induce a modification of only 28 transcripts out of 2500 and that 2 of them induce a gene active in ABA catabolism, producing an enzyme CYP707A involved in the control of seed dormancy and germination. They conclude that *P. ramosa* seeds germinate after the endogenous ABA content reaches a sufficiently low level through CYP707A dependent catabolism triggered by the germination stimulants. The work carried out at Nantes and Toulouse on *O. cumana* permitted to obtain a reference transcriptome of *O. cumana*, a transcriptomic profiling during the broomrape development and an annotation of the *O. cumana* genome sequence. Work is continuing with a PhD thesis (Sabrina Tourneur/ poster) and the project miPEPITO, aiming at identifying micropeptids involved in the regulation of specific target genes in *Orobanche* and sunflower, in order to implement biocontrol methods.
Maria Joita-Pacureanu (National Agricultural research and Development Institute Fundulea) presented the current global situation of the sunflower broomrape which concerns 70% of the world production area and 60% of the production; and the evolution of broomrape populations. The newest populations determined in some countries were called G, H and I, but there is a doubt in the description of races in different countries, especially for the recent ones. To facilitate communication and comparisons, proposals have been made for a universal adoption of the coded triplets system based on differential sets of sunflower lines, similarly to other plant pathogens. Sources of resistance to the races G and following have been identified in wild *Helianthus* species. The presentation concludes on the necessity to complexify the breeding strategy, using pyramiding of single dominant *Or* genes, and use of quantitative non-race-specific tolerance. Using resistance to the AHAS-inhibiting herbicides is part of the strategies.
(Sanrui Agri Tech) and Maria Duca (University of Academy of Science of Moldova) presented the status of *Orobanche* monitoring in China and Moldova respectively. In China, the results show a trend towards a higher pressure of broomrape. Hybrids resistant to races E and F were developed, but a race G is present already in Inner Mongolia and will probably increase. In Moldova, broomrape has a long history since 1935 with races A and B; the latest monitoring results show a rather unfavorable situation with a higher presence of the parasite in the south of the country, with more than 60% of infested lands, and a gradient from south to north, but the latest races F, G, H are present in all regions. Molecular studies and phylogenetics have been achieved, showing a pathogen-host co-evolution. Jian Wang (Zejiang University) detailed the situation and control techniques in Inner Mongolia, China: it seems that water soaking from irrigation can affect the vigor of *O. cumana* seeds and decrease their germination rate. Faisal Islam (Zejiang University) reviewed the possible management levers against *Orobanche*, including agronomic ones.

Resistance mechanisms in sunflower
Alberto Martin Sanz (Corteva) presented a complete review of the resistance mechanisms to *O. cumana* in sunflower, distinguishing pre-attachment and post-attachment phases, the latter being divided into pre-haustorial and post-haustorial, and describing the mechanisms identified in the literature. The action of some of the major resistance genes may be attributed to a dominant mechanism (e.g pre-haustorial for *Or7*).
Na Zhang et al (Zejiang University) tested in controlled conditions a pre-treatment of sunflower seeds with brassinolide, revealing positive effects on sunflower growth and biomass. Mireille Chabaud (INRA) presented the phenotyping device used in Toulouse for the study of the resistance of sunflower to *Orobanche* at early stages, in a rhizotron with automation of imaging and image analysis and optimization of the nutrient solution.

Genetic resistance
Leonardo Velasco (CSIC) introduced the session with a review of the recent developments of breeding for resistance against broomrape, pointing out a coexistence of more than one century between the crop and its parasite with a gene to gene resistance system, and a complexifying racial situation. The *Orobanche* variability and increase in virulence is not due solely to mutations: recent studies in Spain have shown the existence of a certain level of cross-fertilization and genetic recombination between individuals of different gene pools. Also in Bulgaria it was found that there was a gene flow between populations parasitizing wild hosts and populations parasitizing sunflower. Velasco listed and commented on 5 complementary research strategies in a scenario of racial uncertainty: 1. Racial characterization of broomrape populations, 2. Discovery of new resistance genes, 3. Genetic and physiological characterization of resistance genes in sunflower, 4. Genetic and physiological characterization of avirulence genes in broomrape, 5. Developing diagnostic molecular markers for resistance and for avirulence genes. Concerning the 3rd strategy, he insisted on the fact that genetic and physiological characterization of the resistance are equally important in the perspective to associate gene pyramiding with a physiology-based strategy.
Stéphane Munos (INRA) presented the work carried out in the French-Spanish Helior project: observing that cell wall modifications seem to be involved in both compatible and incompatible attachments and that genes from both broomrape and sunflower are expressed in the attachments samples of the two categories, the team carried out transcriptomic studies to measures the gene expression from both *O. cumana* and sunflower during the early stages of the interaction. For this, they produced a complete sequence and first genetic map of *O. cumana* using the segregating populations of *O. cumana* identified in Spain. Work on transcriptomics is going on to annotate the two genomes.
Dragan Skoric reviewed the progress in sunflower breeding for the resistance to *Orobanche* and observed that the permanent change in populations of *O. cumana* hinders the success of breeding for resistance and concludes on the pregnant need of methods to compare the results of different studies and to evaluate the resistances.
Gerald Seiler (USDA) showed, based on literature reports, that sunflower is among the species for which the use of genetic resources from wild relatives is the most important, especially concerning resistances to biotic stresses. 37 sources of resistance to broomrape have been identified in wild relatives, 29 of them in perennials. Notably resistances to races E, F, G are available in several perennial *Helianthus*.

Herbicide tolerance and other control methods.
Johannes Bessai (BASF) highlighted the interest of imidazolinone herbicides and Clearfield system for completing the genetic control of *Orobanche* specially in specific areas with a high pressure of *Orobanche* and the presence of very virulent races. He also pointed out the risk of development of *Orobanche* biotypes resistant to these herbicides as for any weed species, and concludes that a 'golden standard' for broomrape control would associate Clearfield sunflowers with the latest genetic broomrape resistance, that would also allow the genetic resistances to stay longer in the market and gain time for new breeding developments. Then he gave comparative information on the two imazamox systems Clearfield and Clearfield plus. Luis Carlos Alonso (Syngenta) reminded us of important basic elements of the biology of *Orobanche*, conditioning the success of the control strategies: the fields are infested by mixtures of different races, the characterization of races by letters is not reliable when considering different countries, and the importance of the wind in the dispersal of the *Orobanche* seeds seems to be quite relative. Strategies combining genetic, chemical control and agronomic practices including long rotations and trap crops seem to have shown the possibility to eradicate *Orobanche* in one irrigated farm in

Spain, at the opposite of previous heavy eradication programs on parasitic plants in Australia and USA.

Call for collaboration
The last session of the symposium was devoted to a workshop on the constitution of **an International consortium on Sunflower broomrape resistance**, on a joint initiative of CSIC Cordoba, Spain and INRA France, whose purpose is to bring together a wide range of public and private partners working on the sunflower broomrape system to define and implement long-term research and control strategies. The operational objectives are a) to define a clear set of differential lines to universally classify broomrape races, b) to develop a collection of well-characterized broomrape populations based on their virulence degree, c) to use these collected genetic resources for molecular diversity, d) to progress on the functional characterization of the interaction at all stages (from seeds to flowering shoot). Open to public and private organisations, the funding would come from private companies and from public projects, on the principles of sharing the part of the results that fit the objectives.

NEW PROJECT

N_2AFRICA – new *Striga* project

N_2Africa is a large scale, science-based 'research-in-development' project focused on putting nitrogen fixation to work for smallholder farmers growing legume crops in Africa.

With funding from the Bill & Melinda Gates Foundation, N_2Africa has been active since 2013 in Ethiopia, Tanzania and Uganda, and since 2009 in DRCongo, Ghana, Kenya, Malawi, Mozambique, Nigeria, Rwanda and Zimbabwe. Focal legume crops are common bean, chickpea, cowpea, faba bean, groundnut and soyabean.

A recent review by Franke *et al.* (2018), noted below, looks at the benefits from inclusion of legumes in the rotation, particularly on the yield of cereal crops. This is mainly (but apparently not exclusively) due to the increase in N. Where *Striga* occurs there are two additional benefits as the N decreases the damaging effect on the crop while at the same time most legumes reduce the *Striga* seed bank via suicidal germination. Inter-cropping is not necessarily so beneficial. They refer to a paper by Rusinamhodzi et al. (2012) in which a study of the effect of legume rotation on cereal yield had to exclude one result where pigeonpea caused an 800% increase in maize, mainly due to reduction of *Striga*. (Rusinamhodzi, L., Corbeels, M., Nyamangara, J., Giller, K.E., 2012. Maize–grain legume intercropping is an attractive option for ecological intensification that reduces climatic risk for smallholder farmers in central Mozambique. Field Crop Res. 136, 12–22.)
The potential effects of legumes on *Striga* are now the subject of a new project being conducted under the programme by Dr Travis Goron at Wageningen. Dr Travis writes as follows:

'My first set of experiments is being conducted in Western Kenya, in Bungoma, Busia, and Kakamega counties, areas known for their high infestation levels. My objectives are to quantify the *Striga* seed bank in maize fields of high and low infestation, correlate the seed bank and *Striga* emergence with soil physiochemical characteristics, and compare *Striga* emergence and seed bank between maize in monoculture or rotation with a legume crop.

This past June, I conducted a survey with help from IITA scientists, to identify farmers with maize fields of both high and low infestation levels. I asked these farmers questions regarding their management practices in the fields of both the high and low infestations, including fertilizer/manure input use, variety, and importantly, cropping history. At all of these fields, I also took soil samples which are currently being tested for percent clay, silt, and sand, available P and N, organic content, pH, macronutrients (K, Ca, Mg, Na), and micronutrients (Cu, Fe, Mn and Zn). Also, the *Striga* seed bank from these soil samples is being quantified by both microscopy.

During a future growing season, I will return to these farmers, and in each field two treatments of either legume or monoculture maize will be planted, with high/zero N fertilization treatments to disentangle the legume N2-fixation benefit. *Striga* reduction in the subsequent maize crop will be compared between the cropping treatments with visual inspection, and analysis of the seed bank as described above. It is hypothesized that rotating maize with legumes will reduce the *Striga* seed bank and subsequent parasitism of a maize crop in a variety of environments?'

Travis Goron, Wageningen, The Netherlands

Taking the lead toward witchweed control

The first specific inhibitor for an uncontrollable plant pest, the witchweed *Striga hermonthica*, has been discovered through collaboration between two groups at KAUST, led by plant biochemist Salim Al-Babili and structural biologist Stefan Arold.

Witchweed is a parasitic plant that attaches to the roots of cereal plants, stealing their water and nutrients. It affects more than 60 percent of farmland in sub-Saharan Africa, and is spreading across other areas, including Asia, Southeast Europe and Saudi Arabia. Commercial losses for sub-Saharan Africa alone exceed 7 billion US dollars. *Striga* and related species have become one of the most serious threats to global food security,' says Imran Haider, from KAUST. The magnitude of its destruction led the Bill & Melinda Gates foundation to award substantial funding to Al-Babili who teamed up with other researchers in the biological sciences and those from the Computational Bioscience Research Center and Core Labs units.

'The breakthrough was fortuitous,' says postdoc Umar Hameed, whose team was studying the molecular structure of a cell membrane receptor protein involved in the germination of *Striga* seeds. This protein, ShHTL7, must bind to natural plant compounds called strigolactones during seed germination. While working to determine the structure of ShHTL7, the researchers used the molecule Triton X-100 to assist preparation of samples of the protein. 'We noticed that our ShHTL7 molecules always had Triton X-100 bound to them,' says Hameed. The next crucial discovery was that this binding of Triton X-100 molecules inhibits the germination of the *Striga* seeds, acting as an *antagonist* by preventing the natural strigolactones from binding.

'We soon realized that we had stumbled upon the first lead compound that could inhibit *Striga* seed germination without also affecting the host plant infected with *Striga*,' says Haider. A lead compound demonstrates useful biological activity that can be refined by developing structurally similar, but more effective, compounds.
Hameed and Haider, together with Salim Al-Babili and Stefan Arold, are using their results as a stepping stone to develop more potent inhibitors that will bind more tightly and permanently to the site that Triton X-100 has identified.

The researchers believe that this success is a great demonstration of the power of structural analysis of proteins in identifying compounds that can selectively bind to proteins to inhibit their activities. They hope this approach can be applied more widely.
Another target on their radar is the *Orobanche* (broomrape) parasite that infests commercially significant crops, such as tomato and sunflower, in the northern hemisphere.

Reference:

Hameed, U.S., Haider, I., Jamil, M., Kountche, B.A., Guo, X., Zarban, R.A., Kim, D., Al-Babili, S. and Arold, S.T. 2018. Structural basis for specific inhibition of the highly sensitive ShHTL7 receptor. EMBO Reports - advance online publication, 18 July 2018.

NOTE

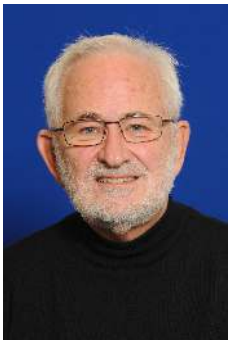
Mistletoe in pear

In the older literature there are mentioned among others as host for *Viscum album* in addition to the family/genus*Malus* also the genus *Pyrus. V. album* however very seldom grows on pear trees. Approx. 30 years ago I infected 40 young wild pears *Pyrus pyraster* with seeds of *V. album* - however with little success (either the seedlings became dry or the pear tree died below the infection). Only one infection was successful. Unfortunately, I'm not able to inform you about the further history of the pear mistletoe. It was handed over to an open-air museum where it disappeared (much to my regret !).

But 12 years ago my hometown Radevormwald established in Radevormwald-Herbeck an orchard with old varieties of fruit. This orchard is grazed extensively by sheep. There are also some beehives. Furthermore, perches for owls, kestrels and buzzards were installed. A hedge with various *Rosa canina, Cornus* sp., *Corylus avellana, Viburnum opulus, Crataegus* sp*., Prunus spinosa* was planted around the orchard. There is a great variety of insects. *V. album* is growing.abundantly on a pear tree *Pyrus communis* of the old species *'*Gellert's Butterbirne*'* . Due to a very hot and long summer period the pear tree doesn't have any fruits, contrary to the other fruit trees of the orchard.

Dietmar Fennel
https://bergischer-naturschutzverein.de/wer-macht-was/

CONGRATULATIONS



To Prof. Lytton Mussselman, congratulations on having a new species of *Striga* named *Striga musselmanii* – see Moolayil, O. and Sreenivas, V.K. 2018, below.

To Dr Chris Thorogood, congratulations on publication of his latest book – 'Weird Plants' (see listing below) which he aims at the general public with vivid descriptions of insectivorous and other exotic plants including parasitic *Raffflesia, Hydnora* and *Orobanche.* Also for his valuable paper of the *Hydnora* genus in his paper, also listed below, both lavishly illustrated with photographs and his own superb art-work.

To Dr G.N. Dhanapal,
congratulations on becoming a fellow of Indian Society of Weed at their Golden Jubilee International Conference held on 21st November, 2018.

REQUEST FOR SEEDS OF *OROBANCHE CRENATA*

Professor Gianniantonio Domina, University of Palermo, Italy, is launching a project to establish seed banks of *Orobanche* and *Phelipanche* samples from across Europe and the Mediterranean. He will appreciate offers of seed at gianniantonio.domina@unipa.it .

PRESS REPORTS

Sphinx molecule to rescue African farmers from witchweed: discovery of a hypersensitive suicide germination stimulant. (abridged)

An interdisciplinary team led by researchers at Nagoya University has discovered a highly potent and selective molecule, SPL7, that can lead seeds of the noxious parasitic weed *Striga* to suicide germination. *Striga*, also known as witchweed, has seriously affected millions of hectares of crop fields in Africa and poses a major threat to food security.

The molecular structure of a strigolactone (SL) is composed of an ABC-ring linked with a D-ring. Upon entering into the pocket of the SL receptor protein, SL is decomposed at the linker site. It has been thought that the structure of the D-ring is important, as it stays in the pocket to activate the receptor and lead *Striga* seeds to germinate. On the other hand, modifying the ABC-portion has been leading to the development of variable SL-like molecules. Nonetheless, the exact structure providing *Striga*-selectivity was still unknown. The plant biology team at the Institute of Transformative Bio-Molecules led by Yuichiro Tsuchiya initiated the search for a *Striga*-selective molecule from 12,000 synthetic molecules with random structures, and was able to identify a series of hit compounds (represented by a

molecule called SAM690) that bind to an SL receptor in *Striga*, but not to that in the model plant Arabidopsis, and stimulate *Striga* seed germination with moderate activity (micromolar-range; 10-6 M).

The research went on with a serendipitous discovery of a highly active byproduct generated during the synthesis of hit molecules. The chemistry team led by Daisuke Uraguchi and Takashi Ooi isolated minuscule amount (0.01%) of the by-product from a crude mixture of a SAM compound and identified its structure as a hybrid of SAM690 and the D-ring component of SLs. The optimized molecule, which is called sphynolactone-7 (SPL7), stimulated *Striga* germination at femtomolar (10-15 M) range, yet only bound to the SL receptor in *Striga*. The potency is on a par with the natural strigolactone, 5-deoxystriogl (5DS), which is the strongest germination stimulant to *Striga* among all commercially available compounds. Named after sphinx (a mystical creature with the head of a lion and the body of a human), SPL7 appeared as a hybrid molecule which inherits *Striga*-selectivity from SAM690 and high potency from SLs.

As expected from the selective binding to the SL receptor in *Striga*, SPL7 did not show typical SL activity in *Arabidopsis,* such as reduction of the number of shoot branches or elongation of root hairs. Not only to *Arabidopsis*, but SPL7 also appeared to have a limited effect on the growth of AM-fungi, which is an agronomically important microbe. Finally, the research team confirmed that SPL7 did induce suicidal germination of *Striga* and protected maize plant from *Striga* parasitism in laboratory experiments. In conclusion, the team has proven that SPL7 is an effective *Striga*-selective suicide germination stimulant at least in laboratory experiments. The research team is planning to extend the discovery to field trials of SPL7 in Kenya.

Institute of Transformative Bio-Molecules (ITbM), Nagoya University
Media Contact
Dr. Yuichiro Tsuchiya
yuichiro@itbm.nagoya-u.ac.jp

EurekAlert, 17-Dec-2018

(NB This release refers to the paper by Uraguchi *et al,* 2018 – see below)

Cuscuta Seed Extract Market Growing Demand 2018 to 2025 (abridged)

Global *Cuscuta* Seed Extract Market Insights, Forecast to 2025 covers key market updates, the impact of regulations and technological updates. New startups entering the space of Global *Cuscuta* Seed Extract need to carefully pick their niches and genres so that they can compete on an equal footing with global companies who have an end to end development studios, production capabilities and global skills and experience backing them. New vendors in the market are facing tough competition from established international vendors as they struggle with technological innovations, reliability and quality issues. The report will answer questions about the current market developments and the scope of competition, opportunity cost and more.

The report systematically analyzes the most significant details of the Global *Cuscuta* Seed Extract Market with the help of a thorough and specialized analysis. Characterized in a ground-up manner, the report presents an extensive synopsis of the market in view of the factors that are foreseen to have a considerable and measurable impact on the market's developmental states over the conjecture time frame**.**
The prominent players in the global *Cuscuta* Seed Extract market are Active Herb Technology, Barlowe's Herbal Elixirs, Bristol Botanicals, Stakich, Nutra Green Biotechnology. *Cuscuta* seed extract powder, liquid *Cuscuta* seed extract are used in
medicines, food additives, dietary supplements.

Get a sample copy of this report at:
https://www.marketinsightsreports.com/reports/0905822138/global-*Cuscuta*-seed-extract-market-insights-forecast-to-

2025/inquiry?source=businessstrategies24&Mode=23
(NB cost -$3,900!)

tanmay@marketinsightsreports.com
September 5, 2018

Biska - One of the smallest cities in the world specializes in mistletoe brandy.

According to the legend, the city of Hum, Croatia, was built by giants. One day long ago, the massive creatures were heaving rocks along the valley of the Mirna River to build their homes. After they'd finished, a few stones remained. To tidy up, the giants placed the leftover slabs upon the ridge above them and one of the smallest cities in the world was born. Today, the city of Hum hovers around a population of 20 people, but with its surrounding walls, entrance gate, castle, and hospital, the area doesn't lack for much, especially liquor.

Hum is located on the Istrian Peninsula, the stomping grounds for many a culture over the years. But the Celtic Druids are said to be the ones who left behind an original recipe for the mistletoe brandy known as *biska* 2,000 years ago. Hum has become famous for its production of the herb-infused brandy, which enjoys a special celebration at the end of October during the annual *Rakija* Festival. Although Hum offers its locally made biska throughout the year, at the festival people can find a host of the homemade batches that producers from throughout the region bring to be judged and, hopefully, awarded for their top-notch flavor. Attendees can also taste a bit of Istria while hearing poetry dedicated to brandy.
(It is a blend of apple distillate and carefully selected mistletoe leaves prepared according to a traditional recipe. Traditionally Biska is made in Istria, but the original recipe comes from the Celts who lived on the Istrian peninsula and is about two thousand years old. Bisca is the local name for mistletoe (*Viscum album*), whose healing force was already known in ancient times. It was highly esteemed by the Celtic druids, Greeks and Romans. Delikroat)
What does biska taste like? First, strong. Referred to as a type of rakija, biska is essentially a fruit brandy or grappa that has been infused with mistletoe and herbs. Mistletoe, actually a parasitic plant (known by some for dangerously dangling over door frames during Christmastime), gets gathered from local apple trees before being soaked in the distilled brandy. After one last distillation to remove impurities, the final, herbaceous brandy becomes, as one poet puts it, 'the medicine whose drops warm our hearts.'
Need to Know - If you're keen on visiting Hum's Rakija Festival, stop by on the last Sunday in October.

Atlas Obscura.

Improved cowpea in the offing for Ghanaian smallholders

Accra. Ghanaian smallholders could by the end of this year get access to new, disease-resistant cowpea varieties that mature early and improve yields, says an expert who developed the varieties. According to researchers, cowpea is a major source of plant protein in the diet of Ghanaians but suffers up to 100 per cent yield losses from stress induced by drought, viruses and *Striga gesnerioides* also called cowpea witchweed. Examples of recipes in Ghana that include cowpeas are *tubaani* (steamed cowpea pudding) and *waakye* (rice and red or brown cowpeas cooked together).

'The three newly developed cowpeas with resistant traits to all known races of *Striga* in West Africa were first to have been reported,' says Aaron Asare, principal investigator of the project that developed the new varieties. 'These novel cowpeas will sustain the cowpea industry and provide foundation for further breeding and improvement of the crop. 'Cowpea seeds may be initially distributed free to farmers if funded and subsequently certified seeds will be produced by seed companies for farmers to buy from agro-shops and Ghana's Ministry of Food and Agriculture.'

The new varieties require eight weeks to mature, have yield potential of almost four tonnes per hectare unlike existing yields with almost three tonnes per potential, and are highly tolerant to drought, rust and several viruses that attack cowpeas including cowpea severe mottle virus and cucumber mosaic virus. The new cowpea varieties are subject to approval by Ghana's Ministry of Food and Agriculture based on recommendation by the National Varietal Release and Registration Committee, adds Asare, who is head of the Department of Molecular Biology and Biotechnology at Ghana's University of Cape Coast.

During an inspection workshop which took place at the University of Cape Coast last month (18 September), Asare told *SciDev.Net* that the evaluation and selection of the cowpea varieties involved farmer and consumer participatory activities. The project, which began in April 2016 and is to end in April 2019, has partners including Ghana's Council for Scientific and Industrial Research and US-based University of Virginia. The novel cowpeas were developed through classical breeding techniques involving genetic crosses of *Striga*-resistant parental donor with recipient parents.

Michael Timko, a professor of biology and public health at the University of Virginia, says that breeding improved cowpea varieties that are disease- and pest-resistant and can cope with climate change ensures future food security for people in Sub-Saharan Africa. 'The lives and livelihoods of smallholders depend on their abilities to produce cowpea for food, forage and economic value, thus having improved varieties is essential,' he explains.

Richard Akromah, an associate professor of crop science and plants breeding at Ghana's Kwame Nkrumah University of Science and Technology, tells *SciDev.Net* that the varieties can benefit small-scale farmers who cannot afford irrigation and thus depend on rain-fed agriculture. 'During the trials, whereas other varieties were failing due to erratic rainfall patterns, the new varieties were performing better, which would benefit Sub-Saharan Africa due to similar ecological conditions,' explains Akromah, who is a member of Ghana's National Varietal Release and Registration Committee.

Samuel Hinneh, SciDev.Net
4 August, 2018

Chinese Herbs Healing - Art of Herbal Remedies Revealed - *Loranthus* (Mulberry Mistletoe, Sang Ji Sheng)

Loranthus, also known as mulberry mistletoe or Sang Ji Sheng in mandarin, has long been characterized by increasing lifespan and preserving health in many medical classics. It was first mentioned as a medicine by Shen Nong Ben Cao Jing (the Divine Farmer's Materia Medica). Medicinally people often confuse it with mistletoe (*Viscum album*). But it is generally accepted by doing so since they are quite similar in healing properties. In summary, *Loranthus* health benefits include lowering blood pressure, treating an abnormal heart rhythm, increasing coronary blood flow, improving coronary circulation, enhancing cardiac contractility, reducing myocardial oxygen consumption, inhibiting platelet aggregation, preventing thrombosis, promoting microcirculation, suppressing tumor growth, curing hepatitis, and so on.

As a matter of fact, *Loranthus* refers to a genus rather than a certain species. The typical *Loranthus* characteristic is that all of its plants are parasitic. That being said, *Loranthus parasiticus* (=*Scurrula* parasiticus) lives on other woody trees, apparently fed by directly robbing water and nutrients from the host. When it comes to such a mode of existence, *Loranthus* is not alone and actually it is just only one member in a bigger group – the showy mistletoe family (Loranthaceae), which consists of 73 genera and more than 900 species. Hence, Loranthaceae is also known as the largest family of mistletoes.

Medicinally it mainly refers to the dried aerial parts of *Taxillus chinensis* (DC.) Danser (*Loranthus chinensis* Dc.) But the fact is China's ancient herbalists used to obtain it from several different genera in the family Loranthaceae, including *Taxillus, Scurrula*, and *Viscum*. To date *Viscum coloratum* (Komar.) Nakai is still mixed up with *Taxillus chinensis* even though it has been recorded separately in the 'Chinese Pharmacopoeia.' Besides, *Taxillus sutchuenensis* (*Loranthus sutchuenensis* Lecomte), *Scurrula parasitica* L. (*Loranthus scurrula* L.), *Taxillus nigrans* (Hance) Danser, and others are also used medicinally as *Loranthus* mulberry mistletoe. Therefore, other names of this herb include Mulberry Mistletoe Stem, Herba Taxilli, *Loranthus* stem, parasitizing *Morus*, Sangjisheng, *Loranthus parasiticus, Loranthus ramulus*, and more. In China, it is mainly produced in Guangdong, Guangxi, and Yunnan. It is usually collected in winter and next spring. After the harvest, it needs to remove big stems, cut into sections, and then dry. Medicinally it is generally used raw and in thick slices.

Numerous clinical studies have shown that mistletoe has a certain effect on the treatment of angina pectoris, hyperlipidemia, acute and sequelae of poliomyelitis, arrhythmia, etc. In addition, the pharmacological studies have also shown that mistletoe preparations are anticancer while mistletoe extract has immunogenic

properties, which can be used as the adjuvant treatment of precancerous symptoms, prevention of the relapse after surgery, and advanced cancer.

(The report continues with a detailed description of *Taxillus chinensis*. Also further detail of uses and side effects, and specific Chinese preparations. For the full report see http://www.chineseherbshealing.com/loranthus-mistletoe/)

New mistletoe species named after Pinay environmentalist

A newly discovered mistletoe species has been named after a Filipina environmentalist, according to an article published in the scientific journal Phytotaxa.
The new species named *Amyema lisae*, was named after Lisa Paguntalan, Philippine Biodiversity Conservation Foundation Inc. (PBCFI) Executive Director, *'*a champion of biodiversity conservation in the Philippines.*'*

The authors of the article, namely: Pieter B. Pelser, Shiella Mae B. Olimpos, Peter O'byrne, and Julie Barcelona, said the new species was named after Paguntalan *'*to honor her contributions to nature conservation in the Philippines.*'* 'Lisa has been an epitome of a conservationist who is most successful in bringing together stakeholders in the conservation of biodiversity. She is a champion of organizing and involving local communities in conservation programs in many parts of the country,*'* they added.

The new mistletoe species was discovered in November 2017, in Balinsasayao - Twin Lakes Natural Park on the island of Negros as part of the PBCFI-USAID Mainstreaming Biodiversity Conservation in the Negros Island Regional Development Agenda Project.

Paguntalan told GMA News Online that she is honored by the gesture and added that *'*usually adto ni sa mga tao nga dako (ang) contribution sa plant conservation or research [usually this is done for people who have a big contribution to plant conservation or research].*'*

A graduate of Silliman University in Dumaguete City, Paguntalan has ventured into conservation right after taking BS Biology in 1996 and proceed to take a Master's degree which she finished in 2002. In 2000, she received the BP Conservation Award in London for her work. The award, Paguntalan says, started her career in wildlife research and conservation science. She is known in Cebu for her work in the conservation of endemic bird species, the black shama or Siloy, Cebu flowerpecker, and the Cebu hawk owl, among others.

BAP, GMA News
September 25, 2018 11:51pm

Rare native mistletoe blooming on Hutt tracks
The rare native mistletoe (*Peraxilla tetrapetala*), known as beech mistletoe, has been spotted lately on a number of tracks in Kaitoke Regional Park and Pakuratahi Forest.
'We are seeing more and more beech mistletoe blooms each year, which we believe is largely due to our possum control work in the area,' says Barrett Pistoll, Senior Monitoring Environmental Officer at Greater Wellington Regional Council.
'The best way to spot them is to look for a carpet of red petals on the ground. If you do, be sure to look up – they often grow quite high up.'
The Beech mistletoes are now becoming quite rare in New Zealand's forests, especially in the North Island. This is mainly due to forest clearance, invasive predators, and the decline in native bird species that act as pollinators and seed-dispersers. 'Possums love to browse the fleshy

leaves of these species. The presence of mistletoes still in our regional parks is a testament to our ongoing pest control efforts and forest management practices.'

Mistletoe is a famously romantic plant. According to Norse mythology, when the god Odin's son Baldur was prophesied to die, his mother Frigg, the goddess of love, went to all the animals and plants of the natural world and asked them to promise not to harm him. But Frigg neglected to consult with the unassuming mistletoe, so the god Loki made an arrow from the plant, which was used to kill Baldur. According to happier versions of the myth, the gods were able to resurrect Baldur from the dead. Frigg declared mistletoe a symbol of love and promised a kiss to all who passed beneath it. This is the perfect time of year for a romantic stroll in the bush,' says Mr Pistoll. 'We encourage people to visit the area and enjoy these rare and beautiful flowers.' Beech mistletoe has been monitored by members of Upper Hutt Forest and Bird for more than 10 years. Some key facts about beech mistletoe:
The beech mistletoes in New Zealand are quite unique worldwide as they have a strong mutual relationship with their avian pollinators.
• Unlike some mistletoe species found in other countries, New Zealand mistletoes usually do not harm their hosts.
• Beech mistletoes are some of the few plants in the world with 'explosive' flowers. To be pollinated, these flowers must be twisted open by native birds such as tui and bellbirds. When twisted, the flower petals of the ripe buds spring open and spray the bird with pollen. This pollen can then be transferred to the next flower the bird visits, which allows that mistletoe plant to produce seeds. Amazingly, a tiny native bee only one-quarter the size of a red mistletoe bud can also pollinate this plant by twisting open flowers. No other plant in the world is known to have this unusual pollination system!
• Beech mistletoes provide native birds with a very important source of fruit and nectar, which are otherwise scarce in beech forests. Two of the beech mistletoes have bright red flowers that appear around Christmas time and are often mistaken for rata.
• Beech mistletoes and native birds have developed a mutualism, which is a specialised relationship that benefits both species. Birds rely on the mistletoes for fruit and nectar, and mistletoes depend on birds for pollination and seed dispersal. This mutualism may be evolutionarily dangerous, because if either species declines then the other is in trouble.
Greater Wellington Regional Council
14 November 2018

THESIS

The role of strigolactones in resistance, tolerance and control of *Striga* infection in sorghum. Nasreldin Mohemed Ahmed. PhD Thesis, Wageningen University, The Netherlands. (Supervisors, Prof. Harro Bouwmeester, Amsterdam University and Prof. Abdel Gabar Babiker, National Research Centre, Kahhartoum, Sudan.)

Summary. Huge yield losses in important staple cereal crops including sorghum (*Sorghum bicolor* [L.] Moench) (Parker, 2009) are caused by infections by the root parasitic plant *Striga hermonthica* [Del.] Benth. (*Striga*) particularly in sub-Saharan Africa. Integrating host genetic resistance and tolerance with agricultural practices that reduce the *Striga* seed bank in the soil are deemed to be the best control strategy. *Striga* seeds can remain dormant in the soil for up to 20 years. They will germinate when they perceive specific germination inducing compounds that are secreted from the roots of its host and sometimes non-host into the rhizosphere. It was shown that strigolactones (SLs), are the most potent germination stimulants of *Striga* seed. Exudation of less active SLs in sorghum was shown to be associated with field resistance to *Striga* while in pearl millet the production of different SLs seems to make it resistant to the *Striga* that infects sorghum. In contrast, exudation of high amounts of active SLs by non-host intercrops is expected to results in higher suicidal germination and thus help in *Striga* control. In this study I used 36 sorghum genotypes, 2 pearl millets cultivars and 4 intercrop cultivars to investigate the role of variation in SL amount and profile in resistance and *Striga* control through intercropping and to

answer the question if they also play a role in tolerance.

In chapter 2 and **chapter 3** I focus on studying the role of strigolactones in resistance and tolerance to *Striga*. Hereto, I used statistical analysis on the combined results of strigolactones profiling, *in-vitro* germination bioassays, gene expression and molecular marker analysis, crop morphological and physiological traits, and photosynthesis measurements. This showed that the exudation of high amounts of orobachol in combination with low amounts of 5-deoxystrigol and sorgomol by some sorghum genotypes is associated with low root exudate germination stimulatory activity and low *Striga* infection. Moreover, such genotypes had a higher tolerance to *Striga* and maintained higher photosynthetic capacity under *Striga* infection. All this suggests that selection/breeding for high orobanchcol/low 5-deoxystrigol and sorgomol profiles will not only improve pre-attachment resistance but also improve tolerance to the *Striga* that can still attach.

In **chapter 4** I investigated the role of strigolactones in inter- and rotation crops. I showed that exudation of high amounts of orobanchyl acetate in the root exudate of pearl millet is associated with low germination stimulatory activity and low infection of a *Striga* sorghum ecotype, making pearl millet a suitable rotation crop. Vice versa exudation of high amounts of 5-deoxystrigol by sesame and groundnuts correlated with high (suicidal) germination stimulatory activity and low *Striga* infection when sorghum was intercropped with these intercrops. This knowledge enables a more targeted selection/ breeding of resistant rotation crop cultivars or intercrop cultivars that induce more *Striga* suicidal germination. Knowledge on the sensitivity of the target *Striga* ecotype for certain strigolactones is important before a specific intercrop can be advised in the process of combating *Striga* in sorghum and other cereals.

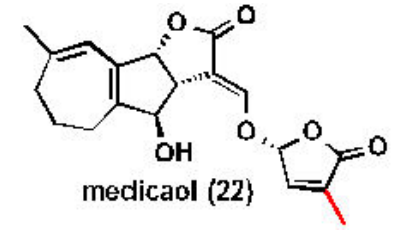
In **chapter 5** a field experiment using 5 sorghum genotypes with different strigolactone profiles shows that the results from lab and greenhouse experiments can be translated to the field. For example, sorghum genotypes Fakimustahi and Wadfahel with high production of 5-deoxystrigol and sorgomol and relatively low orobanchol production exhibited high susceptibility to *Striga* in the field whereas Mogud and Wadbaco with much lower 5-deoxystrigol and sorgomol production and higher orobanchol exhibited field resistance.

In **chapter 6** I discuss the main highlights of the present thesis. I showed that there is a relationship between resistance/tolerance and the amount and identity of SL production. I hope that the knowledge generated in my thesis about the role of strigolactones in resistance and tolerance can help breeders with the selection of genotypes better equipped to withstand *Striga*. In addition I hope that the data generated by me can be used for the identification of the underlying genetic regions which would potentially allow the transfer of resistance and tolerance to elite but susceptible sorghum genotypes. The use of these traits in combination with post-attachment resistance mechanisms should result in a better and durable control of this parasite.

CORRIGENDUM

Yoneyama, K., *et al.* 2018. Which are the major players, canonical or non-canonical strigolactones? Journal of Experimental Botany 69: 2231–2239. .

The structure of medicaol (Fig. 1, 22) should have a methyl on the D-ring and that of zealactone (Fig. 2, 24) should have a conjugated double bond as shown below. The error re zealactone also occurs in the paper by Uraguchi *et al.* 2018 – see both papers listed below.



medicaol (22)

zealactone (24)

FORTHCOMING MEETINGS

International Conference on Legume Genetics and Genomics (ICLGG). 9th Biennial Conference, Dijon, France May 13th-17th, 2019. Including a session on Biotic Stress Resistance.

Abstract and Early Bird registration deadlines 11th January, 2019. http://iclgg2019.com/

15th World Congress on Parasitic Plants. Amsterdam, the Netherlands, 30th June – 5th July.

IUFRO World Congress 2019 - Technical Session - **Complex interactions of mistletoe, ecosystems, and people.** Curitiba, Brazil. 29 September – 5 October, 2019. Abstract deadline 31st December, 2018. http://www.iufro2019.com/ Or contact**:** David Shaw, Oregon State University, dave.shaw@oregonstate.edu

GENERAL WEB SITES

For individual web-site papers and reports see * 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 the first circular, 15th World Congress on Parasitic Plants, Amsterdam. 2019, see: https://www.wcpp2019.org

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

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

For the Index of Orobanchaceae prepared by Óscar Sáchez Pedraja, Gerald Schneeweiss and others (updated December 2018), see: http://www.farmalierganes.com/Otrospdf/publica/Orobanchaceae%20Index.htm

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 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

LITERATURE

***indicates web-site reference only**
Items in bold selected for special interest
Items in blue relate to therapeutic uses of parasitic plants

Agyeno, O. E., Aigbokhan, E. I., Jayeola, A. A., Elisha, E. B., Dawurung, C. J., Gosomji, Y. J., and Oso, O. A. 2018. Incidence of *Hydnora* Thunb. in Nigeria: First report. Nigerian Field 83 (x) xx-xxx. [Records the first collection of *Hydnora abyssinica* in West Africa, a considerable range extension for this species. It is used in traditional medicine for digestive ailments as reported in eastern and southern Africa. The authors document numerous hosts, all legumes including the first report for parasitism of *Piliopstigma thonningii*.]

Agyigra, I.A., Ejiofor, J.I. and Magaji, M.G. 2017. Acute and subchronic toxicity evaluation of methanol stem-bark extract of *Ximenia americana* Linn (Olacaceae) in Wistar rats. Bulletin of the Faculty of Pharmacy, Cairo University 55(2): 263-267. [Extracts of the bark of *X. americana,*

used traditionally in Nigeria to treat bowel ulcers, were shown to be quite safe in mice but have some toxic effect in rats.]

Ahmed, N.M. 2018. The role of strigolactones in resistance, tolerance and control of *Striga* infection in sorghum. PhD Thesis, Wageningen University, Wageningen, Netherlands, 220 pp. [see Thesis above.]

Aistova, E.V. and Bezborodov, V.G. 2017. Weevils belonging to the genus *Smicronyx* Schönherr, 1843 (Coleoptera, Curculionidae) affecting dodders (*Cuscuta* Linnaeus, 1753) in the Russian Far East. Russian Journal of Biological Invasions 8(2): 184-188. [*S. rubricatus* occurred on *C. japonica* but did not form galls, while *S. madaranus* infested *C. campestris* and formed galls.]

Akinnagbe, O.M., Adeniran, T P. and Adeniran, A.A. 2018. Intra-household roles in cocoa production in Ondo State, Nigeria. Journal of Agricultural Extension 22(3): 77-86. [Recording that removal of (unspecified) mistletoe is predominantly done by men, but not quantifying how much time is required.]

Al-Sultany, F.H., Al-Husainy, I.M. and Al-Saadi, A.H. 2018. Determination of cytotoxicity by apoptosis and some liver biochemical indices in type 1 diabetic rats treated with *Cuscuta chinesis* Lam. Biochemical and Cellular Archives 18(Suppl. 1): 1029-1035. [Concluding that diabetic rats treated with 400 mg/Kg body weight of *C. chinesis* extract for two months regained fasting plasma glucose to the normal level and without biochemical evidence of toxicity.]

Amini, M., Nabiabad, H.S. Deljou, A. 2018. The role of cuscutain-propeptide inhibitor in haustoria parasitism and enhanced resistance to dodder in transgenic alfalfa expressing this propeptide. Plant Biotechnology Reports 12(3): 165-173. [Cuscutain is a cysteine protease produced by dodder essential for the development and penetration of the haustoria in host. Penetrating digitate cells of haustoria could not differentiate into the xylem and phloem hyphae when cuscutain was inhibited.]

Anam Fatima, Mushtaq Ahmad, Muhammad Zafar, Ghulam Yaseen, Khan, M.P.Z., Butt, M.A. and Shazia Sultana. 2018. Ethnopharmacological relevance of medicinal plants used for the treatment of oral diseases in Central Punjab-Pakistan. Journal of Herbal Medicine 12: 88-110. [Including results for *Cuscuta reflexa*.]

Anjana Bista. 2018. Polarity nature of seed germination stimulants present in root extract of host plants of *Orobanche* spp. Indian Journal of Weed Science 50(1): 97-99. [Hexane and ethyl acetate fractions of root extract of tobacco, tomato and brinjal induced better germination of *Orobanche cernua* than any other solvent tested.]

Arti Rani, Meghana, R. and Anil Kush. 2018. Squalene production in the cell suspension cultures of Indian sandalwood (*Santalum album* L.) in shake flasks and air lift bioreactor. Plant Cell, Tissue and Organ Culture 135(1): 155-167. [Describing the generation of squalene, of value in a range of therapeutic uses including cancer, in cell suspensions of *S. album* as an alternative to the current source - shark liver oil.]

Ashwani Tapwal, Swedha Verma and Gunjan Thakur. 2017. *In vitro* evaluation of *Trichoderma* species and botanicals for the management of *Lasiodiplodia theobromae*. Indian Forester, Dehradun, India. Indian Forester 143(12): 1312-1317. [An extract of *Santanlum album* was among the most effective treatments for the control of *L. theobromae*, the causal agent of bark cancer in a wide range of crops species.]

Aybeke, M. 2018. Transcriptomic effects of *Aspergillus alliaceus* on *Orobanche* during its pathogenesis. Journal of Plant Diseases and Protection 125(1): 33-39. [The pathogenicity of *Aspergillus alliaceus* (Aa), a fungal biocontrol agent, was tested for its effect on *Orobanche* transcriptomics. It was concluded that during Aa pathogenesis, (1) the increased SOD value was associated with ROS (reactive oxygen species) threats; (2) the fungus disturbed protein synthesis metabolism; (3) the inhibited antioxidant and apoptosis-based pathways compared to the control group.]

Babita Mishra, Sandeep Chakraborty, Sandhya, M.C. and Viswanath, S. 2018. Sandalwood farming in India: problems and prospects. Indian Journal of Tropical Biodiversity 26(1): 1-12. [Noting a substantially increased interest in farming *Santalum album* in India in recent years. Discussing cultivation methods in current farming systems and current and future prospects for increased livelihood opportunities and enhanced farm income.]

*Bandaranayake, P.C.G, and Yoder, J.I. 2018. Factors affecting the efficiency of Rhizobium rhizogenes root transformation of the root parasitic plant *Triphysaria versicolor* and its host *Arabidopsis thaliana.* Plant Methods 14: 61 pp. (https://plantmethods.biomedcentral.com/track/pdf/10.1186/s13007-018-0327-2) [Various environmental, nutritional and procedural conditions were examined for their effects on transformation by *Rhizobium rhizogenes* of the model hemi-parasitic plant *Triphysaria versicolor* and *Arabidopsis thaliana*. Analyses of root

transformation factors provided a method for recovering transgenic roots from both parasitic plants and their hosts at high frequency.]

Bartolucci, F. and 20 others. 2017. Notulae to the Italian native vascular flora: 4. Italian Botanist 4: 43-51. [*Melampyrum variegatum* is reported for Lazio, but not confirmed in the regional flora recently published by Anzalone et al. (2010).]

Baso, A.A. and Mudi, S.Y. 2017. Evaluation of antiulcer and phytochemical activities of leaf extracts from *Tapinanthus dodoneifolius* DC. (*Loranthaceae*) grown on *Tamarindus indica* tree. Bayero Journal of Pure and Applied Sciences 10(1): 392-396. [Results confirm that an aqueous extract from *T. dodoneifolius* growing on tamarind, reduced aspirin-induced ulceration in wistar rats for one week and showed no serious side effects.]

Beladjila, K.A., Berrehal, D., de Tommasi, N., Granchi, C., Bononi, G., Braca, A. and de Leo, M. 2018. New phenylethanoid glycosides from *Cistanche phelypaea* and their activity as inhibitors of monoacylglycerol lipase (MAGL). Planta Medica 84(9/10): 710-715. [Identifying four new glycosides, one of which showed good activity on MAGL, an enzyme involved in the lipidic metabolism of cancer cells.]

Belmont, J., Sánchez-Coronado, M.E., Osuna-Fernández, H.R., Orozco-Segovia, A. and Pisanty, I. 2018. Priming effects on seed germination of two perennial herb species in a disturbed lava field in central Mexico. Seed Science Research 28(1): 63-71. [Germination of *Castilleja tenuiflolia* was increased by 'priming', a wetting/re-drying regime in the lab, or burying in moist soil for different periods.]

*Bİlgİİ, E., Ozturk, M., Coskuner, K.A., Baysal, I., Serdar, B., Yavuz, H., Eroglu, M. and Usta, Y. 2018. Quantifying the effect of pine mistletoe on the growth of Scots pine. Forest Pathology 48(4): e12435. (https://onlinelibrary.wiley.com/journal/14390329) [Noting that *Viscum album* ssp. *austriacum* causes substantial damage to *Pinus sylvestris* in Turkey and confirming that radial growth could reduced by 40-60%.]

Boğa, M., Yaman, S., Doğan, S.C. and Burğut, A. 2018. (Determination of feed value of mistletoe collected in Niğde region by *in vitro* gas production technique.) (in Turkish) Turkish Journal of Agriculture - Food Science and Technology 6(8): 1051-1057. [Unspecified mistletoe (*Viscum album* or *Loranthuis europaeus*) proved to be moderate in protein and in fibre and high in crude fat content compared with forages, and very good in metabolizable energy and net energy lactation values. Assuming its safety is confirmed in feeding trials, it has good potential as a feed ingredient in the diets of ruminants.]

Bouwmeester, H. 2018. Can witchweed be wiped out? Science 362(6420): 1248-1249. [Commenting on the paper by Uraguchi *et al* – see below.]

Boutet-Mercey, S., Perreau, F., Roux, A., Clavé, G., Pillot, J.P., Schmitz-Afonso, I., Touboul, D., Mouille, G., Rameau, C. and Boyer, F.D. 2018. Validated method for strigolactone quantification by ultra high-performance liquid chromatography - electrospray ionisation tandem mass spectrometry using novel deuterium labelled standards. Phytochemical Analysis 29(1): 59-68. [A method was developed for determining endogenous fabacyl acetate and orobanchyl acetate in plant tissue based on novel deuterium labelled standards. A method of orobanchol quantification using GR24 as internal standard was proposed.]

*Bragard, C. and 20 others. 2018. Pest categorisation of *Arceuthobium* spp. (non-EU). EFSA Journal 16(7): e05384. (https://efsa.onlinelibrary.wiley.com/doi/10.2903/j.efsa.2018.5384) [Reviewing the dangers from introduction of exotic *Arceuthobium* species into Europe and concluding that 'as a group of organisms, the criteria assessed by the Panel for consideration as a potential quarantine pest are met, while, for regulated non-quarantine pests, the criterion on the pest presence in the EU is not met.' (clear?).]

Bromhead, L.J., Norman, A.R., Snowden, K.C., Janssen, B. and McErlean, C. 2018. Enantioselective total synthesis and biological evaluation of (−)-solanacol. Organic & Biomolecular Chemistry 16(30): 5500-5507. [Describing the third, shortest and efficient synthesis of optically pure natural solanacol in only 6-steps. Solanacol was confirmed to be far more active than GR24 in germination stimulation of *O. minor* seeds. Although solanacol was reported to be inactive in bud outgrowth inhibition of pea, differential scanning fluorimetry (DSF) demonstrated that it could interact with the strigolactone receptor DAD2.]

Brun, G., Braem, L., Thoiron, S., Gevaert, K., Goormachtig, S. and Delavault, P. 2018. Seed germination in parasitic plants: what insights can we expect from strigolactone research? **Journal of Experimental Botany 69(9)**: 2265-2280. [Discussing strigolactone biosynthesis, perception, and signal pathways and the many questions remaining to be answered regarding the

germination process of parasitic plants, including how parasitic plants evolved to germinate in response to a wide variety of molecules, while autotrophic plants do not and what particular features are associated with their lack of spontaneous germination. Reviewing to what extent conclusions from research into strigolactones could be applied to better understand the biology of parasitic plants.]

Bush, D., Harwood, C. and Pinkard, E. 2018. Species for changing climates - Australian dryland forestry opportunities. Australian Forestry 81(2):102-115. [Including consideration of the future for 'emerging products such as sandalwood oil'.]

*Butt, H. Muhammad Jamil, Jian YouWang, Al-Babili, S. and Mahfouz, M. 2018. Engineering plant architecture via CRISPR/Cas9-mediated alteration of strigolactone biosynthesis. BMC Plant Biology 18(1): 174. (https://doi.org/10.1186/s12870-018-1387-1) [*ccd7* mutants of rice showed increased tillering and greatly reduced exudation of strigolactone, and consequent reduction in germination of *Striga*.]

Caires, C.S. 2018. (Flora of the canga of Serra dos Carajás, Pará, Brazil: Loranthaceae.) (in Portuguese) Rodriguésia 69(1): 133-146. [Nine species recorded - *Oryctanthus alveolatus*, *O. florulentus*, *Passovia disjectifolia*, *P. pedunculata*, *P. pyrifolia*, *Peristethium reticulatum*, *Psittacanthus eucalyptifolius*, *Struthanthus marginatus* and *S. polyrhizus*.]

Calvo, M.V., Delgado, S., Scatoni, I. and Mello Garcia, F.R. 2017. First report of *Neosilba pradoi* and *Dasiops frieseni* (Diptera: Lonchaeidae) in cultivated and wild hosts in Uruguay. Florida Entomologist 100(4): 831-832. [Recording an undetermined lonchaeid fly on *Acanthosyris spinescens* (Santalaceae).]

Celedon, J.M. and Bohlmann, J. 2018. An extended model of heartwood secondary metabolism informed by functional genomics. Tree Physiology 38(3): 311-319. [Studying the development and decay of heartwood in *Santalum album* and discussing a variation of existing models of hertwood formation, based on the recent discovery of specific transcriptome signatures of terpenoid biosynthesis.]

Chen, J., Wei, J., Gao, J.M., Ye, X.X., Mcerlean, C.S.P. and Ma, Y.Q. 2017. Allelopathic inhibitory effects of *Penicillium griseofulvum* produced patulin on the seed germination of *Orobanche cumana* Wallr. and *Phelipanche aegyptiaca* Pers. Allelopathy Journal 41(1): 65-80. [Results confirmed complete inhibition of germination of *O. cumana* and *P. aegyptiaca* by dried *P. griseofulvum* and showed this was due to the active component, patulin, at 1 mg/l.]

Chen XianBing, Yang QingYu, Qin XiaoLi, Zhao FangYu, Tang XianE, Wang ZiLi, Chen ZongHai and Xiang JiaPeng. 2018. (Effect of *Balanophora* polysaccharide on expression of PPARγ, irisin and glucolipid metabolism in experimental diabetic rats.) (in Chinese) Chinese Journal of Pharmacology and Toxicology 32(5): 400-406. [Confirming that *Balanophora* saccharide 'can significantly reduce the blood glucose level in diabetic rats induced by STZ, enhance the antioxidant capacity, improve the abnormal blood lipid metabolism, can improve the irisin level and enhance the PPAR expression in the liver.']

Chen ZhuLin and Wang XueFeng. 2018. (Image diagnostic method of *Zeuzera coffeae* in *Santalum album* by texture models.) in Chinese) Journal of Southwest Forestry University 38(1): 117-125. [Involving *Z. coffeae,* coffee carpenter moth in *S. album* but abstract not clear.]

*Chen ZhuLin, Wang XueFeng and Wang HuaiJing. 2018. Preliminary research on total nitrogen content prediction of sandalwood using the error-in-variable models based on digital image processing. PLoS ONE 13(8): e0202649. (https://journals.plos.org/plosone/article?id=10.1371/journal.pone.0202649) [Describing the use of ground-based digital imaging to assess the nitrogen status of *Santalum album*, a relatively new introduced crop in China.]

Cheng Dan, Zheng JunChao, Ma SuYa, Murtaza, G., Wahab, A., Yu ChangYing, Liu JingWei and Lu Yi. 2107. Chemical constituents, and pharmacological and toxicological effects of *Cynomorium songaricum*: an overview. Tropical Journal of Pharmaceutical Research 16(11): 2689-2696. [Extracts of *C. songaricum* have promising pharmacological activities, due to the presence of various flavonoids, triterpenes and polysaccharides as well as promising effects against inflammation, aging, fatigue, viruses and cancer. No serious side effects have been seen but more testing is needed.]

Cheung WingLan and 9 others. 2018. Gelsemium poisoning mediated by the non-toxic plant *Cassytha filiformis* parasitizing *Gelsemium elegans*. Toxicon 154: 42-49. [Confirming that *C. filiformis* can absorb the toxic alkaloids from *G. elegans* and cause acute poisoning in patients taking *C. filiformis* as a traditional medicine.]

Chiocchio, I., Mandrone, M., Sanna, C., Maxia, A., Tacchini, M. and Poli, F. 2018. Screening of a hundred plant extracts as tyrosinase and elastase inhibitors, two enzymatic targets of cosmetic

interest. Industrial Crops and Products 122: 498-505. [*Cytinus hypocistis* was among the most potent inhibitor of elastase while being low in inhibition of tyrosinase.]

*Cui JinLong, Vinod Vijayakumar and Zhang Gang. 2018. Partitioning of fungal endophyte assemblages in root-parasitic plant *Cynomorium songaricum* and its host *Nitraria tangutorum.* Frontiers in Microbiology 9(April): pp.666. (https://www.frontiersin.org/articles/10.3389/fmicb.2018.00666/full) [Presenting evidence for the movement of endophytic fungi from *C. songaricum* to its host.]

Cui JinLong, Zhang YanYan, Vinod Vijayakumar, Zhang Gang, Wang MengLiang and Wang JunHong. 2018. Secondary metabolite accumulation associates with ecological succession of endophytic fungi in *Cynomorium songaricum* Rupr. Journal of Agricultural and Food Chemistry 66(22): 5499-5509. [Detecting and describing variations in the accumulation of secondary metabolites associated with particular endophytic fungi communities.]

Cui QingLing, Pan YingNi, Zhang Wei, Zhang YaNan, Ren ShuMeng, Wang DongMei, Wang ZhenZhong, Liu XiaoQiu and Xiao Wei. 2018. Metabolites of dietary acteoside: profiles, isolation, identification, and hepatoprotective capacities. Journal of Agricultural and Food Chemistry 66(11): 2660-2668. [Supporting the use of a tea made from unspecified *Cistanche* sp. for hepatotoprotectioin. And indicating that metbolites of acteoside are responsible for the effect.]

da Fonseca-Pereira, P., Silva, W.B., Araújo, W.L. and Nunes-Nesi, A. 2018. How does European mistletoe survive without Complex I? Trends in Plant Science 23(10): 847-850. [Commenting on the recent confirmation of the complete absence of mitochondrial Complex I in a multicellular eukaryote, *Viscum album*, and demonstrating that its mitochondrial electron transport chain displays dramatic rearrangements of its components apparently reflecting its parasitic lifestyle.]

da Pantoja, P. and 11 others. 2018. The polysaccharide-rich tea of *Ximenia americana* barks prevents indomethacin-induced gastrointestinal damage *via* neutrophil inhibition. Journal of Ethnopharmacology 224: 195-201.

da Silva, B.A.F., da Costa, R.H.S., Fernandes, C.N., Leite, L.H.I., Ribeiro Filho, J., Garcia, T.R., Coutinho, H.D.M., Wanderley, A.G. and da Menezes, I.R.A. 2018. HPLC profile and antiedematogenic activity of *Ximenia americana* L. (Olacaceae) in mice models of skin inflammation. Food and Chemical Toxicology 119:199-205.

da Silva, J.A.T., Kher, M.M., Deepak Soner, Nataraj, M., Dobránszki, J. and Millar, M.A. 2018. *Santalum* molecular biology: molecular markers for genetic diversity, phylogenetics and taxonomy, and genetic transformation. Agroforestry Systems 92(5): 1301-1315.

Dai, M., Fadhilah, A., Rahmawati, J., Forentin, A., Usia, T., Maryati, M. and Saifudin, A. 2018. T47D cell-inhibiting Indonesian medicinal plants and active constituents of *Alpinia galanga* rhizome. Pharmacognosy Magazine 14(56): 359-363. [30 medicinal plants tested for possible treatment of human breast cancer. The 5 most active on a T47D cell line included *Santalum album*.]

De Moraes, P.L.R. 2018. (Flora of the canga of the Serra dos Carajás, Pará, Brazil: Lauraceae.) (in Portuguese) Rodriguésia 69(1): 81-117. [*Cassytha filiformis* among species recorded on iron-ore outcrops.]

De Souza, M.C., Scalon, M.C., Poschenrieder, C., Tolrà, R., Venâncio, T., Teixeira, S.P. and da Costa, F.B. 2018. Aluminium detoxification in facultative (*Passovia ovata* (Pohl ex DC.) Kuijt and *Struthanthus polyanthus* Mart. - Loranthaceae) and dependent (*Psittacanthus robustus* (Mart.) Marloth - Loranthaceae) Al-accumulating mistletoe species from the Brazilian savanna. Phytochemistry 153: 58-63. [Describing how *P. robustus* parasitizes only Al-acumulating species (such as *Miconia albicans*) and protects itself from Al poisoning by chelation with oxalate, while *P. ovata* and *S. polyanthus* had higher citrate and phenolic concentrations.]

Dieni, Z., Tignegre, J-B. de la Salle, Tongoona, P., Dzidzienyo, D., Asante, I.K. and Ofori, K. 2018. Identification of sources of resistance to *Alectra vogelii* in cowpea [*Vigna unguiculata* (L.) Walp.] germplasm from Burkina Faso. Euphytica 214: 234. [*A. vogelii* is serious problem on cowpea in Burkina Faso. Seven varieties shown to be resistant (immune?) three of which - Komcalle, IT99K-573-2-1 and IT98K-205-8 are improved varieties which can be recommended to farmers.]

*Disciglio, G. and 9 others. 2018. Effect of olive-mill wastewater application, organo-mineral fertilization, and transplanting date on the control of *Phelipanche ramosa* in open-field processing tomato crops. Agronomy 8(6): 92. (https://www.mdpi.com/2073-4395/8/6/92) [*P. ramosa* emergence was reduced and tomato yields significantly increased by delaying transplanting from April to May in southern Italy. Also by application of olive-mill waste water at 80m^3/ha

40 days before planting, and by several organic fertilizer preparations.]

Domina, G. 2018. Host-driven morphological variability in *Orobanche crenata* (Orobanchaceae) Turkish Journal of Botany 42(4): 502-509. [Recording that *O. crenata* was larger in various parameters on more vigorous hosts such as faba bean. The shape of the calyx and colour of corolla and stigma also showed significant variations according to the host – faba bean, pea, chickpea and vetch.]

Dong YanHong, Guo Qi, Liu JingJing and Ma XueQin. 2018. Simultaneous determination of seven phenylethanoid glycosides in *Cistanches* Herba by a single marker using a new calculation of relative correction factor. Journal of Separation Science 41(9): 1913-1922.

Dostert, N., Caceres, F., Brokamp, G. and Weigend, M. 2018. (In situ propagation of rhatany - *Krameria lappacea* (Krameriaceae): factors limiting natural regeneration and effects of reseeding measures.) (in Spanish) Revista Peruana de Biología 25(1): 29-34. [Exploring measures to improve the propagation of the medicinal and dye plant, *K. lappacea*, by the burial of the seeds, and by regrowth from secondary roots.]

Eizenberg, H. and Goldwasser, Y. 2018. Control of Egyptian broomrape in processing tomato: a summary of 20 years of research and successful implementation. Plant Disease 102(8): 1477-1488. [Describing the development of the PICKIT decision support system for application of sulfosulfuron and imazapic to control *P. aegyptiaca* in tomato and its successful use in Israel to increase tomato yields by 40 t/ha.]

Emiru Birhane, Kidu Gebremeskel, Tewodros Taddesse, Mengsteab Hailemariam, Kiros Meles Hadgu, Norgrove, L. and Negussie, A. 2018. Integrating *Faidherbia albida* trees into a sorghum field reduces striga infestation and improves mycorrhiza spore density and colonization. Agroforestry Systems 92(3): 643-653. [Planting of the agroforestry tree *F. albida* in sorghum resulted in improved sorghum yield under the canopy, associated with increased fertility and increased AM fungi.]

Etame-Loe, G., Ebongue, C.O., Ngaba, G.P., Mpai, M., Pouka, C.K., Ngene, J.P., Ngoule, C.C., Yinyang, J., Tankeu, E.S. and Dibong, S.D. 2018. (Evaluation of the antioxidant and antiinflammatory activities of the aqueous extract of *Phragmanthera capitata* haustorium harvested on *Psidium guajava* on adult female Wistar rats.) (in French) Journal of Animal and Plant Sciences (JAPS) 36(3): 5933-5941. [The aqueous extract of the *P. capitata* haustorium had antioxidant and anti-inflammatory properties as well as having low toxicity, and its use in traditional medicine appears justified.]

*Fang Lei, He TianTian,Wang Xiao and Zhou Jie. 2018. Isolation and purification of galloyl, caffeoyl, and hexahydroxydiphenoyl esters of glucoses from *Balanophora simaoensis* by high-speed countercurrent chromatography and their antioxidant activities in vitro. Molecules 23(8): 2027 (https://www.mdpi.com/1420-3049/23/8/2027/htm)

Franke, A.C., van den Brand, G.J., Vanlauwe, B. and Giller, K.E. 2018. Sustainable intensification through rotations with grain legumes in Sub-Saharan Africa: A review**.** Agriculture, Ecosystems & Environment 261(1): 172-185. [As part of the N2Africa programme, funded by Gates Foundation, reviewing the influence of legumes on a range of factors, concluding that the only effect on weeds is on *Striga* spp., via suicidal germination or as a result of increased soil fertility.]

Freire, S.M.de F and 11 others. 2018. Protective effect of *Struthanthus marginatus* on ethanol-induced gastric damage in mice. Pharmacognosy Research10(2): 143-150. [The results show that *S. marginatus* is rich in flavonoids and that these compounds contribute directly to the gastroprotective and ulcer healing effects of this herb.]

Fu ZhiFei, Fan Xiang, Wang XiaoYing and Gao XiuMei. 2018. Cistanches Herba: an overview of its chemistry, pharmacology, and pharmacokinetics property. Journal of Ethnopharmacology 219: 233-247. [A wide-ranging review on the components, and activity of 'Cistanche Herba' (presumably based on *Cistanche deserticola* and/or *C. tubulosa*), concluding that the phenylethanoid glycosides, echinacoside and acteoside, have demonstrated wide pharmacological actions and have great clinical value if challenges such as poor bioavailability, fast and extensive metabolism are addressed. Other constituents, their pharmacological activities and underlying mechanisms, also deserve further study.]

Garba, Y., Abubakar, H.N. and Aliyu, I. 2017. Influence of inorganic fertilizer and spacing on growth and yield of two maize cultivars under *Striga hermonthica* infestation. Agro-Science 16(2): 38-45. [Nitrogen at 60, 120 and 180 kg/ha caused increasing reduction in *S. hermonthica* with resultant significant increases in yield. Spacing caused no significant differences.]

García, M.A., Nickrent, D.L. and Mucina, L. 2018. *Thesium nautimontanum*, a new species of Thesiaceae (Santalales) from South Africa. Phytokeys 109: 41-51. [A new species from the Matroosberg Mountains of Western Cape Province of South Africa shows several morphological features unusual for the genus. Molecular (ITS rDNA) analyses place it as sister to all African, Madagascan, and South American *Thesium* species]

Gebauer, R., Volařík, D. and Urban, J. 2018. Seasonal variations of sulphur, phosphorus and magnesium in the leaves and current-year twigs of hemiparasitic mistletoe *Loranthus europaeus* Jacq. and its host *Quercus pubescens* Willd. Journal of Forest Science 64(2):66-73. [Levels of S, P and Mg in host and parasite varied greatly through the year but were generally higher in the *L. europaeus* than in the host].

Gonzalvez, J. and 10 others. 2017. The enriched proanthocyanidin extract of *Ligaria cuneifolia* shows a marked hypocholesterolemic effect in rats fed with cholesterol-enriched diet. Recent Patents on Endocrine, Metabolic & Immune Drug Discovery 11(1): 47-53. [Results with *L. cuneifolia* in Argentina.]

Goswami, N.B. and Jagatpati Tah. 2018. White sandal (*Santalum album* L.), a precious medicinal and timber yielding plant: a short review. Plant Archives 18(1): 1048-1056. [Reviewing the medicinal, religious, domestic and industrial uses of *S. album*.]

Gulwaiz Akhter and Khan, T.A. 2018. First report of disease complex caused by *Orobanche aegyptiaca* and *Meloidogyne incognita* in *Nicotiana tobacum* in India. Plant Disease Research 33(1): 107-108. [Reporting simultaneous infection of tobacco by *O. aegyptiaca* and *M. incognita* in Bihar, India, resulting in more severe damage than either alone.]

Gutsch, J., Werthmann, P.G., Rosenwald, A. and Kienle, G.S. 2018. Complete remission and long-term survival of a patient with a diffuse large B-cell lymphoma under *Viscum album* extracts after resistance to R-CHOP: a case report. Anticancer Research 38(9): 5363-5369. [Reporting complete remission of a lymphoproliferative disorder after treatment with a *V. album* extract confirming that further investigations seem highly worthwhile.]

*Haghighian, F. and Jahanbazi, H. 2107. (Introduction of wild almond pests species in Karebas region in Chaharmahal va Bakhtiary province.) (in Persian) Iranian Journal of Forest and Range Protection Research 15(2): Pe147-Pe154. (http://ijfrpr.areeo.ac.ir/article_115706_a73b3d0b9987efec07d62e45d2194958.pdf) [Noting that *Loranthus grewinskii* and unspecified *Orobanche* spp. commonly damage several species of wild almonds in this district.]

Halbritter, D.A., Willett, D.S,, Gordon, J.M., Stelinski, L.L. and Daniels, J.C. 2018. Behavioral evidence for host transitions in plant, plant parasite, and insect interactions. Environmental Entomology 47(3): 646-653. [*Neophasia* butterflies were more frequent on ponderosa pines infected by *Archeuthobium americanum* probably due to the volatiles released by the mistletoe. Commenting that mistletoe is considered the butterflies' ancestral host, and the evolutionary transition to pine may have occurred recently in Arizona.]

*Hameed, U.S., Haider, I., Jamil, M., Kountche, B.A., Guo, X., Zarban, R.A., Kim, D., Al-Babili, S. and Arold, S.T. 2018. Structural basis for specific inhibition of the highly sensitive ShHTL7 receptor. EMBO Reports - advance online publication, 18 July 2018. (**http://embor.embopress.org/content/early/2018/07/18/embr.201745619**) [[For germination, *Striga* seeds require host-released strigolactones that are perceived by the family of HYPOSENSITIVE to LIGHT (ShHTL) receptors. Broad specificity and high sensitivity of ShHTL7 was suggested. Strigolactones trigger structural changes in ShHTL7 and several lead compounds were suggested for the rational design of efficient *Striga*-specific herbicides targeting ShHTL And see project report above.]

Haque, M. and Coury, D.L. 2018. Topical sandalwood oil for common warts. Clinical Pediatrics 57(1): 93-95. [Sandalwood oil was applied topically twice daily for 12 weeks cured cutaneous warts in 8 subjects out of 10.]

*Hasegawa, S. and 16 others. 2018. Low Infection of *Phelipanche aegyptiaca* in Micro-Tom Mutants Deficient in *CAROTENOID CLEAVAGE DIOXYGENASE 8.* International Journal of Molecular Sciences 19(9): 2645. (https://www.ncbi.nlm.nih.gov/pmc/articles/PMC6163878/) [Showing that strigolactones were very low in exudates from ccd8-defective mutants of Micro-Tom tomato and caused very little germination of *P. aegyptiaca*.]

Ichihashi, Y., Kusano, M., Kobayashi, M., Suetsugu, K., Yoshida, S., Wakatake, T., Kumaishi, K., Shibata, A., Saito, K. and Shirasu, K. 2018. Transcriptomic and metabolomic reprogramming from roots to haustoria in the parasitic plant, *Thesium chinense.* Plant and Cell Physiology 59(4): 729-738. [Field-omics data provided

evidence supporting the hypothesis that the molecular developmental machinery used for lateral root formation in non-parasitic plants has been co-opted into the developmental reprogramming of haustorial formation in parasitic plants.]

Inayat-ur-Rahman, Aftab Afzal, Zafar Iqbal, Farhana Ijaz, Niaz Ali, Muhammad Asif, Jan Alam, Abdul Majid, Hart, R. and Bussmann, R.W. 2018. First insights into the floristic diversity, biological spectra and phenology of Manoor Valley, Pakistan. Pakistan Journal of Botany 50(3): 1113-1124. [Recording *Cuscuta reflexa*.]

Iseki, M., Shida, K., Kuwabara, K., Wakabayashi, T., Mizutani, M., Takikawa, H. and Sugimoto, Y. 2018. Evidence for species-dependent biosynthetic pathways for converting carlactone to strigolactones in plants. **Journal of Experimental Botany** 69(9): 2305-2318. [Hinanit?]

Jacobs, S.J., Kristofferson, C., Uribe-Convers, S., Latvis, M. and Tank, D.C. 2018. Incongruence in molecular species delimitation schemes: what to do when adding more data is difficult. Molecular Ecology 27(10): 2397-2413. [Incongruence between different molecular data sets is often dealt with whereas incongruence within a line of evidence must also be accounted for. Two molecular species delimitation approaches (SpedeSTEM and BPP) were applied to the *Castilleja ambigua* (Orobanchaceae) species complex; the latter proved superior.]

Jain, A.K., Ruchi Chourasia, Ashish Kumar and Joshi, R.P. 2018. Identification of resistant genotypes against *Striga asiatica* (L.) Kuntze in kodo millet. Electronic Journal of Plant Breeding 9(2): 603-610. [Comparing 38 varieties of *Paspalum scrobiculatum* for the susceptibility to *S. asiatica* and finding a wide range of susceptibility but no immunity.]

Jamil, M. and 16 others. 2018. Methyl phenlactonoates are efficient strigolactone analogs with simple structure. Journal of Experimental Botany 69(9): 2319-2331. [Describing the synthesis of methyl phenolactones based on the structure of the non-canonical SL methyl carlactonoate, some of which stimulate germination of *Striga hermonthica* and outperform GR24 in some other types of activity. Small variations in structure cause changes in the spectrum of activity. MP1 compared favouably with GR24 in a test for suicidal germination of *S. hermonthica* in soil.]

Kabiri, S., Rodenburg, J., van Ast, A. and Bastiaans, L. 2017. Slavery in plants: how the facultative hemi-parasitic plant *Rhamphicarpa fistulosa* can completely dominate its host. Annals of Applied Biology 171(3): 353-363. [Pot experiments demonstrated that *R. fistulosa* initially causes increased root:shoot ratio decreased host plant height, leaf area and tiller number. This may be followed by interference with light interception, leading to almost complete cessation of host growth, 22-71% reduction in biomass and up to 100% reduction in seed yield.]

*Kaitera, J., Kalleinen, L., Mikkilä, J. and Hantula, J. 2017. *Cronartium flaccidum* sporulates on new *Euphrasia* species in natural habitats in Finland. Forest Pathology 47(5): e12349. (https://onlinelibrary.wiley.com/doi/10.1111/efp.12349) [Natural sporulation of the pine rust, *C. flaccidum,* was confirmed on 6 species of *Melampyrum, Euphrasia* and *Pedicularis* but not on *Rhinanthus minor.*]

Kakoli Banerjee, Khemendu, G.R., Rakesh Paul and Abhijit Mitra. 2018. Carbon storage potential in dominant trees of Koraput District of Odisha. In: Singh, V.P., Yadav, S. and Yadava, R.N. (eds) Select Proceedings of ICWEES-2016, International Conference on Water, Environment, Energy and Society, Madhya Pradesh, India, 15-18 March 2016: pp. 235-249. [Comparing the carbon storage potential of a range of forest trees and finding that of *Santalum album* relatively low.]

Kanampiu, F., Makumbi, D., Mageto, E., Omanya , G. Waruingi, S., Musyoka, P. and Ransom, J. 2018. Assessment of management options on *Striga* infestation and maize grain yield in Kenya. Weed Science 66(4): 516-524. [Three varieties of maize were grown as sole crop, inter-cropped with *Desmodium uncinatum* or groundnut or rotated with soya bean. Highest yields and least *Striga hermonthica* were recorded with *Striga*-resistant and herbicide-resistant varieties (with herbicide) intercropped with *Desmodium*.]

Keno, T., Azmach, G., Wegary, D., Worku, M., Tadesse, B., Wolde, L., Deressa, T., Abebe, B., Chibsa, T. and Suresh, L.M. 2018. Major biotic maize production stresses in Ethiopia and their management through host resistance. African Journal of Agricultural Research 13(21): 1042-1052. [Reviewing the failure of new maize varieties in Ethiopia to resist a range of fungal diseases and *Striga hermonthica*, and suggesting approaches to conducting genetic analysis and achieving durable host resistance to these stresses.]

*Kiseleva, O. and Trofimova, L. 2018. Anatomical structure of leaves, stems and roots of hemiparasitic plants *Thesium ebracteatum* Hayne (Santalacea R. Br.) from the Urals. Conference paper : BIO Web of Conferences 11: 00022. (https://www.bio-conferences.org/articles/bioconf/full_html/2018/02/bioconf_pdcmb2018_00022/bioconf_pdcmb2018_00022.html) [A detailed description.]

Koca-Calİskan, U., Yİlmaz, I., Taslİdere, A., Yalcİn, F.N., Aka, C. and Sekeroglu, N. 2018. *Cuscuta arvensis* Beyr "dodder": in vivo hepatoprotective effects against acetaminophen-induced hepatotoxicity in rats. Journal of Medicinal Food 21(6): 625-631. [Results of studies on the hepatoprotective activity of extracts of '*C. arvensis'* (=*C. campestris*) supported its use in traditional medicine. One of the active ingredients was identified as kaempferol-3-*O*-rhamnoside.]

Kokla, A and Melnyk, C. 2018. Developing a thief: haustoria formation in parasitic plants**.** Developmental Biology 442(1) 53-59. [Discussing the developmental basis for plant parasitism, focusing on haustorial initiation, penetration and vascular formation. Also reviewing the outstanding questions in this emerging field.]

Kollas, C., Gutsch, M., Hommel, R., Lasch-Born, P. and Suckow, F. 2018. Mistletoe-induced growth reductions at the forest stand scale. Tree Physiology 38(5): 735-744. [A model based on the tree's water and carbon cycle was tested on a natural population of *Pinus sylvestris* in Germany and found to give good predictions of the losses in timber. Heavy infection by *Viscum album* caused 29% growth reduction over a 9 year period.]

Kountché, B.A., Novero, M., Jamil, M., Asami, T., Bonfante, P. And Al-Babili, S. 2018. Effect of the strigolactone analogs methyl phenlactonoates on spore germination and root colonization of arbuscular mycorrhizal fungi. Heliyon 4(11): e00936. (https://www.sciencedirect.com/science/article/pii/S2405844018326616) [Confirming that, although the strigolactone analogues MP1 and MP3 inhibit AMF spore germination, they promote the intra-radical root colonization, both more efficiently than GR24. These results indicate that field application of MP1 and MP3 does not have negative impact on mycorrhizal fungi, reinforcing their potential for controlling parasitic weeds. See also Jamil *et al.* above]

Kukushkin, O.V., Doronin, I.V. and Krasylenko, Y.A. 2017. (Analysis of dwarf mistletoe *Arceuthobium oxycedri* (DC.) M. Bieb. and its principal host Eastern prickly juniper *Juniperus deltoides* R. P. Adams distribution in Crimea using GIS technologies.) (in Russian) Russian Journal of Ecosystem Ecology 2(1): unpaginated. [Describing the sporadic distribution of *A. oxycedri* in Crimea on both *J. deltiodes* and *J. excelsa*, and its dispersal by birds visiting to feed on berries of the hosts. Also studying its distribution in relation to climate.]

Labrousse, P. and Delmail, D. 2017. Sunflower resistance to the vampire weed broomrape: a Van Helsing quest story. In: Ahmad, P. (ed.) Oilseed crops: yield and adaptations under environmental stress 2017: 123-151. [A general review. Van Helsing was dracula's arch-enemy.]

Lai FuBing, Li WeiGuang, Lai Fang, Liu XiongMin, Ma L and Wang YiFan. 2018. (Determination of content of nervonic acid separated from *Malania oleifera* oil by HPLC.) (in Chinese) China Oils and Fats 43(6): 144-146. [Describing a standardised method for the analysis of nervonic acid from *M. oleifera* (Olacaceae).]

Lan YueHui, Chi XiaoFeng, Zhou GuoYing and Zhao XiaoHui. 2018. Antioxidants from *Pedicularis longiflora* var. *tubiformis* (Klotzsch) P. C. Tsoong. Records of Natural Products 12(4): 332-339. [The results indicate that a combination of online HPLC-DPPH assay with HSCCC could be suitable for the screening and separation of antioxidant compounds from extracts of the Tibetan medicinal plant, *P. longiflora*.]

Leandre, S.P., Francis, K., Richard, A., Joseph, B., Baptiste, T.J., Ouedraogo, J.T., Patrick, A., Close, T.J. and Roberbs, P.A. 2018. Screening for resistance to *Striga gesnerioides* and estimation of yield loss among cowpea (*Vigna unguiculata* (L.) Walp.) progenies in the Upper East Region of Ghana. African Journal of Agricultural Research 13(28): 1430-1442. [251 inbred lines from a cross between IT97K 499-35 (resistant to *S. gesnerioides*) and Sanzi (susceptible) were screened and 27 found to be resistant. Yield loss of these was 3% or less compared to 28-58% in the susceptible lines.]

Liao PoLin, Li ChingHao, Tse LingShan, Kang JawJou and Cheng YuWen. Safety assessment of the *Cistanche tubulosa* health food product Memoregain®: genotoxicity and 28-day repeated dose toxicity test. 2018. Food and Chemical Toxicology 118: 581-588. [No adverse effects were recorded.]

Libiaková, D., Ruyter-Spira, C., Bouwmeester, H.J. and Matusova, R. 2018. *Agrobacterium rhizogenes* transformed calli of the holoparasitic plant *Phelipanche ramosa* maintain parasitic

competence. Plant Cell Tissue and Organ Culture 135(2): 321-329. [The study describes a highly efficient genetic transformation and regeneration protocol for the root holoparasitic *P. ramosa* using a new transformation system with *A. rhizogenes* MSU440 carrying a non-destructive selection marker gene coding for a red fluorescent protein (DsRed1).]

Lingard, K. and Perry, M. 2018. An assessment of the regulatory framework of the Western Australian sandalwood industry. Australian Forestry 81(2): 89-101. [Assessing the legal, institutional and economic support for sustainable forest management principles in the Western Australian native sandalwood (*Santalum spicatum*) industry.]

Linyi Zhang, Comerford, M. and Hood, G.R. 2018 Botanical parasitism of an insect by a parasitic plant. Current Biology Correspondence 28(16): PR863-864. [Recording parasitism by *Cassytha filiformis* on wasp galls on oak trees in Florida. Suggesting that the *Cassytha* is killing the wasp larvae directly, but surely they are simply being starved because the gall is being robbed by the parasite?]

Liu Xiao, Yan YaRu, Liu YuYu, Mo Ting, Wang XiaoHui, Song YueLin, Chen QingLiang, Zhao YunFang, Shi ShePo and Tu PengFei. 2018. Cell culture establishment and regulation of two phenylethanoid glycosides accumulation in cell suspension culture of desert plant *Cistanche tubulosa*. Plant Cell, Tissue and Organ Culture 134(1): 107-118. [Describing the growth of callus of *C. tubulosa* in tissue culture, and the doubling of levels of acteoside and echinacoside by feeding tyrosine and methyl jasmonate.]

Liu XiaoXiao, Lin XiuLian, Li Hua, Lin JinFeng, Wang Lei and Luo ZhuoYa. 2018. (Rapid determination of tartrazine adulterated in Cuscutae Semen by HPLC combined with LC-QQQ/MS.) (in Chinese) Journal of Pharmaceutical Research 37(4): 206-209.

Liu ZiJun, Wang YaLan, Li QiLing and Yang Liu. 2018. Improved antimelanogenesis and antioxidant effects of polysaccharide from *Cuscuta chinensis* Lam seeds after enzymatic hydrolysis. Brazilian Journal of Medical and Biological Research 51(7): e7256. (http://www.bjournal.com.br/2018/07/improved-antimelanogenesis-and-antioxidant-effects-of-polysaccharide-from-cuscuta-chinensis-lam-seeds-after-enzymatic-hydrolysis/) [Polysaccharide isolated from *C. chinensis* had antimelanogenic activity but the enzymatically hydrolised form was even more active, confirming that it has potential for skin-whitening.]

Loe, G.E., Ngaba, G.P., Kamdom, M., Mpondo, E.M. and Dibong, S.D. 2018. (Evaluation of anti-inflammatory and antioxidant activities of palm wine extract of the leaves of *Phragmanthera capitata* (Sprengel) S. Balle (Loranthaceae) collected on *Psidium guajava* in Cameroon.) (in French) International Journal of Biological and Chemical Sciences 12(1): 233-243. [A 'palm wine' made from the leaves of *P. capitata* was shown to be non-toxic and had anti-inflammatory and antioxidant activity that could justify its traditional use.]

Lorenzana-Jiménez, M., Avila, M.E., Figueroa, A., Mendiola-Almaraz, L., Magos Guerrero, G.A. and Lemini, C. 2018. The Mexican mistletoe *Struthanthus venetus* (HBK Blume) inhibits proliferation and synergizes antagonistic actions of Tamoxifen and Fulvestrant in breast cancer MCF-7 cells. Journal of Pharmacognosy and Phytotherapy 10(8): 133-141. [Uterotrophic activity of extracts of *S. venetus* was found to show synergism with tamoxifen and fulvestrant, and hence have potential against breast cancer.]

*Mahadi Hasan, Ali, M.T., Rifat Khan, Parag Palit, Aminul Islam, Veronique Seidel, Rabeya Akter and Laizuman Nahar. 2018. Hepatoprotective, antihyperglycemic and antidiabetic effects of *Dendrophthoe pentandra* leaf extract in rats. Clinical Phytoscience 4: 16 pp. (https://clinphytoscience.springeropen.com/track/pdf/10.1186/s40816-018-0076-9) [Concluding that extracts of *Dendrophthoe pentandra* have potential hepatoprotective, antihyperglycemic and antidiabetic activity. Anti-diabetic activity was equivalent to the standard Metformin.]

Mahesh, H.B. and 10 others. 2018. Multi-omics driven assembly and annotation of the sandalwood (*Santalum album*) genome. Plant Physiology 176(4): 2772-2788.

Mandumbu, R., Mutengwa, C.S., Mabasa, S. and Mweje, E. 2019. Challenges to the exploitation of host plant resistance for *Striga* management in cereals and legumes by farmers in sub-Saharan Africa: a review. Acta Agriculturae Scandinavica, Section B - Soil & Plant Science 69: 82-88. [Reviewing the various mechanisms of resistance to *Striga* species and the problems involved in exploiting these, including genetic variation in the parasite allowing it to evolve virulence. Suggesting that different resistance mechanisms may need to be present in genetically heterogeneous varieties of cereals rotated in the same field. Also emphasising the problem of low soil fertility.]

*Mandumbu, R. Mutengwa, C., Mabasa, S., Mwenje, E., Gotosa, J and Munyati, V. 2018. The parasitic weeds scourge in northern Zimbabwe: effects of soil degradation, hosts and food security implications to rural farmers. Scientia Agriculturae 20(3): 86-91. (http://pscipub.com/Journals/Data/JList/Scientia%20Agriculturae/2017/Volume%2020/Issue%203/4.pdf) [Reviewing the occurrence of *Striga asiatica, S. gesnerioides* and *Alectra vogelii* in Zimbabwe and finding that all are common and affecting the food security of many small-holder farmers. No effective control methods are reported.]

Maul K., Krug M., Nickrent D.L., Müller K.F., Quandt D. and Wicke S. 2019. Morphology, geographic distribution and host preference are poor predictors of phylogenetic relatedness in the mistletoe genus *Viscum* L. Molecular Phylogenetics and Evolution 131:106-115. [Nuclear ITS and chloroplast rbcL and trnLF were used to generate a molecular phylogeny of 59 species of *Viscum* sampled from across its distribution. The genus originated in Africa and diversified mainly through geographic isolation (not host specialization). Reduction of leaves (evolution of scales) occurred multiple times independently.]

Mekuanent Tebkew, Yohannis Gebremariam, Tadesse Mucheye, Asmamaw Alemu, Amsalu Abich and Dagim Fikir. 2018. Uses of wild edible plants in Quara district, northwest Ethiopia: implication for forest management. Agriculture and Food Security 7(12): 12 pp. [Listing *Ximenia americana* among 'highly valued' wild species.]

Menke, K., Schwermer, M., Felenda, J., Beckmann, C., Stintzing, F., Schramm, A. and Zuzak, T.J. 2018. *Taraxacum officinal*e extract shows antitumor effects on pediatric cancer cells and enhance mistletoe therapy. Complementary Therapies in Medicine 40: 158-164. [Showing that *T. officinale* extracts can have synergistic effects on cancer cells in combination with *Viscum album* preparations (Iscucin Tiliae and Iscucin pini).]

*Missé, P.T.E. 2017. Comparative analysis on the management of the parasitic weed *Striga* in the USA, Australia and Kenya. Available at SSRN: https://ssrn.com/abstract=3231805 or http://dx.doi.org/10.2139/ssrn.3231805 [Prompted by the discovery of *S. asiatica* in 62 ha of sugar cane in Queensland in 2013, reviewing the biology of *S. asiatica* and *S. hermonthica* and control methods in USA and Kenya. The £AUS 6 million programme implemented in Australia mainly follows the US pattern i.e stopping the spread, preventing reproduction and completely destroying every propagule.]

Miura, C., Yamaguchi, K., Miyahara, R., Yamamoto, T., Fuji, M., Yagame, T., Imaizumi-Anraku, H., Yamato, M., Shigenobu, S. and Kaminaka, H. 2018. The mycoheterotrophic symbiosis between orchids and mycorrhizal fungi possesses major components shared with mutualistic plant-mycorrhizal symbioses. Molecular Plant-Microbe Interactions 31(10): 1032-1047.

Mohemed, N. Charnikhova, T., Fradin, E.F., Rienstra, J., Babiker, A.G.T. and Bouwmeester, H.J. 2018. Genetic variation in *Sorghum bicolor* strigolactones and their role in resistance against *Striga hermonthica*. Journal of Experimental Botany 69(9): 2415-2430. [Analysing the strigolactones in exudates from 36 sorghum genotypes and showing that high germination and susceptibility were associated with high exudation of 5-deoxystrigol and low germination and resistance with high levels of orobanchol.]

*Molina Martín, C., Montamarta Prieto, G. and Eugenio Gozalbo, M. 2017. Additions to the Floristic Catalogue of the Province of Soria (Spain), V: new citations of the family Orobanchaceae.) (in Spanish) Flora Montiberica 68: 18-26. [Species not previously recorded in Soria Province included *Orobanche cernua, O. hederae,O. santolinae, Phelipanche nana* and *P. lavandulaceiodes.*]

Moolayil, O. and Sreenivas, V.K. 2018. *Striga musselmanii* (Orobanchaceae): a new species of *Striga* from Western Ghats. Phytotaxa 375 (1): 099–103. [*S. musselmanii* is a newly described species, parasitic on *Dactyloctenium aegyptium, Digitaria ciliaris* and *Perotis indica,* based on a small number of specimens, distinct from *S. angustifolia* in having yellow flowers and different seed sculpturing. Distinction from. *S. asiatica* (*s.l.*) not so clear other than in having 15 calyx lobes.]

Moreno-Ramírez, Y.D.R., Torres-Castillo, J.A., Mora-Olivo, A. and Torres-Acosta, R.I. 2018. First report of the mistletoe *Phoradendron quadrangulare* (Viscaceae) on *Moringa oleifera* (Moringaceae) in Mexico. Plant Disease 102(10): 2045-2046. [Reporting a localised occurrence of *P. quadrangulare* on *M. oleifera,* associated with nearby infestations on an *Acacia* sp. and *Prosopis laevigata.*]

Moura, M., Dias, E.F. and Maciel, M.G.B. 2018. Conservation genetics of the highly endangered Azorean endemics *Euphrasia azorica* and *Euphrasia grandiflora* using new SSR data. Conservation Genetics 19(5): 1211-1222.

[Detailed genetic studies confirm that *E. azorica* is diploid while *E. grandiflora* is tetraploid. Eradication of invasive species and control of grazing will be fundamental to promote in situ restoration.]

Mousavi, E.A., Nasibi, F., Kalantari, K.M. and Oloumi, H. 2017. Stimulation effect of carrageenan on enzymatic defense system of sweet basil against *Cuscuta campestris* infection. Journal of Plant Interactions 12(1): 286-294. [Spraying basil plants with αcarrageenan 3 times before exposure to *C. campestris* reduced infestation by 26% and improved basil growth and identifying a range of metabolic changes which might be respsonsible.]

Mrema, E., Shimelis, H., Laing, M. and Mwadzingeni, L. 2018. Genetic analysis of the maximum germination distance of *Striga* under *Fusarium oxysporum* f. sp. *strigae* biocontrol in sorghum. Journal of Integrative Agriculture 17(7): 1585-1593. [Maximum germination distance (MGD) is an important component of *Striga* resistance in sorghum. The objective of this study was to determine gene action influencing MGD of *S. hermonthica* and *S. asiatica* among selected sorghum lines treated with a biocontrol agent, *F. oxysporum* f. sp. *strigae* (FOS). Breeding methods exploiting these genetic effects may provide enhanced response to selection for *Striga* resistance and FOS compatibility in integrated *Striga* management (ISM) programmes.]

Muhammad Ali, Tariq Khan, Kaneez Fatima, Qurat-ul-Ain Ali, Muhammad Ovais, Khalil, A.T., Ikram Ullah, Abida Raza, Shinwari, Z.K. and Muhammad Idrees. 2018. Selected hepatoprotective herbal medicines: evidence from ethnomedicinal applications, animal models, and possible mechanism of actions. Phytotherapy Research 32(2): 199-215. [Including study of the hepatoprotective effect of extracts of *Cuscuta chinensis*.]

Mujezinović, O., Treštić, T., Margaletić, J., Dautbašić, M., Zahirović, K., Ivojević, S. and Brkić, H.2018. (Effect of mis(t)letoe (*Viscum album* L.) on radial growth of fir trees (*Abies alba* Mill.) in Bosnia and Herzegovina.) (in Croatian) Naše Šume 16(50/51): 34-40. [Describing the effects of *V. album* on fir trees, in relation to the 'opacity' (density?) of the crown. But is the opacity not influenced by the mistletoe?]

Mutinda, S.M., Masanga, J., Mutuku, J.M., Runo, S. and Alakonya, A. 2018. KSTP 94, an open-pollinated maize variety has postattachment resistance to purple witchweed (*Striga hermonthica*). Weed Science 66(4): 525-529. [Showing that the resistance of KSTP94, also known as Kakamega, is not only due to low production of sorgomol but also to the inability of the parasite to penetrate the endodermis resulting in greatly reduced size and numbers of attachments.]

Nagaratna Biradar, Nagar, R.P. and Vinod Kumar. 2018. Analysis of selected fodder ventures in southern and western India. Range Management and Agroforestry 39(1): 109-114. [Among the constraints identified for growers of fodder crops was the 'slow tedious process of cleaning *Cuscuta*-infested seed'.]

Ndagurwa, H.G.T., Maponga, T.S., Dube, B., Nzuma, T.M. and Muvengwi, J. 2018. Termitaria vs. mistletoe: effects on soil properties and plant structure in a semi-arid savanna. Acta Oecologica 91: 35-42. [Comparing the different benefits to soil properties from termite mound material and the leaf droppings from unidentified mistletoe in Zimbabwe and finding that soil under mistletoe-infested trees were associated with silt, organic matter, Na, P, Mg and nitrate, and encouraged the growth of *Securinega virosa* (Euphorbiaceae).]

Ndouyang, C and Noubissie Tchiagam, J.B. 2018. Genotypic response of *Sorghum bicolor* (L) Moench landraces to sodium carbonate Application in control *of Striga hermonthica* in the Sudano-Sahelian zone of Cameroon. Haya: The Saudi Journal of Life Sciences August 3(8): 541-550. [Comparing 24 genotypes of sorghum for their resistance to *S. hermonthica* and reporting LMO-LT18, LMO-LT22, KW-CP09 and LMT-21 to be the least susceptible. Also showing that sodium carbonate at 75 kg/ha reduced *S. hermonthica* by 74% and increased sorghum yield by 91%.]

Nikulin, S.V., Mnafki, N.A., Shilin, S.A., Gazizov, I.N. and Maltseva, D.V. 2018. Ribosome inactivation and the integrity of the intestinal epithelial barrier. Molecular Biology 52(4): 583-589. [Demonstrating that a lectin viscumin preparation from *Viscum album*, capable of ribosome inactivation, was not damaging to epithelia cells.]

Nilsson, S.G. 2018. (Mowing and grazing in late summer - effects on herbs, especially orchids.) (in Swedish) Svensk Botanisk Tidskrift 112(3/4): 171-175. [Changing the management of grasslands to late summer mowing with aftermath grazing or only late summer grazing (previously grazed from spring to autumn for several decades) greatly increased the proportion of forbs including *Rhinanthus minor*.]

Ntumba, J.K., Tshiongo, C.M., Mifundu, M.N., Robiette, R. and Taba, K.M. 2018. Effective

antimalarial activities of α-hydroxy diynes isolated from *Ongokea gore*. Planta Medica 84(1): 806-812. [Two of three α-hydroxy diynes isolated from *O. gore* (Olacaceae) proved to have anti-malarial activity equivalent to, or greater than, the standard quinine, and were found to be non-toxic.]

Ohikhena, F.U., Wintola, O.A. and Afolayan, A.J. 2018. Quantitative phytochemical constituents and antioxidant activities of the mistletoe, *Phragmanthera capitata* (Sprengel) balle extracted with different solvents. Pharmacognosy Research 10(1): 16-23. [Confirming that extracts of *P. capitata* have potentially useful antioxidant activity.]

Ohikhena, F.U., Wintola, O.A. and Afolayan, A.J. 2018. Investigating the antidiabetic potential of *Phragmanthera capitata*, a mistletoe harvested from rubber tree. Journal of Herbs, Spices & Medicinal Plants 24(2): 151-159. [Finding evidence of activity which could support the use of *P. capitata* in control of diabetes in Africa.]

Onaran, A. and Yılar, M. 2018. Antifungal and herbicidal activity of *Trachystemon orientalis* (L.) G. Don against some plant pathogenic fungi and *Cuscuta campestris* Yunck. Journal of the Institute of Science and Technology 8(1) 37-43. [A '5%' aqueous suspension from dried flowers of *T. orientalis* (Boraginaceae) applied to *C. campestris* caused substantial inhibition. Leaf extract less effective.]

Onoja, U.S., Nweze, I.E., Ekere, N., Uzor, P.F. and Giginna, O.B. 2017. Effects of methanol leaf extracts of *Loranthus micranthus* Linn from three host plants on some biochemical indices of diabetic rats.Tropical Journal of Pharmaceutical Research 16(12): 2919-2926. [Confirming that extracts of '*L. micranthus*' (*Englerina gabonensis*) growing on Persea *americana, Irvingia gabonensis* and *Cola acuminatus* showed antidiabetic, hypolipidemic and anti-anaemic activities on alloxan-induced diabetic rats.]

Onyancha, J.M., Gikonyo, N.K., Wachira, S.W., Mwitari, P.G. and Gicheru, M.M. 2018. Anticancer activities and safety evaluation of selected Kenyan plant extracts against breast cancer cell lines. Journal of Pharmacognosy and Phytotherapy 10(2): 21-26. [*Hydnora abyssinica* found to have good anticancer activity, supporting folklore claims.]

Oremosu, A.A., Edem, E.E., Dosumu, O.O. and Osuntoki, A.A. 2017. African Mistletoe (Loranthaceae) enhances spatial and non-spatial working memory in hypercholesterolemia model of Alzheimer's disease. Nigerian Quarterly Journal of Hospital Medicine 27(3): 849-855. ['The present investigation has demonstrated that methanolic extract of African mistletoe (unspecified in abstract) enhances memory following impairment induced by a high cholesterol diet feeding in mice.']

Orimadegun, B.E., Bolajoko, E.B., Onyeaghala, A.A. and Ademola-Aremu, O.O. 2018. Quantitative analyses of phytochemical and trace elements contents of daily detox, herbal tea consumed in Nigeria. Journal of Medicinal Plants Research 12(20): 289-295. [Analysing the components of a 'detox tea' based on a mix of '*Agerantum'*(= *Ageratum*) *conyzoides* and '*Loranthus benguensis*' (= *Tapinanthus banguensis*).]

Orsenigo, S. and 14 others. 2018. Global and Regional IUCN red list assessments: 5. Italian Botanist 5: 83-99. [Providing a valuable description of *A. oxycedri* and its distribution in Europe, including good illustrations. Noting that it only occurs in a small area of Tuscany and Marche in Italy and is threatened by changes in agricultural practices and is to be regarded as 'endangered' at the regional level.]

Ortiz-Rodriguez, A.E., Guerrero, E.Y. and Ornelas, J.F. 2018. Phylogenetic position of Neotropical *Bursera*-specialist mistletoes: the evolution of deciduousness and succulent leaves in *Psittacanthus* (Loranthaceae). Botanical Sciences 96(3): 443-461. [Three species of *Psittacanthus* occur on *Bursera*: *P. palmeri*, *P. sonorae* and *P. nudus*. Concatenated nuclear ITS rDNA and chloroplast trnLF sequences showed the *Bursera* species to be monophyletic with the *P. nudus* (Honduras) clade being sister to one clade of *P. palmeri* (Mexico). Because *P. nudus* may be deciduous (not leafless), a feature also seen in *P. palmeri*, the two may be conspecific.]

*Osunlana, O.R., Bello, M.O. and Johnson, J.A. 2018. Nutritive values and bioactive compounds content of three commonly used blood pressure regulating plant leaves. Pharmacology Online 1 : 128-136. (http://pharmacologyonline.silae.it/files/archives/2018/vol1/PhOL_2018_1_A014_Osunlana.pdf) [Suggesting caution in the consumption of '*Viscum album'* growing on *Gmelina arborea* because of its oxalate content. **N.B. Yet another example of the misuse of the name *Viscum album* for a mistletoe from West Africa.**]

*Ouédraogo, O., Kaboré, T.D., Noba, D.R. and Traoré, S. 2018. *Polygala rarifolia* DC., plante faux hôte du *Striga hermonthica* (Del.) Benth. Journal of Applied Biosciences 123: 12346-12353. (https://dx.doi.org/10.4314/jab.v123i1.3) [Confirming that *P. rarifolia* can act as trap crop,

stimulating the germination of *S. hermonthica*, also that the stimulant involved appears to be identical to that from cowpea.]

Ouyang HaoNan, Wang Xiaoan and Guo Hua. 2018. (Study on host selection and parasitic characteristics of *Loranthus tanakae* in Ziwuling, Shaanxi.) (in Chinese) Genomics and Applied Biology 37(5): 2090-2095. [Recording *L. tanakae* on *Quercus wutaishanica* , *Carpinus turczaninowii* and *Betula platyphylla.*]

Özpınar, A., Polat, B., Şahİn, A.K. and Özpınar, S. 2017. (Determination of the relationship between *Orobanche ramosa* L. and *Phytomyza orobanchia* Kaltenbach, (Diptera: Agromyzidae) on tomato areas of Çanakkale province.) (in Turkish) Journal of Tekirdag Agricultural Faculty 14(1): 48-53. [Surveys showed that 58% of tomato crops in this province are infested with *O. ramosa* and release of *P. orobanchia* at 3, 6 and 12 adults per tomato plant at least doubled infestation rate and resulted in 28, 56 and 60% reduction in parasite seed production respectively.]

*Quintana-Rodríguez, E., Ramirez-Rodriguez, A.G., Ramírez-Cháve, E., Molina-Torres, J., Camacho-Coronel, X., Esparza-Claudio, J., Heil, M. and Orona-Tamayo, D. 2018. Biochemical traits in the flower lifetime of a Mexican mistletoe parasitizing mesquite biomass. Frontiers in Plant Science 17 July 2018. (https://www.frontiersin.org/articles/10.3389/fpls.2018.01031/full) [Detailed analysis of the changes in nectar chemistry, volatiles, carotenoids and cell wall invertase activity over the 4 day period of flowering in *Psittacantus calyculatus*, and their influence on floral visitors, the most common being hummingbirds.]

Paporisch, A., Laor, Y., Rubin, B, Achdari, G and Eizenberg, H. 2018. Application timing and degradation rate of sulfosulfuron in soil co-affect control efficacy of Egyptian broomrape (*Phelipanche aegyptiaca*) in tomato. Weed Science 66(6): 780-788. [Describing the acceleration of the degradation rate of sulfosulfuron with increased temperature, which may result in reduced efficacy.]

*Park SuBin, Park GwangHun, Kim HaNa, Song HunMin, Son HoJun, Park JiAe, Kim HyunSeok and Jeong JinBoo. 2018. Ethanol extracts from the branch of *Taxillus yadoriki* parasitic to *Neolitsea sericea* induces cyclin D1 proteasomal degradation through cyclin D1 nuclear export. BMC Complementary and Alternative Medicine 18:189(20 June 2018) (https://bmccomplementalternmed.biomedcentral.com/articles/10.1186/s12906-018-2258-x) [The results, from Korea, ‘ suggest that extracts from *T. yadoriki* may suppress cell proliferation by down regulating cyclin D1 protein level through proteasomal degradation via T286 phosphorylation-dependent cyclin D1 nuclear export’, confirming potential in treatment of cancer.]

*Patykowski, J., Dell, M., Wevill, T. and Gibson, M. 2018. Rarity and nutrient acquisition relationships before and after prescribed burning in an Australian box-ironbark forest. AoB Plants 2018 Vol.10 No.3 pp.ply032 (https://academic.oup.com/aobpla/article/10/3/ply032/4996542) [Inncluding discussion of the important role of hemi-parasites *Amyema miquelii* and *Exocarpos cupressiformis* (Santalaceae) in the nutrient cycling in box-ironbark forest (mainly *Eucalyptus* spp.)]

Peevska, P., Drumeva, M. and Georgiev, G. 2018. Registration of a new sunflower hybrid - Sevar. Agricultural Science and Technology 10(1): 29-33. [Describing the development and release in Romania of variety Sevar, having resistance to downy mildew and to *Orobanche cumana* up to race F.]

*Pelser, P.B., Olimpos, S.M.B., O’Byrne, P. and Barcelona, J.F. 2018. A new species of *Amyema* (Loranthaceae) and a new *Gastrodia* (Orchidaceae) record for the Philippines from Negros Island. Phytotaxa 371(1): 3. (https://biotaxa.org/Phytotaxa/article/view/phytotaxa.371.1.3) [*Amyema lisae* differs from similar species with verticillate phyllotaxy and inflorescences of simple umbels by having relatively smaller leaves and 5-merous flowers that are yellow and tomentose. This new species is named in honor of Lisa J. Paguntalan, a champion of biodiversity conservation in the Philippines. See Press Report above]

Pérez-Crespo, M.J., Ornelas, J.F., González-Rodríguez, A., Ruiz-Sanchez, E., Vásquez-Aguilar, A.A. and Ramírez-Barahona, S. 2017. Phylogeography and population differentiation in the *Psittacanthus calyculatus* (Loranthaceae) mistletoe: a complex scenario of climate-volcanism interaction along the Trans-Mexican Volcanic Belt. Journal of Biogeography 44(11): 2501-2514. [Bayesian analyses strongly supported a scenario of habitat isolation (glacial/interglacial cycles) and east to west invasion of the Trans-Mexican Volcanic Belt by *P. calyculatus* during the late-Pleistocene.]

Phiri, C.K., Kabambe, V.H., Bokosi, J. and Mumba, P. 2018. Screening for resistance mechanisms in cowpea genotypes on *Alectra vogelii*. American Journal of Plant Sciences 9(6): 1362-1379. [Noting that *A vogelii* is an increasing problem in

legumes in Malawi. Among 4 varieties of cowpea tested, Mkanakaufiti, showed least attack and yielded best in infested pots, followed by IT82E-16 which showed tolerance. IT99K-7-21-2-2XIT82E-16 also showed some resistance. In a germination test, only Mkanakaufiti caused low germination; the others high.]

Pilichowski, S., Filip, R., Kościelska, A., Żaroffe, G., Żyźniewska, A. and Iszkuło, G. 2018. (Influence of *Viscum album* ssp. *austriacum* (Wiesb.) Vollm. on tree radial growth of *Pinus sylvestris* L.) (in Polish) Sylwan 162(6): 452-459. [Noting that *V. album* is an increasing problem in Scots pine in Poland and that infestation not only reduces yield of seed but also reduces radial growth.]

Pincovici, S., Cochavi, A., Karnieli, A., Ephrath, J. and Rachmilevitch, S. 2018. Source-sink relations of sunflower plants as affected by a parasite modifies carbon allocations and leaf traits. Plant Science 271: 100-107. [Showing that parasitism of sunflower by *Orobanche cumana* changes source-sink relations leading to thinner and larger leaves.]

Pinto-Carrasco, D., Scheunert, A., Heubl, G., Rico, E. and Martínez-Ortega, M.M. 2017. Unravelling the phylogeny of the root-hemiparasitic genus *Odontites* (tribe Rhinantheae, Orobanchaceae): evidence for five main lineages. Taxon 66(4): 886-908. [This is the most comprehensive molecular study of Rhinantheae to date. *Odontites* was recircumscribed to include *Bartsiella, Bornmuellerantha*, and *Macrosyringion* (but not *Odontitella*). Among the five *Odontites* lineages, most species are monophyletic.]

Prasanta Jana, Mritunjoy Paul, Utsa Roy, Singh, A.K., Amit Mandal, Arka Chowdhury and Rakib Sarkar. 2018. Evaluation of dietary plant based attractants on growth performance, feed utilization and body carcass composition of *Labeo bata* (Hamilton, 1822) fingerlings. Journal of Experimental Zoology, India 21(2): 679-685. [A mixture of 5 plants including *Cuscuta reflexa* was superior to any plants alone for the feeding of *L. bata* fish.]

Prerostova, S., Kramna, B., Dobrev, P.I., Gaudinova, A., Marsik, P., Fiala, R., Knirsch, V., Vanek, T., Kuresova, G. and Vankova, R. 2018. Organ-specific hormonal cross-talk in phosphate deficiency. Environmental and Experimental Botany 153: 198-208. [P starvation was associated with elevation of abscisic acid and jasmonic acid and stimulation of strigolactone signaling pathway. The data show highly organ-specific effects of P deficiency and decisive role of strigolactones, not only in roots but also in apices.]

Rai, I.D., Bhardwaj, M., Talukdar, G, Rawat, G.S., and Sathyakumar, S. 2018. Large scale infestation of blue pine by Himalayan dwarf mistletoe in the Gangotri National Park, Western Himalaya. Tropical Ecology 59:157–161.[Forest degradation and mortality of *Pinus wallichiana* caused by *Arceuthobium minutissimum* was examined. Long-term (two decades) of climate data show changes in minimum and average temperatures which may intensify dwarf mistletoe pathogenicity.]

Ramasamy Perumal, Magill, C.W., Peterson, G.C. Prom, L.K., Bashir, E.M. Tesso, T.T. and Serba, D.D. 2018. Achieving sustainable cultivation of sorghum. In: Little, C.R. (Ed.) Volume 1: Genetics, breeding and production techniques. Burleigh Dodds Science Publishing Limited, Cambridge, UK, pp.189-226. [A general review including some reference to *Striga* but no abstract available.]

*Renna, M., Signore, A., Paradiso, V.M. and Santamaria, P. 2018. Faba greens, globe artichoke's offshoots, crenate broomrape and summer squash greens: unconventional vegetables of Puglia (Southern Italy) with good quality traits. Frontiers in Plant Science 9(March): 378. (https://www.frontiersin.org/articles/10.3389/fpls.2018.00378/full) [Noting that the shoots of faba bean are used as a vegetable, also *Orobanche crenata,* parasitizing the faba bean are used like asparagus in local cuisine. The faba bean shoots can be recommended as substitute for more nitrate-rich vegetables, while *O. crenata* is a good source of antioxidants and 'may be considered as a very nutritious agri-food product.']

Rial, C., Gómez, E., Varela, R.M., Molinillo, J.M.G. and Macias, F.A. 2018. Ecological relevance of the major allelochemicals in *Lycopersicon esculentum* roots and exudates. Journal of Agricultural and Food Chemistry 66(18): 4638-4644. [Exudates from tomato included α-tomatine which proves allelopathic against several species but also stimulates the germination of *Phelipanche ramosa*.]

Rigling, A., Moser, B., Feichtinger, L., Gärtner, H., Giuggiola, A., Hug, C. and Wohlgemuth, T. 2018. (20 years of Scots pine dieback in Valais (Switzerland): a retrospect and new results.) (in German) Schweizerische Zeitschrift für Forstwesen 169(5): 242-250. [Increased losses in Scots pine are shown to be associated with dry conditions but also with *Viscum album*.]

Ritter, S.M., Hoffman, C.M., Stewart, J.E. and Zimmerman, T. 2018. The influence of prescribed crown fire on lodgepole pine dwarf mistletoe (*Arceuthobium americanum*) populations 33 years

post-fire. Forest Pathology 48(3): e12419. (https://onlinelibrary.wiley.com/doi/full/10.1111/efp.12419) [Study of the effect of three fires, 33 years, later, confirms the value of natural wild fires in the control of *A. americanum*.]

Ruchi Mishra, Saurabh Sharma, Sharma, R.S., Savita Singh, Sardesai, M.M., Sadhna Sharma and Vandana Mishra. 2018. *Viscum articulatum* Burm. f. aqueous extract exerts antiproliferative effect and induces cell cycle arrest and apoptosis in leukemia cells. Journal of Ethnopharmacology 219: 91-102. [Confirming high activity of extracts of *V. articulatum* on leukaemia cells.]

Salcedo-Morales, G., Trejo-Espino, J.L., Martínez-Bonfil, B.P., Cruz-Sosa, F. and Trejo-Tapia, G. 2017. (Root formation and haustoria induction of *Castilleja tenuiflora* Benth. with catechin and hydrogen peroxide.) (in Spanish) Polibotánica 44: 147-156. [Reporting attempts to culture haustoria of *C. tenuiflora* for pharmacological purposes, and recording some success with combinations of catechin, hydrogen peroxide and culture media Schenck and Hildebrandt, and Gamborg *et al*'s B5.]

Samejima H., Babiker A.G. and Sugimoto Y. 2018. Improvement of food security in semiarid regions of Sudan through management of root parasitic weeds. In: Kokubun M., Asanuma S. (eds) Crop Production under Stressful Conditions. Springer, Singapore pp.159-175. [Reporting on a project of this title which was implemented from 2009 to 2015 under the auspices of JICA/JST SATREPS.]

Sánchez-Gutiérrez, J.A., Vázquez-Sánchez, M., Álvarez-Bernal, D., Mares-Quiñones, M.D., Valiente-Banuet, J.I., Medina-Medrano, J.R. and Villar-Luna, E. 2018. Determination of phenolic compounds and the antioxidant capacity of *Ximenia parviflora* Benth. var. *parviflora* (Olacaceae) fruit by high-performance liquid chromatography with diode array detection. Analytical Letters 51(13): 1986-1998. [Identifying gallic acid, chlorogenic acid, caffeic acid and quercetin , presumed to be responsible for antioxidant properties in *X. parviflora* fruits. In Mexico.]

*Santana, C.P., Medeiros, F.D., Correia, L.P., Diniz, P.H.G.D., Véras, G. and Medeiros, A.C.D. 2018. Dissolution and uniformity of content of tablets developed with extract of *Ximenia americana* L. PLoS ONE 13(5): e0197323. (https://journals.plos.org/plosone/article?id=10.1371/journal.pone.0197323) [Describing a new method of preparing tablets from *X. americana* for the pharmaceutical market.]

Sari, B.L., Rahayu, D.P., Rohdiana, D., Nurlita, S. and Sahara, P.S. 2018. (Influence of gamma ray irradiation on total flavonoid and tannin content of white tea (*Camellia sinensis* L.) and loranthus of tea (*Scurulla atropurpurea* BL. Dans).) (in Indonesian) Jurnal Kefarmasian Indonesia 8(1) 1-9. [Claims to show that radiation of samples of both tea and *L. sinensis* (apparently used medicinally?) increase flavonoid and tannin levels but results look non-significant.]

Saric-Krsmanovic, M., Bozic, D.; Radivojevic, L., Umiljendic, J.G. and Vrbnicanin, S. 2018. Impact of field dodder (*Cuscuta campestris* Yunk.) on chlorophyll fluorescence and chlorophyll content of alfalfa and sugar beet plants. Russian Journal of Plant Physiology 65(5): 726-731. [*C. campestris* was found to affect both the total and relative chlorophyll contents in infested alfalfa and sugar beet, causing significant reduction in chlorophyll content in both host plants.]

Sattler, F.T., Sanogo, M.D., Kassari, I.A., Angarawai, I.I., Gwadi, K.W., Dodo, H. and Haussmann, B.I.G. 2018. Characterization of West and Central African accessions from a pearl millet reference collection for agro-morphological traits and *Striga* resistance. Plant Genetic Resources: Characterization and Utilization 16(3): 260-272. [Seventy-eight landraces of pearl millet were assessed and found to be very variable in resistance to *S. hermonthica* and in other characters. All were inferior in yield to the three control varieties.]

Saucă, F., Anton, G.F. and Petcu, E. 2017. New sunflower genotypes with resistance to drought, main pathogens and broomrape (*Orobanche cumana*), created at NARDI Fundulea. Romanian Agricultural Research 35: 95-99. [Describing new research based on hybrids with the wild species *Helianthus argopyllus* with potential for resistance to drought and *Orobanche cumana* attack.]

*Schad, F., Thronicke, A., Steele, M.L., Merkle, A., Matthes, B., Grah, C. and Matthes, H. 2018. Overall survival of stage IV non-small cell lung cancer patients treated with *Viscum album* L. in addition to chemotherapy, a real-world observational multicenter analysis. PLoS ONE 13(8): e0203058. (https://journals.plos.org/plosone/article?id=10.1371/journal.pone.0203058) [A study of survival rates of 158 patients, of whom 50 were receiving a *V. album* supplement in addition to chemotherapy showed that median survival was 17 months in the *V. album* group and 8 months in those receiving chemotherapy alone. There were also significant benefits in 1- and 3-year survival rates.]

Scheuer, L.-S., Prasad, B., Hooper, A.M., Krüger, Richter, P. and Lebert, M. 2017. Parasitic weeds and their control by means of allelopathy. Chapter 7 In: Sinha, R.P. (Ed.) New Approaches in Biological Research. NOVA Science Publishers pp.191-230. [Including reference to the use of the push-pull technology to control *Striga*.]

Schlemper, T.R., Dimitrov, M.R., Gutierrez, F.A.O.S., van Veen, J.A., Silveira, A.P.D. and Kuramae, E.E. 2018. Effect of *Burkholderia tropica* and *Herbaspirillum frisingense* strains on sorghum growth is plant genotype dependent. PeerJ 6: e5346. (https://peerj.com/articles/5346/) [Recording effects of endophytic bacteria *Burkholderia tropica* and *Herbaspirillum frisingense* on sorgjhum – including increased biomass and a decrease in root diameter.]

Schweiger, J.M.I., Bidartondo, M.I. and Gebauer, G. 2018. Stable isotope signatures of underground seedlings reveal the organic matter gained by adult orchids from mycorrhizal fungi. Functional Ecology 32(4): 870-881.

Selosse, M.A., Bocayuva, M.F., Kasuya, M.C.M. and Courty, P.E. 2017. Mixotrophy in mycorrhizal plants extracting carbon from mycorrhizal networks. In: Martin, F. (Ed.) Molecular mycorrhizal symbiosis. 2017. pp. 451-471. [Reviewing the discovery of mixotrophy in mycorrhizal plants, the available data on mixotrophic physiology, and the evolutionary link between mixotrophy and full mycoheterotrophy.]

Shah, S.S., Yaseen-ur-Rehman, Arshad Iqbal, Zia-ur-Rahman, Zhou BangWei, Peng Mu and Li ZhiJian. 2017. Phytochemical screening and antimicrobial activities of stem, leaves and fruit extracts of *Viscum album* L. Journal of Pure and Applied Microbiology 11(3): 1337-1349. [Confirming the activity of various extracts of *V. album* against a range of bacteria.]

Shang ZhanHuan, Hou Yuan, Li Fei, Guo CanCan, Jia TianHua, Degen, A.A., White, A., Ding LuMing and Long RuiJun. 2017. Inhibitory action of allelochemicals from *Artemisia nanschanica* to control *Pedicularis kansuensis*, an annual weed of alpine grasslands. Australian Journal of Botany 65(4): 305-314. [Identifying 3 compounds from *A. nanschanica* - a sesquiterpene and two aromadendrene oxides – with potential to suppress germination and growth of *P. kansuensis*.]

Sharma, S.K., Anita Patil, Agnihotri, A.K. and Shakti Mehrotra. 2018. In vitro conservation of *Alectra chitrakutensi*; a critically endangered root parasitic plant of high medicinal importance. Acta Physiologiae Plantarum 40(2): 29. [Describing the *in vitro* propagation of *A. chitrakutensis*, highly valued as a medicinal plant in India for treatment of leprosy, leucoderma, tuberculosis and paralysis.]

Shimizu, K., Hozumi, A. and Aoki, K. 2018. Organization of vascular cells in the haustorium of the parasitic flowering plant *Cuscuta japonica*. Plant and Cell Physiology 59(4): 720-728. [Expression profiles of the regulatory genes, combined with those of cell type-specific marker genes, suggest that reprogramming of haustorial cells to vascular cells is regulated in a way that allows the immediate formation of xylem vessels by alleviating inhibition of xylem differentiation. (Could this explain the distinct cell-shape of xylem in the haustorial core of many parasites?]

*Shin HyeWoo and Lee NamSook. 2018. Understanding plastome evolution in hemiparasitic Santalales: complete chloroplast genomes of three species, *Dendrotrophe varians*, *Helixanthera parasitica*, and *Macrosolen cochinchinensis*. PLoS ONE 13(7): e0200293. [This study added three more plastome sequences to those in existence and compared the 11 datasets phylogenetically, size of the inverted repeat, and gene content. NADH dehydrogenases were lost in all sampled Santalales (no Olacaceae s. lat. sampled). No correlation was seen between gene content and type of parasitism.]

Shubha Chimmalagi, Nirmalnath, P.J., Sagarkar, M.A., Jagadeesh, K.S. and Ramesh Babu. 2018. Isolation, screening and selection of efficient native arbuscular mycorrhizal fungi for suppression of *Striga* in sugarcane. Indian Journal of Weed Science 50(1): 51-55. [Confirming that AM fungi significantly reduced *Striga asiatica* as compared to AM-free conditions.]

Shultz, L.M. and Smith, F.J. 2018. Novelties in *Musineon* (Apiaceae) and *Orthocarpus* (Orobanchaceae) in the northern Wasatch Mountains of Utah and Idaho. Madroño 65(1): 60-64. [Describing the new species *Orthocarpus holmgreniorum*, previously known as a subspecies of *O. tolmiei.*]

Simamora, J.M., Hikmat, A. and Zuhud, E.A.M. 2017. (The effect of biotic and physical environmental factors on total individual of *Rafflesia meijerii* in Batang Gadis National Park.) (in Indonesian) Media Konservasi 22(1): 35-41. [43 specimens of *R. maijjerii* were found parasitising *Tetrastigma papillosum*. The various environmental factors studied did not significantly affect its occurrence.]

Song Wu, Tao Yuan, Yang XiaoFeng, Bai XinYu and Jiang Shuang. 2018. Protective effect of ethanol extract of *Cuscuta chinensis* on lipopolysaccharide-induced acute kidney injury

via suppressing the toll-like receptors 4-nuclear factor-κB pathway. Pharmacognosy Magazine 14(56): 383-389. [The protective effect of an extract from *C. chinensis* against lipopolysaccharide-induced acute kidney injury was at least partially associated with suppression of a TLR4-NF-κB signaling pathway, which provides evidence of the renal protective function of *C. chinensis* extract.]

Sosa Díaz, L., Méndez González, J., García Aranda, M.A., Cambrón Sandoval, V.H., Villarreal Quintanilla, J.Á., Ruiz González, C.G. and Montoya Jiménez, J.C. 2018. (Potential distribution of borers, defoliators, barking beetles and mistletoes in coniferous forests of Mexico.) Revista Mexicana de Ciencias Forestales 9(47): 187-208. (http://cienciasforestales.inifap.gob.mx/editorial/index.php/forestales/article/view/159/391) [A model devised to predict the influence of various factors including *Archeuthobium* spp. Noting that temperature is critical to their distribution, low temperatures greatly reducing the dispersal of the seeds.]

Subramanian, D. 2017. Rare and new flowering plants of Cuddalore district, Tamil Nadu, India. Plant Archives 17(2): 1783-1789. [Noting the occurrence of *Santalum album*.]

Sultan, A., Tate, J.A., de Lange, P.J., Glenny, D., Ladley, J.J., and Heenan, P., Robertson A.W. 2018. Host range, host specificity, regional host preferences and genetic variability of *Korthalsella* Tiegh. (Viscaceae) mistletoes in New Zealand. New Zealand Journal of Botany 56:127-162. [The widespread *Korthalsella salicornioides* is the most host-specific, with 96% of the records from *Leptospermum scoparium* (Myrtaceae). For the rare *K. clavata*, *Coprosma propinqua* (Rubiaceae) and *C. dumosa* are the primary and secondary hosts. For *K. lindsayi* (also rare), *Melicope simplex* (Rutaceae) is the primary host (26% of records), whereas 4 other genera are secondary hosts. Very little host overlap occurs. Sequences of ITS and trnQ-rps16 sequencing showed that within-species genetic structure is geographic rather than host-based. Some evidence of introgressive hybridization exists between *K. clavata* and *K. lindsayi*.]

Susikumar Sundharamoorthy, Nartunai Govindarajan, Arunachalam Chinnapillai and Ilavarasan Raju. 2018. Macro-microscopic atlas on heartwood of *Santalum album* L. (sandalwood). Pharmacognosy Journal 10(4): 730-733. [‘The present study is believed to be helpful in identifying the correct botanical source of the plant in crude form and also standardization of formulation containing *S. album* as ingredient.]

*Světlíková, P., Hájek, T. and Těšitel, J. 2018. Water-stress physiology of *Rhinanthus alectorolophus*, a root-hemiparasitic plant. PLoS ONE 13(8): e0200927. (https://journals.plos.org/plosone/article?id=10.1371/journal.pone.0200927) [Investigating the apparent paradox that success of hemi-parasites such as *R. alectrophorus* depend on generally extravagant transpiration, yet they are able to tolerate drought stress. Finding that stomata do close under those circumstances and commenting that climate change and more drought conditions may threaten their survival.]

Tadayyon, A., Zafarian, M., Fallah, S. and Bazoubandi, M. 2018. Effects of arbuscular mycorrhizal fungal symbiosis for control of Egyptian broomrape (*Orobanche aegyptiaca* Pers.) in tomato (*Lycopersicon esculentum* L.) cultivation. Weed Biology and Management 18(3): 118-126. [Use of the AM fungi *G. intraradices* and *G. mosseae* at 200 and 300 kg/ha (!) decreased *O. aegyptiaca* seed germination, the number of nodules and the dry weight of the broomrape and increased root area and dry weight of the tomato plant compared to control treatments without broomrape. Yield of tomato was doubled by 300 kg/ha *G. intraradices*. In Iran.]

Takahashi, I. and Asami, T. 2018. Target-based selectivity of strigolactone agonists and antagonists in plants and their potential use in agriculture. **Journal of Experimental Botany 69(9)**: 2241-2254. [A review, discussing the varied structure and functions of strigolactones, the antagonists of stigolactone receptors that have been developed, selectivity to their targets, and the possibilities for their use in agriculture.]

Tate, H.T. and Page, T. 2018. Cutting propagation of *Santalum austrocaledonicum*: the effect of genotype, cutting source, cutting size, propagation medium, IBA and irradiance. New Forests 49(4): 551-570.

Těšitel, J., Mládek, J., Fajmon, K., Blažek, P. and Mudrák, O. 2018. Reversing expansion of *Calamagrostis epigejos* in a grassland biodiversity hotspot: hemiparasitic *Rhinanthus major* does a better job than increased mowing intensity. Applied Vegetation Science 21(1): 104-112 . [Finding that sowing *R. major* (in combination with some judicious mowing) compares favourably with *R. alectrophorus* in suppressing *C. epigejos*,]

Tewari, V.P. and Diwakara, B.N. 2018. Development of a stand density management diagram for

Santalum album plantations in Karnataka, India. Southern Forests: a Journal of Forest Science 80(3): 251-259.

Thorogood, C. 2018. Weird Plants. Royal Botanic Gardens Kew, UK. 160 pp. [A book for the general public desribing a wide range of carnivorous, insectivorous, parasitic and otherwise exotic plants. Beautifully illustrated with his own photos and brilliant art-work.]

Thorogood, C. 2018. *Hydnora*: The strangest plant in the world? (http://orcid.org/0000-0002-2822-0182) [A wonderfully detailed description of the genus and its 8 species; their evoluion and life history, reproductive history, beatifully illustrated with photos and his own superb drawings.]

Tigay, K.I. and Gontcharov, S.V. 2018. (Development of new sunflower breeding material resistant to downy mildew and broomrape.) (in Russian) Agrarnyy nauchnyy zhurnal 8: 46-50. [Describing a breeding programme to develop varieties of confectionary sunflower with dual resistance to mildew and *Orobanche cumana*.]

Tivadar, B. , Ildikó, V. and Miloš, P. 2017. (The possibilities of visual evaluation process of infected trees by European mistletoe (*Viscum album* L.).) (in Hungarian) Erdészettudományi Közlemények 7(1/2) 43-58. [Discussing different methods of evaluation of *V. album* intensity; concluding that certain models are suitable but only feasible on the smaller scale of parks and urban areas.]

Toscano, S., Romano, D., Tribulato, A. and Cavallaro, V. 2018. Assessing and modeling seed germination of Mediterranean wildflowers for low input landscape restoration. Restoration Ecology 26(3): 525-536. [Germination of *Bartsia trixago* required light.]

Triana, A.E., Hikmat, A. and Basuni, D.S. 2017. (Population of *Rafflesia patma* at Leuweung Cipeucang Geopark Ciletuh Sukabumi.) (in Indonesian) Media Konservasi 22(2): 196-204. [21 individuals of *R. patma* were surveyed, growing on *Tetrastigma papillosum*.]

Tsuchiya, Y., Yoshimura, M. and Hagihara, S. 2018. The dynamics of strigolactone perception in *Striga hermonthica*: a working hypothesis. **Journal of Experimental Botany** 69(9): 2281-2290. [How perception relates to plant parasitism is still a mystery. In this review, the authors explore emerging questions by introducing recent advances in strigolactone research in parasitic plants and attempt to construct a conceptual framework for the unique aspects of plant dynamics in strigolactone perception.]

Vasconcelos, V.O., Costa, E.G.L., Moreira, V.R., Morais-Costa, F. and Duarte, E.R. 2018. Efficacy of plants extracts from the Cerrado against adult female of *Dermacentor nitens* (Acari: Ixodidae). Experimental and Applied Acarology 75(4): 419-427. [*Ximenia americana* one of the sources with greatest activity against *L. nitens*.]

Uraguchi, D. and 13 others. 2018. A femtomolar-range suicide germination stimulant for the parasitic plant *Striga hermonthica*. Science 362(6420): 1301-1305. [Reporting the discovery of a strong suicidal germination stimulant that can potentially be used to control *Striga*. The compound, a hybrid molecule originated from chemical screening, that contains two functional modules derived from a synthetic scaffold and a core component of strigolactones - sphynolactone-7, is active at fmol levels. For the first time indications are obtained about the role of the rest of the strigolactone molecule (other than the D-ring) in receptor (D14) affinity.]

Ustuner, T. and Cakir, S. 2018. Dormancy breaking studies of dodder (*Cuscuta* spp.) was problem in greenhouse tomato. In: Proceedings, International Conference on Research in Education and Science. The Eurasia Proceedings of Science, Technology, Engineering & Mathematics (EPSTEM), 2018 2: 167-178. [Noting that *C. campestris* may cause 100% loss of tomato in greenhouses in Turkey. Dormancy could only be broken by 1% sulphuric acid for 3 minutes.]

Veysi Kamar, Dağalp, R. and Taştekin, M. 2018. Determination of heavy metals in almonds and mistletoe as a parasite growing on the almond tree using ICP-OES or ICP-MS. Biological Trace Element Research 185(1): 226-235. [Finding particularly high levels of K in *V. album* (used as a medicinal plant in Turkey) growing on almond. Levels of B, Ba, K, Mg, and Zn were also higher in the parasite than in the host, while Al, As, Ca, Cd, Cr, Cu, Fe, Mo, Ni, Sr, Pb, and Ti were higher in the lamond.]

Vislobokov, N.A. and Galinskaya, T.V. 2018. Pollination ecology of two co-occurring species of *Balanophora*: differences in range of visitors and pollinators. International Journal of Plant Sciences 179(5): 341-349. [Both species studied had a wide range of pollinators but *B. harlandii* was pollinated mainly by wasps and *B. fungosa* mainly by drosophilid flies. Both species were pollinated also by harvestmen (Phalangidae).]

*Wang XuMei, Gussarova, G., Ruhsam, M., de Vere, N. and Metherell, C. 2018. DNA barcoding a taxonomically complex hemiparasitic genus reveals deep divergence between ploidy levels but

lack of species-level resolution. AoB Plants 10(3): ply026. (https://academic.oup.com/aobpla/article/10/3/ply026/4983864) [Sequences from nuclear ITS and three chloroplast spacers were used to study British *Euphrasia* (Orobanchaceae), a group with multiple ploidy levels, frequent self-fertilization, and widespread hybridization. *Euphrasia* has colonized Britain multiple times from mainland Europe. The species lack consistent sequence profiles (resulting in poor phylogenetic resolution) and ploidy level acts as a barrier to gene flow.]

Wee SukLing, Tan ShwuBing and Jürgens, A. 2018. Pollinator specialization in the enigmatic *Rafflesia cantleyi*: a true carrion flower with species-specific and sex-biased blow fly pollinators. Phytochemistry 153: 120-128. [Only the females of 5 calliphorid flies were found on flowers of *R. cantleyi*, only one of which, *Chrysoma chani,* was an effective pollinator whereas 9 species were attracted to rotten meat. Analysis of volatiles identified dimethyl disulphide and dimethyl trisulphide which were shown to be specific female-attractants for *C. chain*.]

Westerman, P.R., Hemerik, L., van der Werf, W. and Stomph, T.J. 2018. Density-independent reproductive success of the hemiparasitic plant *Striga hermonthica*, despite positive and negative density-dependent phases. Annals of Applied Biology 172(1): 74-87. [Two sorghum varieties were exposed to various densities of *S. hermonthica* (in pots?). Biomas and numbers of parasite were negatively density dependent, but seed production was density-independent. It is suggested that maximum decline and long-term control of *S. hermonthica* was from increased shading and vigorous crop competition.]

Wickert, K.L., Metheny, A.M., Davis, D.D., Geiser, D.M., Wenzel, J.W., Planinsek, D. and Kasson, M.T. 2018. First report of fusarium stem canker on *Pyrularia pubera*, a rare native parasitic shrub in forests of southwestern Pennsylvania. Plant Disease 102(9): 1852. [re *P. pubera* (Santalaceae).]

Wolfe A.D. 2018. *Hyobanche hanekomii* (Orobanchaceae), a new species from the Western Cape of South Africa. Phytotaxa 340: 93-97. [This new species from the northwest part of the Western Cape is somewhat intermediate in appearance between *H. sanguinea* and *H. atropurpurea*, but can be distinguished from both in several morphological characters.]

Xiao-yue Wang, Rong Xu, Jun Chen, Jing-yuan Song, Steven-G Newmaster, Jian-ping Han, Zheng Zhang and Shi-lin Chen. 2018. Detection of Cistanches Herba (*Rou Cong Rong*) medicinal products using species-specific nucleotide signatures. Frontiers in Plant Science 13 November 2018 (https://www.frontiersin.org/articles/10.3389/fpls.2018.01643/full?utm_source=F-AAE&utm_medium=EMLF&utm_campaign=MRK_830687_66_PlantS_20181120_arts_A) [Applying their analysis to 66 commercial products of Cistanche Herba which should be based on *Cistanche deserticola* or *C. tubulosa* and showing that over 50% were adulterated with *C. sinensis, Boschniakia rossica* or *Cynomorium songaricum*.]

Xie YuLu, Li XiCan, Xu JieYing, Jiang Qian, Xie Hong, He JianFeng and Chen DongFeng. 2017. Two phenolic antioxidants in *Suoyang* enhance viability of .OH-damaged mesenchymal stem cells: comparison and mechanistic chemistry. Chemistry Central Journal 11: No.84 pp. [Describing and comparing the protective effect of epicatechin and luteolin-7-*O*-β-D-glucoside, components of an aqueous extract from *Cynomorium songaricum*.]

Xu LongHua, Yao BuQing, Wang WenYing, Ma Zhen, Shi GuoXi and Zhou HuaKun. 2018. (Nitrogen absorption and distribution characteristics in different organs of the main plants in *Kobresia humilis* meadow.) (in Chinese) Acta Botanica Boreali-Occidentalia Sinica 38(5): 957-966. [Describing the accumulation of different forms of nitrogen in different parts of the plant in a range of species including *Pedicularis kansuensis*.]

Yang, L., Yang, G.-S., Ma, H.-Y., Wang, Y.-H., and Shen, S.-K. 2018. Phylogenetic placement of *Yunnanopilia* (Opiliaceae) inferred from molecular and morphological data. Journal of Systematics and Evolution 56:48-55. [Molecular and morphological data are presented that the authors claim justifies recognition of a new genus, *Yunnanopilia*. The main difference between this taxon and *Melientha suavis* is that its flowers are bisexual (vs. unisexual, dioecious), otherwise morphologically very similar. Both taxa are sister with high support. The authors did not entertain the idea that this is simply a new species of *Melientha*. Over 1.5 years after publication, the gene sequences used in this paper are not available on Genbank.]

Yılmaz, H., Kuşak, B. and Akkemİk, Ü. 2018. The role of Aşiyan Cemetery (Istanbul) as a green urban space from an ecological perspective and its importance in urban plant diversity. Urban Forestry & Urban Greening 33: 92-98. [*Osyris*

alba among the 280 species recorded in the cemetery.]

Yingsanga, P., Suwannajan, S. and Makhoon, P. 2018. Effect of food wrapping materials and LLDPE plastic bag on shelf life of *Melientha suavis* Pierre shoot. Acta Horticulturae 1194: 297-303. [Finding that the best storage of *M. suavis* (Opiliaceae), used as a vegetable in Thailand, is from wrapping in banana leaves and enclosure in polythene.]

Yoneyama, K., Xie, X., Yoneyama, K., Kisugi, T., Nomura, T., Nakatani, Y., Akiyama, K. and McErlean, C.S.P. 2018. Which are the major players, canonical or non-canonical strigolactones? Journal of Experimental Botany 69: 2231–2239. [The structures and roles of canonical- and non-canonical strigolactones are discussed. Non-canonical strigolactones but not canonical strigolactones containing the ABC-D ring structure are proposed to be plant hormones as they are distributed widely in the plant kingdom. Isolation and structural determination of a new canonical strigolactone, 7β-hydroxy-5-deoxystrigol, from dokudami (*Houttuynia cordata*) root exudates is also reported. The structure of medicaol (Fig. 1, 22) should have a methyl on the D-ring and that of zealactone (Fig. 2, 24) should have conjugated double bond - see Corrigendum above.]

Yoon JunHo and Tak JunHyung. 2018. Toxicity and repellent activity of plant essential oils and their blending effects against two spotted spider mites, *Tetranychus urticae* Koch. Korean Journal of Applied Entomology 57(3): 199-207. [Among 20 plant extracts tested, sandalwood oil (*Santalum* species not specified) was the most not effective as repellant.]

Yu HaiBin, Zhang YiLi, Liu LinShan, Chen Zhao and Qi Wei. 2018. (Floristic characteristics and diversity patterns of seed plants endemic to the Tibetan Plateau..) (in Chinese) Biodiversity Science 26(2): 130-137. [Noting that the flora includes a large number of *Pedicularis* spp.]

*Yu WenBin, Randle, C.P., Lu Lu, Wang Hong, Yang JunBo, dePamphilis, C.W., Corlett, R.T. and Li DeZhu. 2018. The hemiparasitic plant *Phtheirospermum* (Orobanchaceae) is polyphyletic and contains cryptic species in the Hengduan Mountains of Southwest China. Frontiers in Plant Science 9(February):142. (https://www.frontiersin.org/articles/10.3389/fpls.2018.00142/full) [The polyphyly of *Phtheirosperum* had been previously documented and three species (*P. muliense*, *P. parishii*, and *P. tenuisectum*) were merged into *Pterygiella* (see Pinto-Carrasco et al. 2017 above). In this paper the authors argue for retaining the *Ph. tenuisectum* complex as a different genus, but no new name was proposed.]

*Yu, WenBin, Wang, Hong, Liu, MinLu, Grabovskaya-Borodina, A.E. and Li, DeZhu. 2018. Phylogenetic approaches resolve taxonomical confusion in *Pedicularis* (Orobanchaceae): reinstatement of *Pedicularis delavayi* and discovering a new species *Pedicularis milliana*. PLoS ONE 13(7): e0200372. (https://journals.plos.org/plosone/article?id=10.1371/journal.pone.0200372) [The authors have generated a molecular phylogeny (ITS and four chloroplast regions) that helped straighten out the confusion between *P. delavayi*, *P. siphonantha*, *P. tenuituba*, and *P. milliana*.]

Yule, K.M. and Bronstein, J.L. 2018. Reproductive ecology of a parasitic plant differs by host species: vector interactions and the maintenance of host races. Oecologia 186: 471–482. [*Phoradendron californicum* (Viscaceae) has genetically distinct races that parasitize the hosts *Prosopis* (mesquite) and *Senegalia* (acacia). Differences in vector interactions were tested by quantifying pollinator visitation, floral reward, pollen receipt, and fruit consumption. Although the two races have distinct but overlapping pollinator communities, reproductive success and fruit set did not differ by host.]

Zhang YueYa, Yan HaiFeng, Niu MeiYun, Cheng QingWei, Zhang XinHua, da Silva, J.A.T. and Ma GuoHua. 2018. Multiple strategies for increasing yields of essential oil and obtaining sandalwood terpenoids by biotechnological methods in sandalwood. Trees: Structure and Function 32(1): 17-28. [Discussing the metabolic pathway of terpenoid biosynthesis in sandalweood (presumbly *Santalum album*) and how to obtain these terpenoids or essential oils by chemical synthesis]

Zwanenburg, B. and Blanco-Ania, D. 2018. Strigolactones: new plant hormones in the spotlight. **Journal of Experimental Botany 69(9):** 2205-2218. [An in-depth review discussing the effect of stereochemistry, structure-activity relationships, design and synthesis of analogues with a simplified structure, introduction of fluorescent labels, their biosynthetic origin, mode of action and application in agriculture for the control of *Striga* and *Orobanche* spp.]

HAUSTORIUM 73
has been edited by Chris Parker, 5 Royal York Crescent, Bristol BS8 4JZ, UK (Email chrisparker5@compuserve.com), Lytton Musselman, Parasitic Plant Laboratory, Department of Biological Sciences, Old Dominion University, Norfolk Virginia 23529-0266, USA (fax 757 683 5283; Email lmusselm@odu.edu) and Hinanit Koltai, Dept of Ornamental Horticulture, Institute of Plant Sciences, ARO Volcani Center, Bet-Dagan 50250, Israel (hkoltai@agri.gov.il) with valued assistance from Koichi Yoneyama, Utsunomiya University, Japan, and from Dan Nickrent, Southern Illinois University, Carbondale, USA. It is produced and distributed by Chris Parker and published by Old Dominion University (ISSN 1944-6969).

Send material for publication to any of the editors.

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