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PRESIDENT'S/EDITOR'S MESSAGE

Dear IPPS Members,

It is an honour and a pleasure to start my term as President of the IPPS and I look forward to working with new and existing members of the Executive Committee and everyone involved in parasitic plant research. I hope that together we can take the society forward and continue the excellent work of Koichi Yoneyama.

On behalf of the society I would like to thank Koichi for all the time and hard work he has committed to the IPPS over the last eight years as Vice President and then President of the Society. During his time as President, Koichi oversaw the elections to the Executive committee, the Parasitic Plant Congress in Kunming, China in 2015, which was a huge success and he dealt with the general business of the society very effectively. Finally, I would like to say a personal thank you to Koichi, as I have very much enjoyed working with him during the last four years and learning how the society works.

One of my first and easy tasks is to encourage everyone to attend the 14th World Congress on Parasitic Plants (WCPP) ‘From Genome to Field’, which will be held at the Asilomar Conference Center, Pacific Grove, California from Sunday June 25th to Friday June 30th 2017. The Further details of the venue, the scientific program, which is currently being put together, and details about registration can be found on the website (www.WCPP14.org).

There are two more meetings of interest to parasitic plant researchers, the Second International Legume Society Conference which will be held in Tróia, Portugal, from the 11th -14th October, 2016 and the 2nd International Congress on Strigolactones, which will take place in Turin, Italy from the 27th – 30th of March 2017. Further information about both conferences is provided on page 10 of Haustorium.

I look forward to seeing everyone in Asilomar!

Best wishes,

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

MEETING REPORTS

THE 6th INTERNATIONAL INTERDISCIPLINARY MISTLETOE SYMPOSIUM, 12-14 November 2015, Nonnweiler, Saarland, Germany

Over 100 scientists and doctors from a variety of scientific disciplines and therapeutic approaches met at the European Academy in Otzenhausen for the 6th International, Interdisciplinary Mistletoe Symposium, entitled ‘Mistletoe in Tumour Therapy – Basic Research and Clinical Practice’. The symposium was coordinated by Dr. Rainer Scheer and organised by numerous medical and pharmaceutical professional associations together with the Karl and Veronica Carstens Foundation.

Over the 3 days, the latest results from research and clinical medicine were presented, discussed and compared in 46 lectures, producing a multidimensional and comprehensive picture of the current state of scientific knowledge on mistletoe extracts. The specific areas dealt with included manufacture and testing as well as regulatory assessment of mistletoe preparations, the effects of various ingredients, in vitro and in vivo preclinical studies, studies on immunology and cytotoxicity, clinical results obtained in various applications and tumour entities in both human and veterinary medicine, reports from medical practice and clinical studies designed to demonstrate specific effects, the efficacy, the safety and tolerance of mistletoe preparations. Oncological guidelines and the treatment of pancreatic and gastro-intestinal tumours were chosen as a topic for special attention and also dealt with in depth in a podium discussion. A particular focus was placed on the results of the pioneering Phase III study conducted by Galun and Tröger, as well as the controversial debate this has kindled in the literature.

The organisers hope that in future the Mistletoe Symposia will prove to be a forum for scientific exchange and discussion of questions relating to safe and reliable use of mistletoe in tumour therapy between professional associations and representatives not only of complementary, but also of conventional oncology.

All the abstracts from the symposium are published in English in Phytomedicine 22 (2015) Supplement 1 and are freely available on the Internet at www.ScienceDirect.com. (http://www.sciencedirect.com/science/journal/09447113/22/suppl/S1)

The summary papers that are still in stock are available on request from the author of this article. It is again planned...
to make the full texts of all contributions to the symposium available in a book published by KVC-Verlag, Essen. The print and online version will probably be available by the end of 2016.

The Mistletoe Symposia have been held every 4 years since 1995. This year’s participants again rated the congress as important and stimulating in terms of the results presented, the quality of the lectures, the discussions, the opportunity for individual conversations as well as the possibility to establish contacts. This was further underscored by the harmonious atmosphere as well as the excellent culinary, spatial and technical setting of the venue throughout the symposium.

It is planned to continue this fruitful exchange at the 7th Mistletoe Symposium in 2019, again at the European Academy in Otzenhausen and again with simultaneous interpretation into English. For more information about this and previous Mistletoe Symposia visit www.mistelsymposium.de.

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7TH INTERNATIONAL WEED SCIENCE CONGRESS, 19-25 June, 2016, Prague, Czech Republic.

At the 7th International Weed Science Congress a total of 35 papers on parasitic weeds were presented. The studies at the meeting, excluding the country-specific species inventory studies, covered 9 species of parasitic plants. The studies on broomrapes (Orobanche cumana, O. cernua, O. coerulescens, Phelipanche ramosa) were dominating. Other species were P. aegyptiaca, Cuscuta campestris, Viscum album, Striga asiatica, S. hermonthica and Rhamphicarpa fistulosa.

Against O. cernua in tobacco in India, an integrated management approach, using pre-emergence herbicide and plant hole application of neem cake was recommended. In sunflower in Hungary, genetic variation in resistance against O. cumana was observed among 32 commercial varieties. In Israel the resistance mechanism against O. cumana, was characterized in sunflower variety EMEK 3 and it was found that the parasite intrusive cells are stopped during the penetration attempt, indicating a ‘post-attachment’ mechanism. Control of this broomrape species in sunflower can be enhanced by exogenously applied salicylic acid, which is shown to trigger a defence response in the host plant. A combination of O. cumana-tolerant sunflower variety Emeq 5 with one foliar application of imazapic at 3.6 g ha⁻¹ applied at the 6-leaf stage, was sufficient to decrease parasite infection and increase sunflower seed yield from 630 kg ha⁻¹ to 2,500 kg ha⁻¹. In Greece, O. cumana in sunflower was effectively controlled by Herbicide Resistant Crop (HRC) technologies ExpressSun® and especially Clearfield®.

In Texas, USA, a new outbreak of P. ramosa was observed in 2015 after a containment programme had stopped in 2008. A taskforce was set-up that will work on increased awareness on the re-occurrence of this weed and on ways to prevent further spread. In France, a cropping systems model, called PHERASYS, was developed to identify entry points for control of P. ramosa. Simulations showed that burying seeds by tillage may not be efficient to deplete the parasite seed bank, because of low seed mortality, but delaying crop sowing could reduce crop infestation due to the parasite seed dormancy characteristics. For Egyptian broomrape, P. aegyptiaca, a decision support system, called PICKIT, was developed for affected tomato growers in Israel, based on chemical control. This support system is now being adopted by commercial growers. To optimize this system, a molecular marker approach has been developed and tested to quantify broomrape seeds in soil samples, that could be used to map the within-field distribution, with the aim to conduct more site-specific herbicide applications. Another approach to support such site-specific chemical control was by early recognition of broomrape parasitism in an existing crop, that works through narrow-band spectral signatures of broomrape-infected plats.

The mechanism of control by glyphosate in a glyphosate-tolerant tomato variety has been studied. Glyphosate prevents self-production of aromatic amino acids in P. aegyptiaca by inhibition of the enzyme 5-enolpyruvylshikimate-3-phosphate synthase. In Iran, the genetic diversity of P. aegyptiaca has been studied, both on the molecular basis, as well as on the host preference and sensitivity to sulfosulfuron herbicide. In Turkey, rimsulfuron herbicide application to control P. ramosa in tomato was most effective following three applications via chemigation at 15, 30, and 45 DAP. Another approach tested in Turkey was to graft tomato varieties. Combinations of commercial varieties Newton/King Kong, Beril/Yedi, Selin/Kemerit reduced the number of broomrape plants and tubercles, and this method could be further explored as a solution for growers.

The use of a bio-herbicide to control O. cumana in sunflower was studied in Turkey. Amino acid salt, applied both to the soil and on the parasitic weed, was effective for control and could be recommended for organic sunflower farming where broomrape is problematic. A bio-control option to control broomrapes was also studied (in vitro) in Italy. Strains of fungi Trichoderma harzianum and Fusarium oxysporum proved to metabolize strigolactones, particularly 5-deoxystrigol and 4-deoxyorobanchol (around 73 and 69 %, respectively). In Israel, stimulant-dependent host
specificity of Phelipanche and Orobanche spp. was investigated for sunflower and tomato. O. cernua response to the strigolactones orobanchol, 2’epiorobanchol, 5-deoxystrigol and fabacly acetate was highly specific, matching the tomato, as well as other Solanaceae spp. profile. No O. cernua response was observed after exposure of dehydrocostus-lactone and costunolide, coming from sunflower roots, the exact opposite of the O. cumana response to these compounds. P. egyptiaca proved to have the widest host range.

A study carried out in Poland provided the first evidence of host-to-parasite mitochondrial gene transfer in Orobanche coerulescens belonging to the section Inflatae which also contains the weedy species O. cumana and O. cernua.

On Cuscuta spp., studies on species distribution have been conducted in Russia and in Turkey. In Russia, 17 species of Cuscuta were identified and in Turkey (East Anatolia), through a combination of DNA extraction, cloning and sequencing from herbarium specimen, 8 species have been found. C. campestris was reported as an alien invasive species in sugar beet, while C. polygonorum was observed as a weed in apple orchards. In Serbia a study on the effects of C. campestris on sugar beet plant physiology showed that both the chlorophyll content and a number of chlorophyll fluorescence parameters were negatively affected by infection. In Israel, for control of C. campestris in water melon and chickpea, application of granular pendimethalin (‘Corral’ 2.68%, G) proved effective, as it prevented the parasite from attaching to its host stem. In the USA, integrated management of Cuscuta in cranberry using an AHP (Analytical Hierarchy Processing) model, was tested with growers with an objective to design farm-specific dodder management programs. AHP proved a useful decision support tool for growers.

A pot experiment with sorghum and different seed densities of S. hermonthica was conducted to parameterize a simulation model to investigate the density-dependent population regulation. Density dependence as well as inverse density dependence was observed depending on the life-cycle stage. The resulting overall fitness of S. hermonthica was not seed density dependent, as the population growth rate was constant over the range of densities. In India, for the control of S. asiatica in sugar cane, a combination of pre-emergence herbicide (atrazine) and trash mulching proved effective. Tolerance to S. asiatica has been identified in mutant rice varieties in Madagascar and these are being further tested in farmers’ fields. Against S. asiatica and S. hermonthica, resistance has been identified in wild sorghum types. Profiles of differentially expressed genes between S. hermonthica infecting wild and cultivated sorghum and between S. hermonthica and S. asiatica infecting cultivated sorghum have been compared. Identified genes/loci will provide a platform for enhancing resistance of sorghum to Striga spp. using a genetic modification (GM) or a non-GM approach. Promising advances were also reported on bio-control of S. hermonthica, with a technology that actually seems feasible and effective in farmers’ fields. The strategy entails primary inoculum delivery of the S. hermonthica-controlling fungus F. oxysporum f.sp. strigae on lab-prepared toothpicks, provided to farmers, and secondary inoculum, by the farmer him/herself, through boiled rice applied in the maize planting whole. The approach has resulted in average on-farm maize yield increases of 42-57% in western Kenya. A technology based on placing imazapyr herbicides within so-called sub-granules (30 to 60 μm) pressed into 2 to 4 mm conventionally dimensioned granules (for ease of application), applied with ALS resistant maize seeds, proved efficient to control Striga. Advantage of this method is the slow release of the herbicide and therefore a prolonged efficacy.

On another parasitic weed that parasitizes cereal hosts, the facultative parasite Rhamphicarpa fistulosa (rice vampireweed), results on studies on its distribution and host-parasite interactions were presented. It occurs in 28 rain-fed rice producing countries in Africa causing annual losses of 204,000 tons of milled rice worth US $82 million. Simulation studies showed that non-responsiveness to rice root exudates represents an opportunistic strategy, which is advantageous in combination with some important life history characteristics of this facultative parasite.

In Turkey, an inventory of the presence of Viscum album was conducted in two provinces (Aydin and Denizli) in Turkey. It was found on wild pear, pear, apricot, almond, black pine, poplar, willow and acacia trees. The survey showed that 33% to 76% farmers (depending on the province) had knowledge of this weed.

Jonne Rodenburg

Papers and posters presented:

Tal Shilo et al. - Aspects of glyphosate mechanism in Egyptian broomrape control

Hanan Eizenberg et al. - Assimilating a decision support system ‘PICKIT’ for Egyptian broomrape (Phelipanche aegyptiaca) control in processing tomato in Israel

Noam Ariel et al. - Molecular markers for identification and quantification of broomrape (Orobanche and Phelipanche spp.) seeds in a soil sample

Steven M. Runo et al. - Striga/sorghum arms race during domestication as revealed by Dual RNA-seq
Mihály Zalai et al. - Greenhouse and open-field testing methods for infection and virulence of broomrape (Orobanche cernua) in sunflower (Helianthus annuus)

Amnon Cochavi et al. - Early recognition of broomrape parasitism by physiological measurements and narrow-band spectral signatures

Oz Bendavid et al. - Integrated approach for alleviating the injury of sunflower broomrape (Orobanche cumana) in sunflower

Paula R. Westerman et al. - Density-dependent population regulation of the hemi-parasite, Striga hermonthica, on sorghum

Chinnagounder Chinnusamy - Integrated management of parasitic weed Orobanche cernua infesting transplanted tobacco in red sandy loamy soils

Chinnagounder Chinnusamy - Management of Striga asiatica in early planted sugarcane in red gravel soil fields of Southern India

Dana S., Eizenberg et al. - Genetic characterization of resistance of sunflower (Helianthus annuus L.) to sunflower broomrape (Orobanche cumana W.)

Denis L. Belkin - Distribution and impact of the genus Cuscuta L. in Russia

Fatma Keskin et al. - Determination of phylogenetic relations of species belonging to the genus dodder (Cuscuta spp.) that problem in agricultural and non-agricultural lands in eastern Anatolia (Turkey)

Lammert Bastiaans et al. - Rhamphicarpa fistulosa, an emerging parasitic weed problem in rain-fed lowland rice production systems in sub-Saharan Africa.

Manoa Raharivelo et al. - In vitro screening of Malagasy rain fed mutant rice lines F154 and B22, tolerant to Striga asiatica

Marija M. Saric-Krsmanovic et al. - The effect of field dodder (Cuscuta campestris Yunk.) on chlorophyll fluorescence and chlorophyll content parameters of alfalfa and sugar beet plants

Muthukumar Bagavathiannan et al. - Branched broomrape (Orobanche ramosa): A serious threat to Texas vegetable industry

Dina Plakhine et al. - Stimulant dependent host specificity of root parasitic weeds (Phelipanche and Orobanche spp.)

Chong Yang et al. - Alleviation of root holoparasitic Orobanche cumana infection by exogenously applied salicylic acid in host crop Helianthus annuus

Magdalena Denysenko et al. - The evidence of the host-to-parasite gene transfer in Orobanche

Angela Boari et al. - Biological control of parasitic weeds by using strigolactone-degrading fungi

David C Sands et al. - Striga biocontrol: A readily deployable and inexpensive method for smallholder farmers

Yaakov Goldwasser et al. - Cuscuta campestris control with granular pendimethalin in chickpea and watermelon

On Rabinovitz et al. - Phelipanche aegyptiaca control in processing tomatoes with rimsulfuron and benzothiadiazole

Noushin Nezamabadi et al. - Investigating broomrape (Phelipanche aegyptiaca) populations genetic diversity, host preferring and response to herbicides and benzothiadiazole

Olivia Pointurier et al. - Modelling cropping system effects on branched broomrape dynamics in interaction with weeds

Martin Reisser et al. - Novel high capacity slow release herbicide formulations with new uses

Selvinaz Karabacak et al. - Broomrape (Orobanche spp.) control with some organic herbicides in sunflower

Emre E. Muslu et al. - Controlling broomrape in tomato with rimsulfuron

Ilhan Uremis et al. - Grafting attempts for broomrape management

Nurcan Büyükkurt et al. - Alien species in sugar beet fields in Turkey

Bilal Esitmez - The role of soil parameters on weed distribution in apple orchards

Hilary A Sandler - Using analytic hierarchy processing and grower feedback to promote adoption of integrated management strategies for dodder (Cuscuta spp.) in cranberry

Petros Vahamidis et al. - Spatial and temporal changes on weed flora and Orobanche cumana abundance in sunflower fields: An impact assessment of environmental, management and site factors

INTERNATIONAL CONFERENCE ON PULSES.

Marrakesh, Morocco, 13-15 April, 2016

Papers/posters presented included:

Diego Rubiales - Integrated management of parasitic weeds to reclaim pulses area in Mediterranean region

Foud Maalouf et al. - Breeding for post-emergence herbicide tolerance in cool-season food legumes

Joseph Mbasani Mans et al. - Assessment of tolerance level of Moroccan lentil genotypes against Orobanche crenata

Mounia Ennami et al. - Host differentiation and variability of Orobanche crenata populations from legume species in Morocco as revealed by cross infestation and molecular analysis

Mounia Ennami et al. - In vitro culture of Orobanche crenata

Aziza M Hassanine et al. - Orobanche crenata effect on some faba bean genotypes and the genetic variation between three Orobanche isolates

Rifai Mohammed, et al. - Screening of lentil germplasm to identify the sources of resistance against Orobanche crenata
Fatima Zahra Briache et al. - Screening of faba bean genotypes for resistance to *Orobanche crenata* under field and controlled conditions

Girma T Kassie et al. - Economic impact of broomrape (*Orobanche crenata*) on pulse crop production in northeastern Ethiopia

Rind Balech et al. - Identification of faba bean lines tolerant to high dosage of glyphosate

Teklay Abebe et al. - Genotype by environment interaction of some faba bean genotypes under diverse broomrape environments of Tigray, Ethiopia

Dahbia Tibt et al. - Mutation induction in lentil

Moez Amri et al. - Achievements of the national chickpea (*Cicer arietinum* L.) breeding program in Tunisia

Moez Amri et al. - Achievements of the national faba bean (*Vicia faba* L.) breeding program in Tunisia

MSM Soliman et al. - Faba bean integrated pest/disease management in demonstration platform in Egypt

A Bouaziz et al. - *Vicia faba* cultivation as seen by farmers: diversity of practices in two Moroccan regions

**PRESS REPORTS**

**Wildlife photographer Jim Thomson takes a look at the elusive Mistletoebird.**

The Mistletoebird (*Dicaeum hirundinaceum*), is a very attractive and interesting bird. During all my years watching and photographing bird life I have only once been able to get them at the nest. I did find a nest at Walka Water Works at one stage but unfortunately it did not survive – it was right at the side of the walking track. The one I did get in the nest was at Vacy. I had found it during one of my many bird watching trips and the nest was low down making it quite easy to get the shot – set up the camera, short lens with the flash on short duration and triggered by remote control. The male Mistletoebird at its nest with hungry chicks demanding attention.

Its appearance in any area is governed by the fruiting of mistletoe. The Mistletoebird in turn helps to spread the plant due to the large quantity of mistletoe berries that passes through the bird, which in turn regenerates new plants. It seems ironic then that while the Mistletoebird has evolved into an extremely efficient local distributor of mistletoe seeds, the bird needs the mistletoe but the mistletoe certainly does not need the bird. Aside from the mistletoe berries these birds feed on berries of other plants, as well as insects. During the first few days of life the female incubates the eggs alone.

Mistletoebirds are usually seen flying very rapidly from tree to tree, gaining their power of strong swift flight from long, narrow wings.

Maitland Mercury, May 6, 2016.

**Vampire vine helps to destroy alien European weeds in Australia**

Let the plant wars begin. A parasitic vine that sucks the life out of feral weeds is being billed as a promising new agent for biocontrol.

*Cassytha pubescens,* or devil’s twine, is the first native plant to be investigated as a weapon against invasive weeds introduced to Australia by European settlers in the early 1800s. Robert Cirocco of the University of Adelaide says the vine is able to kill all the ‘major baddies’ – gorse, Scotch broom and blackberry – by attaching small suckers to the plants’ stems and extracting their water and nutrients. ‘This is important because these weeds cost us millions of dollars annually to eradicate, not to mention their incalculable costs to our native biodiversity,’ he says.
The most notorious of these alien weeds, European gorse (Ulex europaeus), costs more than A$7 million (US$5.5 million) each year to clear from natural habitats and farmland with a mixture of herbicides, mechanical removal and burning. Cirocco and his colleagues showed that devil’s twine can destroy gorse by reducing its water and nutrient intake, which in turn harms photosynthesis. ‘Less photosynthesis translates to less carbohydrate, and less carbohydrate translates to less growth,’ says Cirocco. The gorse plants that the researchers studied were in the Mount Lofty Ranges in South Australia, where many had been naturally infected with C. pubescens in the area. ‘You could see a Cassytha infection front that was leaving dead gorse in its wake,’ says Cirocco.

The work was presented at the Natural Resource Management Science Conference in Adelaide last week. According to Cirocco, the biggest advantage of C. pubescens as a potential biocontrol agent is that it already occurs naturally across large tracts of eastern Australia. As a result, there is little danger that the vine will itself become a menace, as with the cane toads introduced to Australia in 1935 to control beetles that devastated sugar-cane crops. C. pubescens also fulfils the brief of being far more toxic to non-native than native plants.

‘Cassytha is not the smartest thing – it will pretty much go for anything it can get its suckers on, including barbed wire,’ says Cirocco. ‘But research shows that Cassytha has a much greater effect on invasive weeds, perhaps because native plants have co-evolved with it, so they have likely developed mechanisms of resistance or tolerance.’

Cirocco says the next step will be to conduct field trials to confirm the effectiveness of C. pubescens against gorse in a variety of natural habitats. ‘Cassytha continues to show promise as an effective native biocontrol against major invasive weeds, so it’s definitely worth exploring,’ he says.

The strategy makes sense from an ecological point of view, but the success of biocontrols is very difficult to predict, says Roger Cousins of the University of Melbourne. ‘You never can tell with biocontrol agents. You carefully select them and do all the work but quite often they just don’t do the job,’ he says. ‘But when they do work, it’s fantastic.’

Leslie Weston of the Charles Sturt University in Wagga Wagga, New South Wales, agrees that the strategy has potential. ‘The issue is how you manage the Cassytha itself once it’s established because it’s obviously not something you want to be extended past its natural range,’ she says. ‘Although Cassytha might not have an as adverse effect on the natives, it can still have an effect.’ ‘Usually when you pick a biocontrol organism, you pick one that is incredibly specific to the host you’re trying to decimate. This is a non-specific option so it would have to be very carefully managed,’ says Weston.

Alice Klein, New Scientist 30 April 2016.

Boise National Forest Seeks Public Comment on Bogus Basin Forest Health Project

The forest surrounding Bogus Basin Mountain Recreation Area is sick. Many of the large conifer trees are plagued with dwarf mistletoe (Arceuthobium) infection and Douglas-fir beetles. Scores of trees are already dead, left standing and ready to fall at anytime—threatening Bogus Basin’s chairlifts, towers and mountain users. ‘Due to ongoing incidence of tree mortality, a large number of standing dead trees are present in the Bogus Basin developed recreation area,’ stated the Boise National
Forest in its Bogus Basin Forest Health Project plan. ‘Large brooms (dense clumps of branches) on trees infected with dwarf mistletoe may fall, especially under the weight of heavy snow. These trees present a safety hazard to the public on alpine and Nordic ski trails and roads, as well as recreation facilities.’ Standing dead trees are normal in any forest, but Boise National Forest officials state, ‘in recent years there has been a dramatic increase in the number of trees killed by dwarf mistletoe, Douglas-fir beetle and Western bark beetle.

In 2007, the Forest Health Protection Department within the U.S. Forest Service reported Douglas-fir dwarf mistletoe infected almost 80 percent of all stands within the Bogus Basin area. Dwarf mistletoe infected trees are likely to have their branches collapse under heavy snow, posing a risk to nearby skiers and snowboarders. The seriousness of the forest’s ill health came to a head two years ago, when Idaho Gov. C.L. ‘Butch’ Otter submitted a request to U.S. Agriculture Secretary Tom Vilsack, asking for landscape-scale treatments to national forests throughout Idaho. Chief of the U.S. Forest Service Tom Tidwell gave Otter his blessing to treat the areas needing help because of the high risk of insect and disease mortality. Bogus Basin is one of 50 landscape areas throughout the state in need of heavy treatment. A plan was crafted between the Boise Forest Coalition—made up of citizens with a diverse set of perspectives on forest management—and the Boise National Forest.

According to the plan, ‘The desired condition for the proposed project is a healthy forest that facilitates and enhances public recreation and is resilient to natural disturbances such as insects, disease and wildfire.’ Treatments are slated to begin in fall 2016 or summer 2017. Some treatments may need to be repeated every five to 10 years to continue removing dwarf mistletoe-infected trees and beetle-killed trees that pose a hazard on the ski resort.


**Appeal for sightings of rare mistletoe in Abel Tasman National Park**

The public have been asked to keep an eye out for scarlet mistletoe in the Abel Tasman National Park (New Zealand). The at risk plant is declining and has flowers that are an important source of nectar for birds like tui, kaka and bellbird.

Scarlet mistletoe or *Peraxilla colensoi*, has bright red explosive flowers that are an important source of nectar for birds like tui, kaka and bellbird.

The mistletoe is rarely seen in the national park and is classified as at risk and declining. A 2013 survey by the Department of Conservation found only 16 plants in the Canaan area of the park. The mistletoe is seen as one of the parks indicator species as it is very susceptible to possum browsing. This month, Project Janszoon botanist Dr Philip Simpson found another, previously unknown, site where the mistletoe is growing near Canaan.
‘No one can appreciate how rare the sight of a red flowered mistletoe is nowadays. I noticed that the bases of all the branches of the trees nearby were smoothed and horizontal, suggesting a long history of possums climbing up, using the tree to gain entry to the succulent mistletoe leaves above,’ Simpson said. ‘It is likely that long term and sustained 1080 (sodium fluoroacetate) poisoning has saved this plant from certain death.’

There are three species of mistletoe in the park, *Peraxilla colensoi* and *Peraxilla tetrapetala* have red flowers while *Alepis flavida* which has orange and yellow flowers has only been found once in the park.

Simpson is asking visitors to the park to report any sightings of mistletoe. ‘Now is a great time to try to locate these and get an idea of how others are doing. These elusive beautiful plants are a treat to see and to have one beside the track and only just above eye level gives truly a wonderful experience,’ he said. As well as looking for the flowers another good way to spot mistletoe is to look for the bright red petals on the ground.

If you find a mistletoe please take a photo and note the location, preferably with GPS coordinates and notify Project Janszoon at info@janszoon.org

**Uganda: NARO makes breakthrough on sorghum**

National Semi-Arid Resources Research Institute (NaSARRI) has developed five sorghum types that are tolerant to *Striga* and drought. This was revealed by Dr. Michael Ugen, director of research, NaSARRI, while meeting farmers in Mayuge and Namatumba districts during a participatory sorghum variety selection exercise.

*Striga* and drought are key production constraints in sorghum production with a potential to cause up to 100 per cent yield loss in sorghum particularly in the north, north-eastern and eastern Uganda where sorghum production is prominent. The two constraints to production are highly reinforced by low soil fertility and weather variability. ‘Climate change has highly affected sorghum production in many parts of the country but this breakthrough is a ray of hope to Uganda’s sorghum farmers’, said Dr Ugen. The candidate varieties are earmarked to address food security and improve household income since they are resilient to *Striga* and drought and also high yielding.

The sorghum genotypes which are scheduled for release in 2017 are the result of more than two years of research. ‘Sorghum is a major crop in the main producing areas and NaSARRI is determined to always provide reliable seed to farmers through research,’ said Johnnie Ebibiyau, a senior research officer, NaSARRI. ‘The sorghum lines are high yielding giving up to 3,000 kilogrammes per hectare.’

Sorghum is the third most important staple cereal crop after maize and millet and its production in Uganda is estimated to be at 376,000 metric tonnes annually. Steven Koma, the chairperson, Ntalinga farmers’ group, Mayuge District, reiterated the urgent need for better sorghum varieties if the required production is to be attained. ‘We are excited to have participated in the evaluation of these genotypes and can’t wait to have them in this region for production,’ added Paul Magemeso, a farmer in Nakalama Village, Iganga district. ‘Most of us depend on sorghum for food and income but *Striga* was frustrating us.’

Besides food, sorghum is gaining importance in the manufacturing industry for production of beverages, medicine, feeds, paper, ethanol, and food dyes.

NaSARRI is one of the research institutes under NARO and is based in Serere District.

Umar Kyeyune

**Help ‘Believe Big’ and Johns Hopkins Sidney Kimmel Cancer Center Kiss Cancer Goodbye**

One last push in funding is needed for the Premiere U.S. Mistletoe Clinical Trial.

Due to the fundraising efforts of Believe Big, Johns Hopkins is preparing to begin a clinical trial on Mistletoe Extract to help ‘Kiss Cancer Goodbye.’ Not only has mistletoe (*Viscum album*) been found to diminish tumor-related pain, increase the immune response, prevent reoccurrence during the watchful waiting period, but it also offsets the harsh side affects of chemotherapy: nausea, vomiting, and lack of appetite.

Most clinical trials are typically funded by pharmaceutical companies, but because mistletoe is a natural substance, this is not an option. This is truly historic because this clinical trial is entirely patient driven and is being entirely funded by private donations. Even though mistletoe is used all over the world and proven effective in treating cancer, until a clinical trial is done here in the United States, oncologists cannot offer this treatment as standard of care. Currently only 50 physicians are trained to treat with mistletoe in the US. ‘We have been able to raise over $395,000 to start the clinical trial,’ said Ivelisse Page, Executive Director & Co-founder of Believe Big. While European oncologists have used extracts of mistletoe for
the past 90 years, it is not available through oncologists in the U.S. Currently, 1 out of every 3 oncologists in Germany prescribes mistletoe.

Believe Big is a non-profit organization formed in 2011 to help bridge the gap between conventional and complementary medicine for fighting cancer. Now Believe Big and Johns Hopkins are collaborating on a mistletoe clinical trial that brings the conventional and complementary medical communities together. Johns Hopkins researchers say mistletoe treatment could change the way doctors go after cancer. Believe Big founder, Ivelisse Page was healed of stage 4 colon cancer using mistletoe Extract, surgery, and a high alkaline diet. She is now 7 years cancer free and the health advocate that began this effort. Dr. Luis Diaz, professor of oncology and senior researcher at Johns Hopkins, and Dr. Peter Hinderberger, expert in complementary medicine, both treated Ivelisse and are helping to lead the clinical trial at Johns Hopkins along with Dr. Channing Paller. Dr. Hinderberger has used mistletoe in his practice successfully for over three decades. The clinical trial team is hoping that with this study, mistletoe will be included in the standard of care treatment protocol for cancer.

For more information about Believe Big and to find a physician who is currently treating with mistletoe, visit http://www.believebig.org. Anyone wishing to be a part of this historic event can make a tax-deductible donation for this trial by visiting: www.believebig.org/Donate.html

**GENERAL WEB SITES**

For individual web-site papers and reports see LITERATURE

* these websites may need copy and paste.

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

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

For the 14th IPPS World Congress on Parasitic Plants, June 25-30, 2017. see: www.WCPP14.org

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

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

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

For information on the new Frontiers Journal ‘Advances in Parasitic Weed Research’ see: http://journal.frontiersin.org/researchtopic/3938/advances-in-parasitic-weed-research

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

For information on the COST/STREAM 2nd International Congress on Strigolactones; http://www.strigolactones2017.it/

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

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

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

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

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

For a compilation of literature on Viscum album prepared by Institute Hiscia in Arlesheim, Switzerland, see: http://www.vfk.ch/informationen/literatursuche (in German but can be searched by inserting author name).

For the work of Forest Products Commission (FPC) on sandalwood, see: http://www.fpc.wa.gov.au (Search Santalum)
HAUSTORIUM 69 July 2016

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


Ahamide, I.D.Y., Tossou, M.G., Adomou, A.C., Houenon, J.G., Yedomonhan, H. and Akoegninou, A. 2015. (Diversity, impacts and uses of Loranthaceae growing on Cola nitida (Vent.) Schott. & Endl. in Southern Benin.) (in French) International Journal of Biological and Chemical Sciences 9(6): 2859-2870. [Recording that 53% of cola trees were infested with mistletoes including Globimetula braunii, G. cupulata, Phragmanthera capitata, Tapinanthis bangwenis, T. belvisii and T. globiferas and noting that these are widely used medicinally for barrenness, miscarriage and menstrual disorders.]


Akça, A. and Işık, D. 2016. (Determination of weeds species in sugar beet (Beta vulgaris L.) cultivation areas in Kayseri.) (in Turkish) Bitki Koruma Bülteni 56(1): 115-124. [Cascuta (unspecified) recorded in 46% of fields in this region of Central Turkey.]

Akhtouch, B., del Moral, L., Leon, A., Velasco, L., Fernández-Martínez, J.M. and Pérez-Vich, B. 2016. Genetic study of recessive broomrape resistance in sunflower. Euphytica 209(2): 419-428. [Crosses between the Orobanche cumana Race F-resistant lines K-96 and P-96 and the susceptible P-21 suggest that the resistance is mainly controlled by a dominant-recessive epistasis at two loci. Five QTL on LG 2, 3, 4, 5, and 6 were associated with broomrape resistance traits. Concluding that K-96 and P-96 have complementary QTL with minor effect on broomrape resistance. They are, therefore, good donor sources for marker-assisted pyramiding programmes.]

Aksoy, E., Arslan, Z.F., Tetik, Ö. and Eymirli, S. 2016. Using the possibilities of some trap, catch and Brassicaceae crops for controlling crenate broomrape a problem in lentil fields. International Journal of Plant Production 10(1): 53-62. [Results suggest that lentil could be useful as a catch crop and flax as a trap crop, for reduction of Orobanche crenata. Broccoli also had some beneficial effect but methodology not clear.]

Al-Babili, S. and Bouwmeester, H.J. 2015. Strigolactones, a novel carotenoid-derived plant hormone. Annual Reviews in Plant Biology 66: 161-186. [An excellent review of strigolactones as plant hormones, describing their chemistry, biosynthesis, and biological functions. The definition and nomenclature of strigolactones proposed in this review have been accepted by many scientists. Due to very rapid progress in this research area, new important findings need to be added.]


Alakesh Phukan, Bolin Chetia, Handique, J.G. and Devid Kardong. 2016. Antimicrobial, antioxidant activities and...


An Yu, Ma YongQing, Shui JunFeng and Zhong WenJin. 2015. Switchgrass (Panicum virgatum L.) has ability to induce germination of Orobanche cumana. Journal of Plant Interactions 10(1): 142-151. [Concluding from laboratory testing of various extracts of P. virgatum varieties at different stages of growth that it may be useful as a trap crop for O. cumana but without confirmation from appropriate field experiment.]

Anon. 2016. An update of the Angiosperm Phylogeny Group classification for the orders and families of flowering plants: APG IV. Botanical Journal of the Linnean Society 181(1): 1-20. [Focusing just on features that relate to parasitic plants, the following changes were made. Cynomoriiaceae were placed in Saxifragales (in agreement with Nickrent et al. 2005). Apodanthaceae were classified in Cucurbitales (in agreement with Nickrent et al. 2004 and Filipowicz & Renner 2010). Hydnoraceae were lumped into Aristolochiaceae (see Naumann et al. 2013 - justified?). Santalales are now part of a clade called Superasterids. The familial classification within the sandalwood order proposed by Nickrent et al. (2010) was not followed. Moreover, in contrast to Hu et al. (2015), Balanophoraceae are monophyletic and placed in Santalaceae based on an unpublished study by J. W. Byng.]


Baltazár, T., Varga, I. and Pejchal, M. 2015. (The impact of increased infestation in low canopy density situations and showing little correlation with host tree height but... Phoradendron species to mowing dates: implications for grassland conservation and restoration practice. Plant Ecology and Evolution 149(1): 31-38. [Experiments in Czech Republic showed that populations of Rhinanthus major (=R. angustifolius) and Melampyrum nemorum are susceptible to early (June) mowing, while mowing in July was not a problem.]

Biao, T.T., Mohammed, S.G., Kamara, A.Y., Gashua, A.G., Beccarisi, L., Medagli, P., Zizzi, T. and Minonne, F. 2015. (Inventory of the vascular flora of the Natural Reserve of Torre Guaceto (Apulia, Italy).) (in Italian) Thalassia Salentina 37: 11-56. [Noting that species in danger of extinction include Cytinus ruber.]

Bouraoui, M., Abbès, Z., Rouissi, M., Abdi, N., Hemissi, I., Kouki, S. and Sifi, B. 2016. Effect of rhizobia inoculation, N and P supply on Orobanche foetida parasitising faba bean (Vicia faba minor) under field conditions. Biocontrol Science and Technology 26(6): 776-791. [In field trials a Rhizobium strain ‘Mat’ reduced O. foetida by 50% and increased faba bean yield three-fold. Yields reduced 95% in controls. No mention in abstract of the effects of a second Rhizobium, nor of N and P.]


Cabrer, A., Celis, R. and Hermosín, M.C. 2016. Imazamox-clay complexes with chitosan- and iron(III)-modified smectites and their use in nanoformulations. Pest Management Science 72(7): 1285-1294. [A natural smectite modified with the biopolymer chitosan or with Fe3+ cation was used to create controlled release formulations of imazamox for control of unspecified Orobanche spp. Results suggested full activity and much reduced loss by leaching.]

Caires, C.S. and de Azevedo, C.O. 2015. Peristethium phaneroneurum (Loranthaceae): a new combination expands the distribution of the genus from Honduras to Brazil. Rodriguésia 66: 859-861. [A new combination, Peristethium phaneroneurum, is proposed, based on Struthanthus phaneroneurum, described from Honduras in 1940 by Paul C. Standley. This new combination extends the geographical distribution of the genus from Honduras to the ecotone Amazon-Cerrado region of Brazil.]

Caires, C.S. and Proença, C.E.B. 2015. Typification of two neotropical names of Loranthus Jacq. (Loranthaceae). Candollea 70: 197-199. [The original specimens of Loranthus cucularis Lam. (= Psittacanthus cucularis) were located in Paris and the former neotypification proposal for this name is thus rejected. The identity and typification of Loranthus bracteatus (= Loranthus cucularis) and Loranthus florulentus (= Orictanthus florulentus), are discussed.]

Callmader, M.W., Luino, J., Da-Giau, S., Rakotovaov, C. and Gautier, L. 2014. A synoptic revision of the Malagasy endemic genus Socratina Balle (Loranthaceae). Candollea 69: 65-73. [The genus Socratina endemic to Madagascar was revised and three species are recognized, including a new one, Socratina philipsoniana Callm. & Luino.]


Cárton, L., Gomez Casares, G., Laínz, M., Moreno Moral, G., Sánchez Pedraja, O. and Scheneeweiss, G.M. 2016. Index of Orobanchaceae. (http://www.farmalierganes.com/Otrospdf/publica/Orobanche%20Index.htm) [This web page provides nomenclatural information for all genera and species of Orobanchaceae. This up-to-date treatment provides links between accepted names and synonyms with extensive referencing. A massive effort that resulted in an extremely valuable resource!]

Castagneri, D., Bottero, A., Motta, R. and Vacchiano, G. 2015. Repeated spring precipitation shortage alters individual growth patterns in Scots pine forests in the Western Alps. Trees: Structure and Function 29(6): 1699-1712. [The influence of mistletoe (presumably Viscum album) was also included in the study but apparently less important than drought.]

Catteau, L., van Bambeke, F., Quetin-Leclercq, J., Garcia-Viguera, C., Gil-Izquierdo, A., Moreno, D.A., Baenas, N. 2015. Preliminary evidences of the direct and indirect antimicrobial activity of 12 plants used in traditional medicine in Africa. Phytochemistry Reviews 14(6): 975-991. [Methanol extracts of Tapinanthus bangwensis were active against Staphylococcus aureus MRSA ATCC33591 and improved the activity of ampicillin on that organism.]

development of alternative industrial production systems for sandalwood oil fragrances.]

*Chai Min, Zhu Xiaofei, Cui Hongxia, Jiang Chuanfeng, and Zhang Jinzheng. 2015. Lily cultivars have allelopathic potential in controlling *Orobanche aegyptiaca* Persoon. PLoS ONE 10(11): e0142811. (http://journals.plos.org/plosone/article?id=10.1371/journal.pone.0142811) [Reporting on pot and laboratory experiments which showed germination stimulation from a range of different extracts of *Lilium longiflorum* hybrids, and also, perhaps more significantly, from soils in which the lilies had grown.]

Chai Yangyang and Zhao Min. 2016. Purification, characterization and anti-proliferation activities of polysaccharides extracted from *Viscum coloratum* (Kom.) Nakai. Carbohydrate Polymers 149: 121-130. [Three polysaccharides isolated from *V. coloratum* are characterised and shown to have anti-proliferation ability against HepG2 cells and HepG2.2.15 tumour cells]


Chen Qingliang, Guo YuHai, Jiang Yong and Tu Pengfei. 2016. Mechanism of fluridone-induced seed germination of *Cistanche tubulosa*. Pakistan Journal of Botany 48(3): 971-976. [Concluding that GAs and ABA play key roles in the seed germination of *C. tubulosa* and that fluridone inhibits ABA biosynthesis but increases the concentration of GAs in seeds. Fluridone may initiate other processes associated with germination.]

Chen, Q.L., and Jiang, Y. 2016. A convenient and accurate seed germination assay for root parasitic plants. Seed Science and Technology 44(1): 212-217. [Describing a procedure for seed conditioning and germination of *Striga* and *Orobanche* in the same Petri dish involving an inverted filter paper method. This provides a 'platform' for the seeds and does not involve the use of Whatman glass fibre filter paper, thereby reducing costs.]

Chinsenbu, K.C. 2016. Ethnobotanical study of medicinal flora utilised by traditional healers in the management of sexually transmitted infections in Seshake District, Western Province, Zambia. Revista Brasileira de Farmacognosia 26(2): 268-274. [Ximenia caffra one of the more frequent of 52 species used traditionally to treat sexual diseases in this region.]


Chlumský, J., Koutecký, P., Plačková, I. and Štech, M. 2016. Is genetic diversity congruent with morphological diversity across the distributional range of the *Melampyrum subalpinum* group (Orobanchaceae)? *Flora* (Jena) 220: 74-83. [High differentiation among populations of *M. subalpinum* suggests that current gene flow between populations is limited. The high inbreeding coefficient in some populations indicates some level of selfing within the populations. The pollination experiment does not contradict the possibility of autogamy. In general, the data are congruent with the central-marginal model with more variable Austrian populations and less variable isolated and probably partly inbreeding Czech and Slovak populations.]

*Choo WonBum Choi InSu and Choi ByoungHee. 2015. Development of microsatellite markers for the endangered *Pedicularis ishidoyana* (Orobanchaceae) using next-generation sequencing. Applications in Plant Sciences 3(12) 1500083. (http://www.bioone.org/loi/apps) [The study identifies microsatellite markers which are expected to be useful for studies of the population genetics of *P. ishidoyana* in Korea.]


Cirocco, R.M., Facelli, J.M. and Watling, J.R. 2016. Does light influence the relationship between a native stem hemiparasite and a native or introduced host? Annals of Botany 117(3): 521-531. [Growth of the host *Leptospermum myrsinoides* was unaffected by parasitism from the Australian native *Cassytha pubescens* while that of *Ulex europaeus*, was reduced. In neither case was the effect altered under low light, but the growth of the parasite was slightly reduced on *U. europaeus*.]

Cirocco, R.M., Facelli, J.M. and Watling, J.R. 2016. High water availability increases the negative impact of a native hemiparasite on its non-native host. Journal of Experimental Botany 67(5): 1567-1575. [Results suggest that increased growth of *C. pubescens* under wet conditions, perhaps associated with high stomatal conductance resulted in a larger demand for resources.
Costea, M., Stefanović, S., García, M.A., Cruz, S. de la, Casaza, M.L., and Green, A. J. 2016. Waterfowl endozoochory: an overlooked long-distance dispersal mode for Cuscuta (dodder). American Journal of Botany 103(5): 957-962. [Several hundred seeds of C. campestris and (?) C. pacifica were identified from the guts of pintail ducks, with over 50% germination capacity, helping to explain past long-distance movements of Cuscuta spp. prior to those assisted by man.]


Cuevas Guzmán, R., Santana Michel, F.J., Sánchez Rodríguez, E.V. and Núñez López, N.M. 2016. (Cervantesiaceae: new record of a naturalized family for the Flora of Mexico.) (in Spanish) Acta Biológica Colombiana 21(2): 431-436. [Recording for the first time in Mexico the naturalized species Acanthosyris glabrata, and hypothesising how it may have been introduced from Ecuador.]

Cui QiongLing, Pan YingNi, Xu XiaoTong, Zhang WenJie, Wu Xiao, Qu ShouHe and Liu XiaoQiu. 2016. The metabolic profile of acteoside produced by human or rat intestinal bacteria or intestinal enzyme in vitro employed UPLC-Q-TOF-MS. Fitoterapia 109: 67-74. [Identifying a range of metabolites of acteoside from Cistanche deserticola created in the gut or in gut bacteria, some of which may have equal or more activity compared with the parent compound.]

Cui SongKui, Wakatake, T., Hashimoto, K., Sauzet, S.B., Toyooka, K., Yoshida, S. and Shirasu, K. 2016. Haustorial hairs are specialized root hairs that support parasitism in the facultative parasitic plant Phtheirospermum japonicum. Plant Physiology 170(3): 1492-1503. [Using haustorial hair defective (hhd) mutants of P. japonicum to confirm that haustorial hairs assist in, but are not essential for, the attachment and penetration of the haustorium.]

Cusimano, N. and Wicke, S. 2016. Massive intracellular gene transfer during plastid genome reduction in nongreen Orobanchaceae. New Phytologist 210(2): 680-693. [Plastid genomes (plastomes) analyses of Orobanchaceae indicate that the first functional gene losses occurred within 10 Myr of the transition to obligate parasitism (~50 Myr). Nonessential DNA appears to be eliminated much faster in the plastomes of nonphotosynthetic parasites than in their other cellular genomes.]

general biology, traditional uses, phytochemical properties, propagation for conservation, and hemiparasitism of *Orysis lanceolata* (= *Orysis wightiana* var. *rotundifolia*).


Daňková, I., Žemlička, M., Švajdlenka, E., Bartl, T. and Šmejkal, K. 2016. The chemotaxonomic significance of phenylethanoid glycosides of *Lathraea squamaria* L. (Orobanchaceae). Biochemical Systematics and Ecology 64: 53-56. [Describing two isomeric phenylethanoid glycosides, acetyloxy and isoacetyloxy, not previously described in this plant. Also, unsubstituted benzoic acid, and the iridoid glycoside aucubin. Their chemotaxonomic significance is discussed.]


de Vasconcelos, G.C.L., Caires, C.S. and de Melo, J.L.M.. 2015. (Flora of Paraiba, Brazil: *Santalaceae* R. Br.) (in Portuguese) Iheringia, Série Botânica 70(2): 203-215. [Recording 9 species of genera *Dendrophthoe* and *Phoradendron*, of which *D. warmingi*, *P. dipetrum* and *P. quadrangulare* were new to the region. No data on hosts.]

deBruyne, R.A.J., Paetkau, M., Ross, K.A., Godfrey, D.V. and Friedman, C.R. 2015. Thermogenesis-triggered seed dispersal in dwarf mistletoe. Nature Communications 6: 1-5. [Dwarf mistletoe fruits display an anomalous increase in surface temperature by an average of 2.1±0.8°C over an average time of 103±29s before explosive dehiscence. Scanning calorimetry show an exothermic event in the non-reversible heat flow just prior to discharge. These results support thermogenesis-triggered seed discharge, never before observed in any plant.]


Díaz-Limón, M.P., Cano-Santana, Z. and Queijeró-Bolao, M.E. 2016. Mistletoe infection in an urban forest in Mexico City. Urban Forestry & Urban Greening 17: 126-134. [Cladocolea lonicoides occurred extensively on 7 host tree species, while *Phoradendron brachystachyum* occurred only on the exotic *Fraxinus uhdei*.

oxy sporum, nitrogen and sulphur mineral fertilisers, Enzone™ soil fumigant (sodium tetrathio dicarbonate) and a resistant tomato genotype. Chlorophyll levels were reduced in infected tomatoes.]


Dlama, T.T., Oluwagbemileke, A.S. and Enchezy, A.R. 2016. Mistletoe presence on five tree species of Samaru area, Nigeria. African Journal of Plant Science 10(1): 16-22. [Acacia lebeck was infected by Tapinanthus dodoneifolius, T. globiferus, Globimetula braunii, G. oreophila, Englerina lecardii and Tapinanthes belvisii. Other trees affected by one or more mistletoe species were Citrus grandis, Khaya senega lensis, Terminalia mantaly and Terminalia catappa.]

Dor, E., Smirnov, E., Galili, S., Guy, A. and Hersh enhorn, J. 2015. Characterization of the novel tomato mutant HRT, resistant to acetolactate synthase-inhibiting herbicides. Weed Science 64(2): 348-360. [Describing development of the tomato mutant line HRT, obtained by ethyl methanesulfonate seed mutagenesis from the commercial tomato line M82. Line HRT proves highly resistant to imazamox, imazapic, and imazapyr, but does not differ from M82 in its response to the sulfonyleurea herbicides trifloxysulfuron, sulfosulfuron and chlorosulfuron. Complete control of O. aegyptiaca achieved with 2-3 post-emergence applications of imazapic.]

Doweld, A.B. 2015. (2391) Proposal to conserve the name Razoumovska Volgadin ex Krasnop. (fossil Cyanophyceae (vel Cyanobacteria)) against Razoumovska Hoffm. (Angiospermae: Loranthaceae). Taxon 64: 1062-1063. [The cyanobacterial fossil name Razoumovska is proposed for conservation over Razoumovska, a synonym of Arceuthobium (Vissaceae, not Loranthaceae).]

Edewor, T.I., Owa, S.O., Ologan, A.O. and Akinfemi, F. 2016. Quantitative determination of the saponin content and GC-MS study of the medicinal plant Cassytha filiformis (Linn.) leaves. Journal of Coastal Life Medicine 4(2): 154-156. [Eicosanoic acid, methyl ester is the most abundant compound and the steroidal saponin, cholest an-4(2)-one and cyclic 1,2-ethanedienyl acetal are the most abundant compound and the steroidal saponin, cholest an-4(2)-one and cyclic 1,2-ethanedienyl acetal are the most abundant compound and the steroidal saponin, cholest an-4(2)-one. Concluding that C. filiformis is rich in steroidal saponins.]

Encheva, J., Georgiev, G. and Valkova, D. 2015. Sunflower hybrid Rada, developed with mutant restorer line 12002 R. Bulgarian Journal of Agricultural Science 21(5): 961-968. [Results of tests with variety Rada, derived from a cross involving the Orobanche cumana-resistant mutant line 12002R, confirmed its resistance to O. cumana race F in Bulgaria, combined with resistance to Plasmopara halantium - races 300 and 700 and excellent seed and oil yield.]

Espinosa, L.F., Herrera, R.J. and Polanco-Tapia, C. 2015. (Segmentation of anatomical elements in wood microscopic images using artificial vision techniques.) (in Spanish) Maderas: Ciencia y Tecnología 17(4): 735-748. [Using Gaiadendron punctatum (Loranthaceae) to demonstrate an elaborate system for defining the characteristics of pores, radii and fibre from microscopic images of the wood.]

Evans, M., Bryant, S., Huntley, A.L. and Feder, G. 2016. Cancer patients’ experiences of using mistletoe (Viscum album): a qualitative systematic review and synthesis. Journal of Alternative and Complementary Medicine 22(2): 134-144. [Surveying 173 papers and finding just 3 with meaningful results supporting some degree of benefit from mistletoe therapy, but even these lacking fully adequate evidence.]

Faboro, E.O., Wei LiQing, Liang ShaoBo, McDonald, A.G. and Obafemi, C.A. 2016. Characterization of dichloromethane and methanol extracts from the leaves of a medicinal plant: Globimetula oreophila. Industrial Crops and Products 83: 391-399. [The ethnopharmacological uses G. oreophila include treatment of cancer, hypertension, diabetes, and as diuretic agent. This study analyses its chemical constituents without suggesting which are pharmacologically active.]


Flematti, G.R., Scaffidi, A., Waters, M.T. and Smith, S.M. 2016. Stereospecificity in strigolactone biosynthesis and perception. Planta 243(6): 1361-1373. [Detailed explanation of stereochemistry of natural and synthetic strigolactones. Reference for stereochemical structures was proposed. It seems to be reasonable to add ‘ent’ only to non-natural strigolactones with the 2'S configuration.]

Fontürbel, F.E., Murúa, M.M. and Vega-Retter, C. 2016. Development of ten microsatellite markers from the keystone mistletoe Tristerix corymosus (Loranthaceae)
using 454 next generation sequencing and their applicability to population genetic structure studies. Molecular Biology Reports 43(5): 339-343. [Ten microsatellite markers developed for the keystone mistletoe (T. corymbosus) appeared to be a powerful tool for studying population structure, gene diversity, gene flow, and its distribution.]


Frishby, T. 2015. Antifungal activity in extracts of plants from southwestern Oklahoma against *Aspergillus flavus*. Oklahoma Native Plant Record 15(1): 78-95. [Castilleja indivisa among 40 species providing strong inhibition of *A. flavus* when tested as a crude extract but not among the few that retained this activity after dialysis.]

Galindon, J.M.M., Ong, P.S. and Fernando, E.S. 2016. *Rafflesia consueloae* (Rafflesiaceae), the smallest among giants; a new species from Luzon Island, Philippines. PhytoKeys 61: 37-46. *R. consueloae* is distinct in its small-sized (10 cm diameter) flowers, the upright perigone lobes, and prominently cream-white disk surface, often devoid of processes.]


Gao, F.-M., Chen, L., Tian, C.-M., Cairang, D.-Z., Zhou, W.F., Yang, Q.-Q., Zhao, H.-C. and Wu, Y.-L. 2015. Effects of *Arceuthobium sichuanense* infection on photosynthesis and transpiration of *Pinus wilsonii*. Acta Phytopathologica Sinica 45:14-21. [Host tree needle length and width were smaller but specific leaf area was larger in infected vs. control trees. Infection reduced net photosynthesis rate, transpiration rate, and stomatal conductance but sub-stomatal CO₂ concentration was not influenced.]


Goldwasser, Y., Miryamchik, H., Rubin, B. and Eizenberg, H. 2016. Field dodder (*Cuscuta campestris*) - a new model describing temperature-dependent seed germination 64(1): 53-60. [Devising a model by which thermal time can be used to predict germination of *C. campestris*.]

*Grafis, A.M. and Kneefel, J.M. 2015. A parasitic plant increases native and exotic plant species richness in vernal pools. AoB Plants 7: plv100. (http://aobpla.oxfordjournals.org/content/7/plv100.full) [Removal of Cuscuta hoveliana resulted in greater species richness, perhaps via suppression of the dominant Eryngium constrene.]


Guo JingJing, Pan Wei, Chen MeiWan, Wang ChunMing and Wang YiTao. 2015 Overview of Taiwan’s indigenous ethnopharmacology in the perspective of traditional knowledge protection. Chinese Journal of Integrative Medicine 21(12): 949-954. [Including reference to *Taxillus liquidambaricus* but no detail in abstract.]

Haidar, M. and Shabala, S. 2015. Ion flux kinetics in blue light-grown field dodder (*Cuscuta campestris*) seedlings. Weed Biology and Management 15(4): 159-164. [Vanadate, a known blocker of the plasma-membrane H⁺-ATPase, completely prevented both H⁺ and the Ca²⁺ flux responses and inhibited coiling and prehaustoria development, confirming its key role in the growth of *C. campestris* and its adaptive response to the environment.]


Hao, B., Caulfield, J.C., Hamilton, M.L., Pickett, J.A., Midega, C.A.O., Khan, Z.R., Wang, J. and Hooper, A.M. 2016. Biosynthesis of natural and novel C-glycosylflavones utilising recombinant *Oryza sativa* C-glycosyltransferase (OsCGT) and *Desmodium incanum* root proteins. Phytochemistry 125: 73-87. [A rice C-glycosyltransferase was used to generate novel mono-C-glucosyl-2-hydroxyflavanones as putative biosynthetic intermediates to examine the potential of *D. incanum* biosynthetic CGTs to produce novel di-C-
glycosylflavones, compounds implicated in the allelopathic biological activity of Desmodium against Striga.]  


*Harveson, R.M, Nelson, A., Mathew, F. and Seiler, G.J.*  


[Years ago to the frequent use of Medicine 13(6): 363-367. ]


A.M. 2015. The biosynthesis of allelopathic di-C-glycosylflavones from the roots of Desmodium incanum (G. Mey.) DC. Organic & Biomolecular Chemistry 13(48): 11663-11673. [Elucidating the biosynthesis of C-glycosylflavones, the active agents in suppression of Striga spp., suggesting potential opportunities for transferring the enzymic and genetic basis for these allelopathic substances into other food crops.]

Houngbédi, T. and Gibot-Leclerc, S. 2015. First report of Rhampnicarpa fistulosa on peanut (Arachis hypogaea), soybean (Glycine max), and tossa jute (Corchorus olitorius) in Togo. Plant Disease 99(11): 1654-1655. [Reporting the occurrence of R. fistulosa on cowpea, soyabean and tossa jute, causing estimated yield losses of 7-9%]

*Hung YuChiang, Kao ChaoWei, Lin CheChen, Liao YenNung, Wu BeiYu, Hung ILing and Hu WenLong. 2016. Chinese herbal products for female infertility in Taiwan: a population-based cohort study. Medicine (Baltimore) 95: 11, e3075. 9 http://journals.lww.com/md-journal/Fulltext/2016/03150/Chinese_Herbal_Products_for_Female_Infertility_in_44.aspx ] [Indicating that products based on Cusciuta chinesis are commonly used for female infertility, but no evidence for efficacy presented.]

Idu, M., Ovuakporie-Uvo, O. and Nwoakolo, M.J. 2016. Phytochemistry and microscopy of Tapinanthus dodoneifolius (DC) (Danser) (Santalales: Loranthaceae) (African mistletoes) from guava, rubber and orange host trees. Brazilian Journal of Biological Sciences 3: 27-35. [Result of phytochemical analysis showed the presence of oxalate, phytate, saponin, alkaloid, glycoside and tannin in this mistletoe.]

Ikeda, H., Fukuda, T. and Yokoyama, J. 2016. Endophytic fungi associated with a holoparasitic plant, Balanophora japonica (Balanophoraceae). American Journal of Plant Sciences 7(1): 152-158. [Isolating 23 fungal strains from B. japonica growing on Symphocos lancifolia in Japan, including Trichoderma-Hypocrea (also recorded on the host). Penicillium and Phialoconium. This complex differed from that reported on B. harlandii or on Rafflesia cantleyi.]


Journal of Physiology and Pharmacology 94(1): 104-111. [Concluding that extract of *C. salsa* may be a potential therapeutic candidate for treatment of benign prostatic hyperplasia owing to its ability to regulate the expression of inflammatory and apoptosis-related proteins.]


Johnson, B.I., De Moraes, C.M. and Mescher, M.C. 2016. Manipulation of light spectral quality disrupts host location and attachment by parasitic plants in the genus *Cuscuta*. Journal of Applied Ecology 53(3): 794-803. [Studies with *C. campestris* on tomato and *C. gronovii* on ‘jewelweed’ (*Impatiens capensis*) showed that high red:far-red ratio light greatly reduced infection in both cases. Tomato showed some short-term effects from high red:far-red but it is concluded that a suitable shading of crop at the critical stage could contribute to useful selective control.]

Jonstrup, A., Hedrén, M. and Andersson, S. 2016. Host environment and local genetic adaptation determine phenotype in parasitic *Rhinanthus angustifolius*. Botanical Journal of the Linnean Society 180(1): 89-103. [Studying two ecotypes of *R. angustifolius* under varying conditions, most characters were plastic other than node number. Concluding that the complex phenological and morphological variation in this species is caused by a combination of genetically determined ecotypic differentiation and plastic responses to the host environment and other factors.]


Kaitera, J. and Witzell, J. 2016. Phenolic profiles of two *Melampyrum* species differing in susceptibility to *Cronartium* rust. European Journal of Plant Pathology 144(1): 133-140. [Finding differing complexes of phenolics in *M. sylvaticum* and *M. pratense* which could explain why the former, with kaempferol and luteolin flavonoids, is susceptible to *Cronartium flaccidum* and acts as an alternate host to this important stem rust of pine, while the latter, with chlorogenic acid, flavanones and apigenin flavonoids, is resistant.]


Kamran, S.H., Mobasher Ahmad, Durre Shahwar and Muhammad Ajab. 2016. Anti-diabetic and anti-oxidant status of *Loranthus pulverulentus* obtained from two different hosts., Bangladesh Journal of Pharmacology 11(1): 181-189. [Showing that leaves of *L. pulverulentus* (=*Scurrula pulverulenta*) growing on *Dalbergia sissoo* has potential anti-diabetic activity whereas *L. pulverulentus* growing on *Populus nigra* does not.]


Kannan, C. and Aditi Pathak. 2016. A comparative study of morphology and pathogenesis of *Cuscuta* and *Orobanche* - the two devastating parasitic plants. Indian Journal of Agricultural Sciences 86(7): 946-950. [A rather general description of the development of unspecified *Cuscuta* and *Orobanche* spp. on their hosts.]

Kapulnik, Y. and, Koltai, H. 2916. Fine-tuning by strigolactones of root response to low phosphate. Journal of Integrated Plant Biology 58(3): 203-212. [In this review the role and activity of strigolactones under conditions of phosphate deprivation is presented. Under these conditions, their levels of biosynthesis and exudation increase, leading to changes in shoot and root differentiation and plastic responses to the host environment and other factors.]
development. At least for the latter, these changes are likely to be associated with alterations in auxin transport and sensitivity.]


Kropf, M.S., Quinet, A. and Andreata, R.H.P. 2015. Striga asiatica. *Including reference to potential spread of weeds: a review. Agronomy for Sustainable Development 70(2): 287-308. [Including reference to *Struthanthus acuminatus* (Loranthaceae). Phytologia 98: 118. [One of the earliest recorded species of South American Loranthaceae is often cited as *Struthanthus acuminatus* (Ruiz & Pavon) Blume, however, Blume did not actually make this combination. To clarify Blume's taxon, the following comb. nov. is presented along with full synonymy: *Struthanthus acuminatus* (Ruiz & Pavon) Kuijt, comb. nov.]

Kuijt, J. 2016. A nomenclatural note on *Struthanthus acuminatus* (Loranthaceae). Phytologia 98: 118. [One of the earliest recorded species of South American Loranthaceae is often cited as *Struthanthus acuminatus* (Ruiz & Pavon) Blume, however, Blume did not actually make this combination. To clarify Blume's taxon, the following comb. nov. is presented along with full synonymy: *Struthanthus acuminatus* (Ruiz & Pavon) Kuijt, comb. nov.]

Kuijt, J. 2016. The guide of the perplexed: essential nomenclature and iconography of the mistletoes of the New World. (accessed 10 August 2016 http://www.tropicos.org/Project/Mistletoes) [Nomenclature for 26 genera and 725 species of mistletoes is presented representing four families: Loranthaceae, Misodendraceae, Santalaceae, and Viscaceae.]


Kuijt, J., Harrison, J. and Harrison, L. 2016. A third endemic *Dendrophthora* (Viscaceae) from Cerro Jefe, Panama. Phytologia 98: 142-145. [A rare new species, *D. primaria*, is described and illustrated. It is believed to be endemic to the Cerro Jefe area, as are two previously described species of the genus and several other mistletoes in Loranthaceae.]

Kuijt, J. 2016. The guide of the perplexed: essential nomenclature and iconography of the mistletoes of the New World. (accessed 10 August 2016 http://www.tropicos.org/Project/Mistletoes) [Nomenclature for 26 genera and 725 species of mistletoes is presented representing four families: Loranthaceae, Misodendraceae, Santalaceae, and Viscaceae.]


Le, Q.V., Tennakoon, K.U., Metali, F., Lim, L.B.L. and Bolin, J.F. 2016. Ecophysiological responses of mistletoe *Dendrophthoe curvata* (Loranthaceae) to varying environmental parameters. Journal of Tropical Forest Science 28(1): 59-67. [Functions of *D. curvata* in Brunei Darussalam varied depending on the host *Andira inermis*, *Mangifera indica* or *Vitex pinnata* and on changes in light intensity, leaf temperature and atmospheric CO₂ concentrations. Effects of elevated carbon dioxide were long term due to the partial dependence of mistletoe on host-derived carbon.]

Lehn, C.R., Salis, S.M. and Mattos, P.P. 2015. Ecological aspects of *Langsdorffia hypogaea* (Balanophoraceae) parasitism in the Pantanal wetlands. Acta Botanica Brasilia 29(4): 608-612. [Determining that *Protiom heptaphyllum* and *Cordiera sessilis* were the commonest host tree for *L. hypogaea* and that seed dispersal for both host and parasite was by mammals including collared peccaries (*Pecari tajacu*).]


*Li JunMin, Yang BeiFen, Yan QiaoDi, Zhang Jing, Yan Min and Li MaiHe. 2015. Effects of a native parasitic plant on an exotic invader decrease with increasing host age. AoB Plants 7: plv031. (http://aobpla.oxfordjournals.org/content/7/plv031.full)*

[In Zhejiang Province, China, reduction of *Bidens pilosa* by *Cuscuta australis* was much greater when the parasite was introduced to the host at 59 days after sowing than at 84 days, although the parasite grew even better on the older host. Parasite infection reduced the concentrations of total phenolics, total flavonoids and saponins only in the younger host plants. For its use for biocontrol of *B. pilosa* early application would be essential.]

Li Li; Cao Jin and Zhang QingSheng. 2016. (Determination of geniposidic acid in herba cistanche by high performance liquid chromatography.) (in Chinese) Journal of Food Safety and Quality 7(3): 933-937. [Describing a fast and accurate method, used to show differences in geniposodic acid in *Cistanche deserticola, C. tubulosa* and *C. salsa.*]

Li Lun, Zhu ChunYun, Liu XiaoLi, Gu WenYi, Wei HaiBin and Hu Yue. 2015. (The Principal Component Analysis of environmental factors of *Arceuthobium sichuanense*.) (in Chinese) Journal of West China Forestry Science 44(6): 55-60. [Factors affecting the severity of *Arceuthobium sichuanense* on spruce, a major diseases in Qinghai province, China include canopy density, herbaceous biomass, elevation, PH value and slope, the most important being canopy density. Incidence is lower when the forest canopy density is over 0.7, while it becomes serious when the density is 0.4-0.5.]

*Li Nan, Wang JianPing, Ma Jun, Gu ZhiQiang, Jiang Chao, Yu Lie and Fu XiaoJie. 2015. Neuroprotective effects of Cistanches Herba therapy on patients with moderate Alzheimer's disease. Evidence-based Complementary and Alternative Medicine 2015: Article ID 103985. (http://www.hindawi.com/journals/ecam/2015/103985/) [The study involved treatment of 11 Alzheimers patients with ‘Cistanches Herba’, based on *Cistanche deserticola* for 48 weeks compared with patients given Donepezil or none. Both treatments showed significant difference from controls reducing changes in volume of hippocampus and decreasing the levels of T-tau, TNF-α, and IL-1β. Concluding that Cistanches Herba could improve cognitive and independent living ability of moderate Alzheimers patients.]

Li Yang, Zhou GuiSheng, Peng Ying, Tu PengFei and Li XiaoBo. 2016. Screening and identification of three typical phenylethanoid glycosides metabolites from Cistanches Herba by human intestinal bacteria using UPLC/Q-TOF-MS. Journal of Pharmaceutical and Biomedical Analysis 118: 167-176. [Exploring the metabolism, by human intestinal bacteria, of acteoside, isoacteoside, and 2′-acetylacestoside the three main phenylethanoid glycosides occurring in *C. deserticola*, and confirming that the metabolites had comparable bioactivity to the original compounds.]

library in haustorial organogenesis induced by DMBQ in *Striga asiatica* identified genes involved in cell wall expansion and vascular tissue development, nutrient metabolism and transport, hormone regulation, and cellular defense. Results suggest an elaborate and global response closely tied to plant defense and reodox chemistry.

Liu Jiao, Tian Ji, Li Jin, Yang FuSheng and Wang XiaoQuan. 2016. Floral nectary, nectar production dynamics, and floral reproductive isolation among closely related species of *Pedicularis*. Journal of Integrative Plant Biology 58(2): 178-187. [Finding surprising variation in nectary morphology, nectar quality, and nectar production dynamics in flowers of *Pedicularis* section *Cytanthus* in China and suggesting that they may have played a role in speciation.]

Liu, Z.H., Cong, Y.L., Lu, B.H. and Gao, J. 2016. Morphological variation in *Quincha palium* (Schoepfiaceae) is associated with climatic patterns along its Andean distribution. Systematic Botany 40(4): 1045-1052. [*Q. chilense* was shown via morphometric analyses to be a single, polymorphic, widespread species with a continuum of morphological variation (either genotypic or environmental phenotypic plasticity).]

López-Ráez, J.A. 2016. How drought and salinity affect arbuscular mycorrhizal symbiosis and strigolactone biosynthesis? Planta 243(6): 1375-1385. [This paper reviews the importance of AM symbiosis in alleviating plant stress under unfavourable environmental conditions, making emphasis on the role of strigolactones. A better understanding of the mechanisms that regulate this beneficial association will increase its potential use as an innovative and sustainable strategy in modern agriculture.]

Luo YaHuang, Sui Yi, Gan JianMin and Zhang Ling. 2016. Host compatibility interacts with seed dispersal to determine small-scale distribution of a mistletoe in Xishuangbanna, Southwest China. Journal of Plant Ecology 9(1): 77-86. [Findings suggest that seed dispersal interacts with host compatibility and canopy cover to determine establishment success, survival and the observed distribution patterns of *Dendrophthoe pentandra* in plantation and rainforest.]

*Louarn, J., Boniface, M-C., Pouilly, N., Velasco, L., Pérez-Vich, B., Vincourt, P. and Muños, S. 2016. Sunflower resistance to broomrape (*Orobanche cumana*) is controlled by specific QTLs for different parasitism stages. Frontiers in Plant Science, May 10, 2016. (http://journal.frontiersin.org/article/10.3389/fpls.2016.00590/full?utm_source=newsletter&utm_medium=email&utm_campaign=Plant_Science-w27-2016) [A population of 101 recombinant sunflower inbred lines from a cross between HA89 and LR1 were studied and QTL mapped for resistance shown at 3 growth stages. Different QTL were identified for each race – F from Spain and G from Turkey - and for the 3 stages of development, indicating several quantitative resistance mechanisms]

LüShiHong Huang FuZhao, Lu ShuHua, Xu GuangPing, Zeng DanJuan and Li XianKun. 2016. (Effects of Shrub-grass on direct seeding of *Cyclobalanopsis glauca* and *Malania oleifera* in rocky desertification mountains in southwest Guangxi.) (in Chinese) Plant Science Journal 34(1): 38-46. [Results suggest that establishment of *M. oleifera* (Olacaceae) was better under shrub and grass conditions, and should be considered for afforestation in rocky desertification mountains in Southwest Guangxi.]

Lyra, D., Kalivas, D. and Economou, G. 2016. A large-scale analysis of soil and bioclimatic factors affecting the infestation level of tobacco (*Nicotiana tabacum L.*) by *Phelipanche* species. Crop Protection 83: 27-36. [Correlation analysis demonstrated that the level of *Phelipanche* infestation correlated negatively with pH and total humidity index and positively with organic matter. *P. ramosa* was more important than *P. aegyptiaca*.]

Mabrouk, Y., Mejri, S., Hemissi, I. and Belhadj, O. 2016. Biochemical analysis of induced resistance in chickpea against broomrape (*Orobanche foetida*) by rhizobia inoculation. Phytopathologia Mediterranea 55(1): 54-61. [*Rhizobium sp. strain PchAZM reduces parasitism of chickpea by *O. foetida* under greenhouse conditions by up to 90%. Infection is accompanied by enhanced levels of the defence-related enzymes phenylalanine ammonia lyase and peroxidase leading to increased levels of phenolics in the roots. cf Yassine et al., 2016. below.]


Mardian, B.C.and Borowicz, V.A. 2016. Impact of light limitation on mortality and early growth of the root
Identification of compounds in *Olax distitiflora* with larvical effect against *Anopheles arabiensis*. South African Journal of Botany 102: 1-3. [Identifying santalbic acid and a mixture of two closely related compounds (exocarpic acid and octadec-9,11-diyanoic acid) from bark of *O. distitiflora* and confirming that the mixture of the latter two compounds had the highest activity against *Anopheles arabiensis* larvae.]

Meina Kusi, Kanti Shrestha and Rajani Malla. 2015. Study on phytochemical, antibacterial, antioxidant and toxicity profile of *Viscum album* Linn associated with *Acacia catechu*. Nepal Journal of Biotechnology 3(1): 60-65. [Confirming substantial antioxidant activity of *V. album* extracts and also antibacterial activity against *Pseudomonas aeruginosa*]


Millado, A. and Zamora, R. 2016. Spatial heterogeneity of a parasitic plant drives the seed-dispersal pattern of a zoochorous plant community in a generalist dispersal system. Functional Ecology 30(3): 459-467. [Showing that the distribution of other fruiting species could be influenced by frugivorous birds feeding mainly on *Viscum album* ssp. *austriacum*.]


Midega, C.A.O., Pickett, J., Hooper, A., Pittchar, J. and Khan, Z.R. 2016. Maize landraces are less affected by *Striga hermonthica* relative to hybrids in western Kenya. Weed Technology 30(1): 21-28. [Showing that a number of local landraces have better tolerance of *S. hermonthica* than available (unspecified) hybrid varieties.]

[Studying a wide range of factors involved in the ability of farmers to sell surplus produce from their farms and finding age of farmer (younger), farm size (larger), commodity price, location and ownership of mobile phone among the most important. Incidentally noting that Striga hermonthica and S. gesnerioides were the dominant constraints to production of maize and cowpea respectively in the states of Bauchi and Kano.]

Mijatović, K.; Stojanavić, D. 2015. (The new form of Dodder (Cuscuta trifolii Bab.)) (in Serbian) Zaštita Bilja 66(Special Issue): 30-33. [Suggesting that a form of C. trifolii var. angustissima occurring widely in Serbia should be known as forma. luteastigma.]


Morffy, N., Faure, L. and Nelson, D.C. 2016. Smoke and hormone mirrors: action and evolution of karrikin and strigolactone signaling. Trends in Genetics 32(3): 176-188 [The most recent discoveries of karrikin and strigolactone perception and signal transduction are reviewed. Their receptors and signaling mechanisms are presented as well as recent investigations of host perception in parasitic plants that have demonstrated that strigolactone recognition can evolve following gene duplication of KAI2.]

Mounnissamy, V.M., Jarina, A. and Srinivasan, G. 2015. Anti-microbial activity of caffeeic acid isolated from Cansjera rheedii J.Gmelin (Opiliaceae). International Journal of Drug Formulation and Research 6(5): 33-39. [Caffeic acid isolated from aerial parts of C. rheedii (Opiliaceae) was shown to have excellent antibacterial; and antifungal activity.]

Mourão, F.A., Pinheiro, R.B.P., Jacobi, C.M. and Figueira, J.E.C. 2016. Host preference of the hemiparasite Struthanthus flexicaulis (Loranthaceae) in ironstone outcrop plant communities, southeast Brazil. Acta Botanica Brasilia 30(1): 41-46. [S. flexicaulis recorded on 15 hosts species but mainly on Mimosa calodendron. a legume attractive to bird seed dispersers. The interaction is maintained by birds depositing seeds on host branches, but also by the ability of M. calodendron to fix nitrogen. Infection frequently caused host death.


Mutlu, S., Ilhan, V. andTurkoglu, H.I. 2016. Mistletoe (Viscum album) infestation in the Scots pine stimulates drought-dependent oxidative damage in summer.Tree Physiology 36(4): 479-489. [Results of detailed studies on pine needles indicate that the increased mortality of Pinus sylvestris in Turkey may result from very severe drought stress induced by V. album. The increase in the capacity of antioxidative enzyme systems does not protect the plant against oxidative stress in dry summer seasons.]

Mutlu, S., Osma, E., Ilhan, V., Turkoglu, H.I. and Atlıç, O. 2016. Mistletoe (Viscum album) reduces the growth of the Scots pine by accumulating essential nutrient elements in its structure as a trap. Trees: Structure and Function 30(3): 815-824. [Infestation by V. album led to a decrease in the availability of water and mineral nutrients, and caused a powerful inhibition of chlorophyll, dry matter,
and the length of needles by accumulating the essential nutrient minerals in its structure.]


Nan ZeDong, Zhao MingBo, Zeng KeWu, Tian ShuaiHua, Wang WeiNan, Jiang Yong and Tu PengFei. 2016. Anti-inflammatory iridoids from the stems of *Cistanche deserticola* cultured in Tarim Desert. Chinese Journal of Natural Medicines 14(1): 61-65. [Nine iridoids were isolated and identified, 8-epi-loganic acid providing potent inhibition of lipopolysaccharide-induced nitric oxide (NO) production in BV-2 mouse microglial cells comparable to the positive control quercetin.]

Naumann, J., Der, J.P., Wafula, E.K., Jones, S.S., Wagner, S.T., Honnaas, L.A., Ralph, P.E., Bolin, J.F., Maass, E., Neinhuis, C., Wanke, S. and DePamphilis, C.W. 2016. Detecting and characterizing the highly divergent plastid genome of the nonphotosynthetic parasitic plant *Hydnora visseri* (Hydnoraceae). Genome Biology and Evolution 8(2): 345-363. [A greatly reduced, highly divergent, yet functional, plastome of the nonphotosynthetic holoparasite *H. visseri* was sequenced. The plastome is 27 kb in length, with 24 genes (smallest number to date) encoding ribosomal proteins, ribosomal RNAs, tRNAs, and a few nonribosomal genes, but no genes related to photosynthesis. The inverted repeat and the small single copy region are only approximately 1.5 kb, and intergenic regions have been drastically reduced. Gene order and orientation are highly similar to that seen in *Piper cenocladium*, a related photosynthetic plant in Piperales.]


Nazaruk, J. and Orlitkowski, P. 2016. Phytochemical profile and therapeutic potential of *Viscum album* L. Natural Product Research 30(4): 373-385. [A general review of the chemistry and uses of *V. album* in traditional and official medicine, for treating hypertension or arthritis and as a hepatoprotective or a sedative drug.]


Ngugi, K., Ngugi, A.J., Osama, S. and Mugoya, C. 2015. Combating Striga weed in sorghum by transferring resistance Quantitative Trait Loci through molecular marker assisted introgression. Journal of Plant Breeding and Genetics 3(3): 67-76. [Confirming that resistance to *Striga hermonthica* from N.13 could be introduced into the susceptible local variety Ochuti to produce lines with a useful degree of resistance.]

Nguyen Van Suc and Luong Ngoc Son. 2016. Mistletoe leaves as a biosorbent for removal of Pb(II) and Cd(II) from aqueous solution. Desalination and Water Treatment 57(8): 3606-3618. [Concluding that the leaves of *Scurrula parasitica* have potential for the absorption of lead and cadmium from contaminated waste water.]


Determining the main components of oil from *E. roskoviana* to be n-hexadecanoic acid (18%), thymol (8%), myristic acid (5%), fimalool (5%), and anethole (4%). It showed good antimicrobial effect against a
number of organisms associated with eye problems, especially against Gram-positive bacteria but not against \textit{P. aeruginosa}.


Okoye, F.B.C. and 10 others. 2015. Flavonoid glycosides from \textit{Olax mannii}; structure elucidation and effect on the nuclear factor kappa B pathway. Journal of Ethnopharmacology 176: 27-34. [Isolating, identifying and studying a range of flavonoid glycosides from the methanol extract of \textit{O. mannii} and concluding that kaempferol 3-O-α-L-rhamnopyranoside is the one compound exhibiting promising and specific antiproliferative activity on human K562 chronic myelogenous leukemia cells and dose-dependently inhibiting NF-κB transactivation, perhaps accounting for its reported in the ethnomedicinal management of cancer and inflammation.]

Odèmeji, O.H. and Usifoh, C.O. 2015. Phytochemical and antimicrobial studies on some Nigerian medicinal plants. Journal of Pharmacy and Bioresources 12(2): 156-164. [Reporting mediocre results for ‘\textit{Viscum album}’ but some other mistletoe must have been involved.]

\*Olsen, S., Popper, Z.A. and Krause, K. 2016. Two sides of the same coin: xyloglucan endotransglycosylases/hydrolases in host infection by the parasitic plant \textit{Cuscuta}. Plant Signaling and Behavior 11(3): e1145336. (http://www.tandfonline.com/doi/full/10.1080/15592234.2016.1145336) Xyloglucan endotransglycosylases/hydrolases (XTHs) are essential for \textit{Cuscuta} to penetrate the host. However, XTH expression also occurs in resistant tomato upon an attack by \textit{Cuscuta}, suggesting that both host and parasite use these enzymes in their ‘arms race.’ This paper summarises existing data on the cell wall-modifying activities of XTHs and present a model suggesting how they might function.]

Olsen, S., Stribeny, B., Hollmann, J., Schwacke, R., Popper, Z. and Krause, K. 2016. Getting ready for host invasion: elevated expression and action of xyloglucan endotransglycosylases/hydrolases in developing haustoria of the holoparasitic angiosperm \textit{Cuscuta}. Journal of Experimental Botany 67(3): 695-708. [Differentially expressed genes were identified in young haustoria of \textit{C. reflexa} and \textit{C. gronovii}, whose development was induced by far-red light and tactile stimuli in the absence of a host plant. Two xyloglucan endotransglycosylase/hydrolase (XTH) genes were highly expressed almost exclusively at the onset of haustorium development. It was proposed that xyloglucan remodelling by \textit{Cuscuta} XTHs prepares the parasite for host infection and possibly aids the invasive growth of the haustorium.]


Oyatomi, O.A. and 12 others. 2014. Screening wild *Vigna* species and cowpea (*Vigna ungucultata*) landraces for sources of resistance to *Striga gesnerioides*. International Conference on Enhanced Genepool Utilization - Capturing Wild Relative and Landrace Diversity for Crop Improvement. Cambridge, UK, 16-20 June, 2014. Book of Abstracts: 12. [Among 45 wild *Vigna* species screened, 11 species were found to have resistance in at least some accessions, but none of these are cross-compatible with cowpea.]

Panchen, Z.A. 2016. Arctic plants produce vastly different numbers of flowers in three contrasting years at Lake Hazen, Quttinirpaaq National Park, Ellesmere Island, Nunavut, Canada. Canadian Field-Naturalist 130(1): 56-63. [A study involving *Pedicularis capitata*, suggesting that longer warm summers with climate change may increase reproductive success, but only if sustained year on year.]

Patel, P.K. 2016. Floristical study on various hosts of two parasitic species belongs to *Cuscuta* genus around the Patan District from Gujarat state, (western India). Lifesciences Leaflets 76: 34-41. [Discussing host range and damage caused by *Cuscuta* spp. 42 host species enumerated for *C. reflexa* and 25 for ‘*C. chinensis*’ (no doubt *C. campestris*).]


Pérez-Crespo, M.J., Ornelas, J.F., Martén-Rodríguez, S., González-Rodríguez, A. and Lara, C. 2016. Reproductive biology and nectar production of the Mexican endemic *Psittacanthus auriculatus* (Loranthaceae), a hummingbird-pollinated mistletoe. Plant Biology 18(1): 73-83. [Confirming that *P. auriculatus* is self compatible but cross-pollination is normally effected by humming birds or butterflies.]


*Pinto-Carrasco, D., Košnar, J., López-González, N., Koutecký, P., Těšitel, J., Rico, E. and Martínez-Ortega, M.M. 2016. Development of 14 microsatellite markers in *Odontites vernus* s.l. (Orobanchaceae) and cross-amplification in related taxa. Applications in Plant Sciences 4(3):1500111, (http://www.bioone.org/loi/apps) [The results indicate the value of the newly developed microsatellites in *O. vernus* and several other species, which will be useful for taxon delimitation and conservation genetics studies.]

**Piwowarczyk, R. 2015. Seed micromorphology of central European *Orobanche* and *Phelipanche* (Orobanchaceae) in relation to preferred hosts and systematic implications. Australian Systematic Botany 28(2/3): 124-136. [A detailed electron microscope study of 160 seed samples of 26 *Orobanche* and *Phelipanche* taxa from 54 localities across Europe concluding that the best diagnostic features include type of ornamentation of the periclinal wall, perforation diameter (in pitted sculpture), fibrillar diameter (in fibrillar sculpture) and width of anticlinal walls. Noting that characteristics can be modified according to host.]


Qu Zheng Yi, Zhang Yu Wei, Zheng Si Wen, Yao Chun Lin, Jin Yin Ping, Zhang Pei He, Sun Cheng He and Wang Ying Ping. 2016. A new phenylethanoid glycoside from *Orobanche cernua* Loefling. Natural Product Research 30(8): 948-953. [Isolating a novel phenylethanoid glycoside, 3′-O-methyl isocrenatoside, along with methyl caffeate from the fresh whole plant of *O. cernua*, and confirming significant cytotoxicity against the B16F10 murine melanoma and Lewis lung carcinoma cell lines, respectively.]

Quang Vuong Le, Tennakoon, K.U., Metali, F., Lim, B.L.B. and Bolin, J.F. 2015. Impact of *Cuscuta australis* infection on the photosynthesis of the invasive host, *Mikania micrantha*, under drought condition. Weed Biology and Management 15(4): 138-146. [Showing that the combined effects of *C. australis* parasitism and drought significantly suppressed the photosynthesis of *M. micrantha* via both effects on stomata and on non-stomatal effects.]

Queiróz-Bolaños, M.E. and Cano-Santana, Z. 2016. Growth of hartweg’s pine (*Pinus hartwegii*) parasitized by two dwarf mistletoe species (*Arceuthobium* spp.). Botanical Sciences (Botanical Society of Mexico) 94: 51-62. [Crown spread and dbh of host trees infected by *A. globosum*, *A. vaginatum*, or both was measured. Relative growth rate of trees infected by both was lower than uninfected or infected only by *A. vaginatum.*]

Mediterranea 22: 45-62. [Including numerous Cuscuta species.]

*Rahimi, S., Mashhadi, H.R., Banadaky, M.D. and Mesgaran, M.B. 2016. Variation in weed seed fate fed to different Holstein cattle groups. PLoS ONE 11(4): e0154057. [Viability of seeds of C. campestris reduced to 50% after 65-75 hours in the guts of cattle, depending on whether feedlot, lactating etc.]


Rakesh Kumar, Nishat Anjum, Tripathi, Y.C. 2015. Phytochemistry and pharmacology of Santalum album L.: a review. World Journal of Pharmaceutical Research 4(10): 1842-1876. [An in-depth review of the pharmacological uses of S. album, ranging from antibacterial to anticancer. And noting that no significant toxicity has been indicated by sandalwood oil and its individual constituents.]


Ratliff, W.S., Walker, E.S. and Levy, F. 2015. Demographics and Cronartium appalachianum rust disease assessments in three Tennessee populations of Buckleya distichophylla (Nutt.) Torr. (Santalaceae). Castanea 80(4): 243-252. [Recording variations in male:female sex ratio, vigour and rust infection between three populations of B. distichophylla. Tree species nearest to each population were Tsuga canadensis, T. caroliniana and Pinus virginiana, primary host of the rust, leading to greater infection of that population.]


Rocha, D., Ashokan, P.K., Santhoshkumar, A.V., Anoop, E.V. and Sureshkumar, P. 2015 Anatomy and functional status of haustoria in field grown sandalwood tree (Santalum album L.). Forest Research: Open Access 4(3): 148. [While maximum connections were formed with the roots of Casuarina sp. planted in the same ‘pit’, haustoria were also formed with other species, including grasses up to 3 m from the S. album.]

Rodenburg, J., Cissoko, M., Dieng, I., Kayeke, J. and Bastiaans, L. 2016. Rice yields under Rhamphicarpa fistulosa-infested field conditions, and variety selection
criteria for resistance and tolerance. Field Crops Research 194: 21-30. [Incomparisons of 64 rice varieties, 13 showed high resistance (R. fistulosa remaining small, not apparently attached to crop) 16 with moderate tolerance and 2 with high tolerance. For farmers in R. fistulosa-endemic areas the most promising varieties are probably NERICA-L-40 and -31, as they combine good yields under infested conditions with low levels of parasite infection.]

Rodenburg, J. and 13 others. 2015. An in-depth appraisal of a range of projects relating to control of parasitic weeds, Striga asiatica, S. hermonthisca and Rhamphicarpa fistulosa in rice in Africa. Noting the contributions of poor soil fertility and water management and farmers’ lack of inputs and understanding of the problems, also a lack of extension agents, or of their adequate training and equipment. Merits and challenges of an integrated multi-stakeholder and multi-level research project are discussed.

Rodrigues, A. and Stefanovic’, S. 2016. Present-day genetic structure of the holoparasite Conopolisii americana (Orobanchaceae) in eastern North America and the location of its refugia during the last glacial cycle. International Journal of Plant Sciences 177(2): 132-144. [Microsatellite markers were used to infer the presence of two glacial refugia, one in Florida/Alabama and one in the Appalachian Mts.]

Rura, K. 2015. Rare vascular plant species of xerothermic grasslands from the Sandomierz Upland. Fragmenta Floristica et Geobotanica Polonica 22(1): 109-112. [Recording new localities for the rare Orobanche kochii in this part of Poland.]

Sabroe, R.A., Holden, C R and; Gawrskodger, D.J. 2016. Contact allergy to essential oils cannot always be predicted from allergy to fragrance markers in the baseline series. Contact Dermatitis 74(1): 236-241. [Noting some occasional allergy to oil from Santalum album, not always detected when testing oil mixtures.]


*Samigullin, T.H., Logacheva, M.D., Penin, A.A. and Vallejo-Roman, C.M. 2016. Complete plastid genome of the recent holoparasite Lathraea squamaria reveals earliest stages of plastome reduction in Orobanchaceae.PLoS ONE 11(3): 0150718. (http://journals.plos.org/plosone/article?id=10.1371%2Fjourn al.pone.0150718) [The complete plastid genome of Lathraea squamaria indicates that transition to holoparasitism in Lanthraea lineage occurred relatively recently, whereas the holoparasitic lineage Orobanchae is about two times older.]

Sarmento, J.D.A., de Morais, P.L., de Souza, F.I.; da Costa, L.R. and Melo, N.J.deA. 2015. Bioactive compounds and antioxidant activity of Ximenia americana coming from different collection sites. Archivos Latinoamericanos de Nutrición, 65(4): 263-270. [Confirming that the edible fraction of the fruit of X. americana contains high levels of vitamin C, yellow flavonoids, total extractable polyphenols and antioxidant activity.]

Sato, H.A. and Gonzalez, A.M. 2016. Floral development and anatomy of mistilletoe flowers of Lophophyrum (Balanophoraceae), with special reference to the embryo sac inversion. Flora (Jena) 219: 35-47. [Light and scanning electron microscopy were used to examine gynoecium, ovule, and embryo-sac development in two species Lophophyrum. The genus has two ategmic ovules inserted on the central placental column. The embryo-sac is the Adoxa type, tends to take a “J” shape, and there is evidence of embryo-sac inversion.]

Sawant, R.J. 2015. Plants used for bone fracture by indigenous folklore of Toranmal Plateau, Nandurbar District, Maharashtra, India. Advances in Bio Research, 6(4): 101-103. [Dendrophthoe falcata among species used on bone fractures.]

Scalon M.C., Rossatto, D.R., Domingos, F.M.C.B. and Franco, A.C. 2016. Leaf morphophysiology of a Neotropical mistletoe is shaped by seasonal patterns of host leaf phenology. Oecologia 180(1): 1103-1112. [Studies of Passovia ovata (= Phthirosa ovata) parasitizing evergreen Mimonia albicans and deciduous Byrsonima verbascifolia show varying water use efficiency ratio of photosynthetic rate to transpirational water loss; also stomatal density and size, indicating morphophysiological differences in the same mistletoe species parasitizing hosts of different phenological groups.]

Basic Research and Clinical Practice. 6th Mistletoe Symposium, Nonnweiler-Ottenhausen, Germany, 12-14 November 2015. Phytomedicine 22(Suppl.1): S1-S30. (http://www.sciencedirect.com/science/journal/09447113/22/ suppl/S1). [This url leads to the list of papers and provides links to the PDFs of each. See also item above.]

Segneanu, A.E., Damian, D., Hulka, I., Grozescu, I. and Duca, M. 2015. Expression of some antioxidant genes in sunflower infected with broomrape. Analele Științifice ale Universității ‘A.I. Cuza’ din Iași. (Serie Nouă) Științăa II a. Genetică și Biologie Moleculară 16(3): 97-106. [Expression levels of ROS-scavenging genes (MnSOD, APX3 and AOX1A) in leaves of seven sunflower genotypes infected with three Orobanche cumana Wallr. populations were assayed in plants with/without broomrape aerial shoots and control group. AOX1A was the most responsive gene, especially when infection was produced by population from Anenii Noi.]


Simirgiotis, M.J.,quispe, C., Areche, C. and Sepúlveda, B. 2016. Phenolic compounds in Chilean mistletoe (Quiniral, Tristerix tetrandrus) analyzed by UHPLC-Q/ORBITRAP/MS/MS and its antioxidant properties. Molecules 21(3): 245. [Hybrid ultra-HPLC hyphenated with Orbitrap mass analysis used to identify 6 anthocyanins, mainly the 3-O-glycosides of delphinidin and cyanidin. Also several phenolic acids (including feruloylquinic acid, feruloyl glucose, chlorogenic acid) and flavonols (luteolin, quercetin, apigenin, isorhamnetin and glycoside derivatives). High antioxidant activity was recorded.]


Song QingQing, Li Jun, Liu Xiao, Zhang Yuan, Guo LiPing, Jiang Yong, Song YueLin and Tu PengFei. 2016. Home-made online hyphenation of pressurized liquid extraction, turbulent flow chromatography, and high performance liquid chromatography, Cistanche deserticola as a case study. Journal of Chromatography, A 1438: 189-197. [The technique described is claimed to provide an economical alternative to existing methods for simultaneous determination of eight primary phenylethanoid glycosides in extracts of C. deserticola.]


Start, A.N. 2015. The mistletoe flora of southern Western Australia, with a particular reference to host relationships and fire. Australian Journal of Botany 63(8): 636-646. [Reporting conclusions from a 30-year study, involving 19 Loranthaceae and 2 Santalaceae. On 153 host species, including many Leguminosae, but also Eucalyptus and Melaleuca spp. Describing the role of fire in their distribution and survival.]


Sui XiaoLin, Kuss, P., Li WenJun, Yang MeiQing, Guan KaiYun and Li AiRong. 2016. Identity and distribution of weedy Pedicularis kansuensis Maxim. (Orobanchaceae) in Tianshan Mountains of Xinjiang: morphological, anatomical and molecular evidence. Journal of Arid Land 8(3): 453-461. [Confirming that the predominant weedy Pedicularis sp. in this region is P. kansuensis rather than P. verticillata as previously assumed.]

*Suni Shigu and Huang ShuangQuan 2015. Rainwater in cupulate bracts repels seed herbivores in a bumblebee-pollinated subalpine flower. AoB Plants 7: plv019. (http://aobpla.oxfordjournals.org/content/7/plv019.full) [The bracts of Pedicularis rex fill with water when it rains. Draining these bracts did not affect pollinators or nectar robbers but did allow more seed predation.]

Svobodová, Š., Košnar, J., Koutecký, P., Štech, M. and Wesselingh, R. 2016. Microsatellite analysis of four similar Euphrasias (Orobanchaceae) species changes the traditional view of this group. Plant Ecology and Evolution 49(1): 45-58. ["There are three well supported groups in the studied dataset of Euphrasia species. Delimitation of E. stricta and E. nemorosa is in concert with traditional views, but delimitation of the third group changes the traditional distinction of two mostly early-flowering species in the study area."]

Světlíková, P., Blažek, P., Mühleitnerová, R., Těšitel, J. and Wesselingh, R. 2016. Tracing nitrogen flow in a root-hemiparasitic association by foliar stable-isotope labelling. Plant Ecology and Evolution 149(1): 39-44. [Confirming the effectiveness of brushing leaves with 15N-urea as a simple and precise labelling method, which can be applied in greenhouse and field experiments to examine the nitrogen flows between root hemiparasites such as Rhinanthus major and host such as wheat.]

Taylor, A. and Burns, K. 2016. Radial distributions of air plants: a comparison between epiphytes and mistletoes. Ecology 97(4): 819-825. [Interestingly, concluding that mistletoes (unspecified, presumably various, in New Zealand) oriented northwest, parallel to gradients of higher light intensity, temperature, and lower humidity, while non-parasitic epiphytes oriented away from the sun to the southeast.]


plants are functionally classified into root hemiparasites, root holoparasites, stem parasites and endophytic parasites. Evolving from root hemiparasites, advanced parasitic plants are hypothesized to have been released from ecological constraints with increasing ability to acquire resources from the host and increasing host specificity. Hemiparasites are more speciose (by one order of magnitude) than holoparasites and thus are proposed to have more evolutionary stability.

Tjiurute, M.C., Sandler, H.A., Kersch-Becker, M.F., Theis, N. and Adler, L.A. 2016. Cranberry resistance to dodder parasitism: induced chemical defenses and behavior of a parasitic plant. Journal of Chemical Ecology 42(2): 95-106. [Five cranberry cultivars differed little in their susceptibility to unspecified Cuscuta (presumably C. gronovii) but in all cases infection induced production of salicylic acid which may influence other organisms.]

Toh, S., Holbrook-Smith, D., Stogiós, P.J., Onopriyenko, O., Lumba, S., Tsuchiya, Y., Savcénko, A. and McCourt, P. 2015. Structure-function analysis identifies highly sensitive strigolactone receptors in Striga. Science (Washington) 350(6257): 203-207. [The function of 11 strigolactone receptors was characterized from the parasitic plant Striga hermonthica using chemical and structural biology. A clade of polyspecific receptors, including one that is sensitive to picomolar concentrations of strigolactone was identified. A crystal structure of a highly sensitive strigolactone receptor from Striga revealed a larger binding pocket than that of the Arabidopsis receptor, which could explain the increased range of strigolactone sensitivity. By expressing strigolactone receptors in Arabidopsis, a bioassay was developed that can be used to identify chemicals and crops with altered strigolactone levels.]

Toshkova, T. and Baeva, G. 2014. Control in tomato with combinations of metham-sodium or dazomet with trifluralin or maleic hydrazide.]

[Recording useful control of unspecified Orobanchaceae. ecological and taxonomic implications. 7: March p.312 (http://journal.frontiersin.org/article/10.3389/fpls.2016.00312/full) [Over 130 volatile organic compounds were collected from flowers of over 25 Orobanchaceae using dynamic headspace sampling and analyzed using GC-MS. Principal components analysis showed groupings consistent with recognized species.]

*Tóth, P., Undas, A.K., Verstappen, F. and Bouwmeesters, H. 2014. Cranberry resistance to dodder parasitism: induced chemical defenses and behavior of a parasitic plant. Journal of Chemical Ecology 42(2): 95-106. [Five cranberry cultivars differed little in their susceptibility to unspecified Cuscuta (presumably C. gronovii) but in all cases infection induced production of salicylic acid which may influence other organisms.]


Turman, R.J. and Smith, P. 2016. Mistletoes increasing in eucalypt forest near Eden, New South Wales. Australian Journal of Botany 64(2): 171-179. [Noting an increase in mistletoes, chiefly Amyema pendula and Muellerina eucalyptoides inside eucalypt forests between 1990 and 2006. Densities are not greatly affected by prescribed light burning but are probably influenced by occasional severe wild fires.]

Uchôa, V. T.; Sousa, C.M.M., Carvalho, A.A., Sant’Ana, A.E.G. and Chaves, M.H. 2016. Free radical scavenging ability of Ximenia americana L. stem bark and leaf extracts. Journal of Applied Pharmaceutical Science 6(2): 91-96. [Showing that extracts of stem bark and leaves of X. americana contained epicatechin and quercetin, respectively, both proving highly active as antioxidants.]

Uribe-Convers, S. and Tank, D.C. 2015. Shifts in diversification rates linked to biogeographic movement into new areas: an example of a recent radiation in the Andes. American Journal of Botany 102(11): 1854-1869. [A phylogeny of Barista was used to infer divergence times and elucidate biogeographic history. Increased diversification of the South American clade corresponds to biogeographic movement into the New World which happened when the Andes were forming an alpine environment.]

Usoro, V., Signorini, M.A., Tonini, M. and Bruschi, P. 2016. Wild medicinal and food plants used by communities living in Mopane woodlands of southern Angola: results of an ethnobotanical field investigation. Journal of
Ethnopharmacology 177: 126-139. [Including reference to *Ximenia americana* but no detail in abstract.]


Wang FengXia, Liu Qin, Wang Wei, Li Xibo, and Zhang Ji. 2016. A polysaccharide isolated from *Cynomorium songaricum* Rupr. protects PC12 cells against H2O2-

Wang HongJuan, Li WeiTao, Liu YaNan, Yang FuSheng and Wang XiaoQuan. 2015. Range-wide multilocus phylogenetic analyses of Pedicularis sect. Cyathophthora (Orobanchaceae): implications for species delimitation and speciation. Taxon 64(5): 959-974. [Three low-copy nuclear and two chloroplast genes were used to infer a phylogeny of this Section. Results suggest some species reassignments and molecular dating suggests the uplift of the Qinghai-Tibet Plateau played an important role in speciation in this Section.]


*Wang YueHua, Xuan ZhaoHong, Tian Shuo and Du GuanHua 2015. Echinacosides protects against 6-hydroxydopamine-induced mitochondrial dysfunction and inflammatory responses in PC12 cells via reducing ROS production. Evidence-based Complementary and Alternative Medicine 2015: Article ID 189239. (http://www.hindawi.com/journals/ecam/2015/189239/) [Confirming that treatment with echinacoside (from Cistanche salsa) significantly attenuated changes induced by 6-hydroxydopamine and the associated inflammatory responses, thus of potential value in treatment of Parkinson’s Disease.]

Wazis, C.H., Timothy, S.Y., Yesufu, H.B., Mashi, J.S. and Kida, M.Y. 2015. Evaluation of antinociceptive activity of ethanol whole plant extract of Viscum album L. in rats. Journal of Pharmaceutical and Scientific Innovation (JPSI) 4(6): 289-294. [The ethanol whole plant extract of V. album was found to be relatively non-toxic and contain active constituents which might be responsible for its observed antinociceptive activity. Results amply justify the traditional use of this plant as an analgesic.]

Wesselingh, R.A. and Wesselingh, R. 2016. Within-population variation in the relation between node number and flowering time in Rhinanthus angustifolius (Orobanchaceae). Plant Ecology and Evolution 149(1): 21-30. [The number of nodes produced before the first flower is an important trait linked to flowering time. Studying ecotypes with naturally different flowering times showed that both genetically determined (node number) and phenotypically plastic (plant size) traits contribute to variation in flowering time within populations, and even under strong selection against late flowering, wild populations may harbour enough variation to react to a decrease in this selection pressure by later mowing.]


Wiesenborn, W.D. 2016. Conspecific pollen loads on insects visiting female flowers on parasitic Phoradendron californicum (Viscaceae). Western North American Naturalist 76(1): 113-121. [P. californicum parasitizing Acacia greggii was visited by a wide range of insects in the Mojave Desert, Nevada, the most important for pollination being tephritids and calliphorids.]


*Wong HoShan, Chen JiHang, Leong PouKuan, Leung HoiYan, Chan WingMan and Ko KamMing. 2015. A Cistanches Herba fraction/β-sitosterol causes a redox-sensitive induction of mitochondrial uncoupling and activation of adenosine monophosphate-dependent protein kinase/peroxisome proliferator-activated receptor γ coactivator-1 in C2C12 myotubes: a possible mechanism underlying the weight reduction effect. Evidence-based Complementary and Alternative Medicine 2015: Article ID 142059. (http://www.hindawi.com/journals/ecam/2015/142059/) [Alcohol based IBA dips were superior to soaking cuttings in an IBA and NAA solution for root production in cuttings of Lasiopetalum cardiophyllum (Santalaceae).]

4-deoxyorobanchol that were fed to roots of rice plants were detected in shoots harvested 20 hr after treatment, although not in the xylem sap.

*Xiong GuoSheng, Li JiaYang and Smith, S.M. 2016. Evolution of strigolactone perception by seeds of parasitic plants: reinventing the wheel. Molecular Plant 9(4): 493-495. (http://www.cell.com/molecular-plant/fulltext/S1674-2052(16)00029-0) [Orobanchaceae family contain multiple putative SL receptors but, surprisingly, they may not have made use of the recognized SL receptor for this purpose. Instead, the proposed receptors have evolved by duplication and diversification of a gene encoding a putative receptor that responds to an unidentified SL-like signal and is known to trigger seed germination in *Arabidopsis*.


Physiology 36(5): 562-575. [Results suggest that removal of *Viscum album* ssp. *austriacum* from *Pinus sylvestris* (in Switzerland) results in increased N availability and carbon gain, which in turn leads to increased tree growth.


Yassine Mabrouk, Sonia Mejri and Ommane Belhadj. 2016. Biochemical mechanisms of induced resistance by rhizobial lipopolysaccharide in pea against crenate broomrape. Brazilian Journal of Botany 39(1): 107-114. [ *Rhizobium leguminosarum* strain P.SOM has been shown to reduce *Orobanche crenata* in pea. This study confirms that lipopolysaccharides isolated from the rhizobium reduce *O. crenata* germination and restrict attachment to the host root as well as retarding tubercle formation and development. In pot experiments, pea root treatment reduced numbers of *O. crenata* by up to 95%. Apparently enhanced phenylalanine ammonia lyase, peroxidase, and polyphenoloxidase activities leads to production of phenolics and pisatin which confer mechanical and chemical barriers to the invading parasite.]


Yotapakdee, T., Kongsuban, N., Lattirasuvu, T. and Mangkita, W. 2015. Determinants of food bank from *Melientha suavis* Pierre in a rural community in Phrae Province, Thailand. Environment and Natural Resources Journal 13(2): 44-54. [The young shoots, leaves and flowers of *Melientha suavis* (Opiliaceae) serve as a vegetable in soup or dried fish curry. This study confirmed its importance to the community living in the forest as both a source of food and of income from its sale.

You ShuPing, Ma Long, Zhao Jun, Zhang ShiLei and Liu Tao. 2016. Phenylethanol glycosides from *Cistanche tubulosa* suppress hepatic stellate cell activation and block the conduction of signaling pathways in TGF-β/smad potential anti-hepatic fibrosis agents. Molecules 21(1): 102. [Results suggest that *C. tubulosa* may thus be a potential herbal medicine for the treatment of liver fibrosis.]

You ShuPing, Zhao Jun, Ma Long, Tudimat, M., Zhang ShiLei and Liu Tao. 2015. Preventive effects of phenylethanol glycosides from *Cistanche tubulosa* on bovine serum albumin-induced hepatic fibrosis in rats. Daru - Journal of Pharmaceutical Sciences 23: 52. [ *C. tubulosa* is a traditional Chinese herbal medicine that is widely used for regulating immunity. This study confirmed that the main active components, phenyl ethanol glycosides have a significant activity against hepatic fibrosis.]


Zhang Bei, Zhang RongWeng, Yin Xiquan, Lao Zizhao, Zhang Zhe, Wu QingGuang, Yu LiangWen, Lai XiaoPing, Yan YuHua and Li Geng. 2016. Inhibitory activities of some traditional Chinese herbs against testosterone 5α-reductase and effects of *Cacumen platycladi* on hair re-growth in testosterone-treated mice. Journal of Ethnopharmacology 177: 1-9. [Extracts of *Cynomorium songaricum* showed strong 5α reductase inhibition, supporting its traditional use for promoting hair growth.
Zhang XiaoMing, Liu Bo, Guo QiaoSheng, Song LingShan, Chen Lu and Wang ChangLin. 2016. Construction of a haustorium development associated SSH library in *Thesium chinense* and analysis of specific ESTs included by *Imperata cylindrica*. Biochemical Systematics and Ecology 64:46-52. [*T. chinense* is a facultative hemiparasite that can invade host plants by inducing haustoria on neighboring host roots to access the water and nutrients of the host. Suppression subtractive hybridization (SSH) was performed to identify the differentially expressed genes during haustorial development. The results indicated that the relative quantities of TcPME, TcAux/IAA, TcPrx and TcPAL were affected by the secretions of the *Imperata cylindrica* root that *T. chinense* accreted and that these effects were meaningful to the development of the haustorium of *T. chinense*.]

Zhao Wei, Zhang YunXia, Liang JiaFen, Chen DaCan, Li HongYi and Xuan GuoWei. 2016. (Experience of TCM master XUAN Guo-wei in treating skin disease by using herbs from south of the Five Ridges.) (in Chinese) China Journal of Traditional Chinese Medicine and Pharmacy 31(1): 117-120. [Noting that Pro Xuan uses *Striga asiatica* to eliminate dampness and relieve stagnation’.]

*Zhen Jing, Guo Yue, Villani, T., Carr, S., Brendler, T., Mumbengegwi, D.R., Kong AhNg [Kong, A.N.T.], Simon, J.E. and Wu QingLi. 2015. Phytochemical analysis and anti-inflammatory activity of the extracts of the African medicinal plant *Ximenia caffra*. Journal of Analytical Methods in Chemistry 2015: Article ID 948262. ([http://www.hindawi.com/journals/jamc/2015/948262/](http://www.hindawi.com/journals/jamc/2015/948262/)) [Identifying 10 polyphenols in the extract of *X. caffra*, quercetin-rutinoside being the commonest, and showing that it inhibits the mRNA expression of proinflammatory genes (IL-6, iNOS, and TNF-α) by using RT-qPCR, implying anti-inflammatory effects.].


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