# HAUSTORIUM

*Parasitic Plants Newsletter*

Official Organ of the International Parasitic Plant Society

(www.parasiticplants.org)

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MESSAGE FROM THE IPPS PRESIDENT

Greetings to IPPS Members!

I am happy to bring you the new issue of Haustorium that has continuously been growing in content and volume, thanks to great efforts of Chris, Lytton, and Harro. In this issue, you will find two important notices for the IPPS events.

As already announced in the last issue, our next major conference, the 13th World Congress on Parasitic Plants, will take place in Kunming, the City of Eternal Spring, at Kunming Dianchi Garden Hotel & Spa, China, from July 5 to 10, 2015. Airong Li at Kunming Institute of Botany, Chinese Academy of Sciences and her colleagues with other Chinese scientists are busy organizing the congress. John Yorder will lead the program committee. We are looking forward to welcoming you in Kunming. Details will be found in the conference website; http://wcpp13.csp.escience.cn/dct/page/65540

The second notice is the election of the IPPS Executive Committee. According to the schedule confirmed at the last meeting, we are expected to elect half the positions in the Executive Committee; this time, Editor and Treasurer. Details will be sent in a separate mailing. I would like to ask your active participation in this important event in your society.

In Japan, fortunately, we have not yet experienced serious crop losses due to weedy parasitic plants. However, some Japanese companies that have their own crop fields or contract-farmers in areas infested by root parasitic weeds have come to notice the problems caused by these noxious weeds. An example is posted in this issue – Striga gesnerioides infection on tobacco in Zambia. I believe that it is important to educate people especially farmers in parasitic weeds free areas and/or regions about potential damages posed by these devastating weeds. This would help reduce, stop, and limit potential infection by parasitic weeds.

Sincerely,

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

13TH WORLD CONGRESS ON PARASITIC PLANTS

The Organizing Committee cordially invites you to the 13th World Congress on Parasitic Plants (WCPP13) to be held from 5-10 July 2015 in Kunming, the City of Eternal Spring, in Southwest of China mainland. Organized by Kunming Institute of Botany (KIB), Chinese Academy of Sciences (CAS) under the auspices of the International Parasitic Plant Society (IPPS), this 6 day event will bring the WCPP legacy to East Asia for the first time.

WCPP13 will continue the long tradition of regularly assembling experts on parasitic plants from all over the world for academic meetings that started in 1973 in Malta. With the theme ‘Parasitic plants: the good, the bad, and the mysterious’, this congress seeks to stimulate a productive exchange of information and ideas among researchers from around the world representing a wide spectrum of disciplines and perspectives, but all focused around the common theme of plant parasitism. Conference sessions will be designed to find common interests and to include presentations at the cutting edge of parasitic plants research (concerning both weedy and non-weedy species) and of management technologies of parasitic weeds.

The ultimate objectives of WCPP13 can be summarized as ‘Concern, Control, and Collaboration’, and our meeting activities reflect these three elements: ‘Concern’ in that we hope to raise more concern on currently non-weedy parasitic plants before they become a problem; ‘Control’ in the activities that are leading to new technologies and applications for a better management of parasitic weeds; and Collaboration, the hallmark of WCPP13 permeating through all our activities.

We are looking forward to meeting researchers from all over the world for an exciting and varied scientific program. In addition to an engaging scientific program, attendees will enjoy a range of diverse social events as well as Kunming’s many attractions, including a visit to Yunnan Ethnic Village that showcases the culture and customs of all the ethnic groups in Yunnan Province. We hope that you will take the opportunity to socialize and network with new acquaintances, and build upon
those relationships which have already been established to sustain our collaboration.

Please consider attending the 13th World Congress on Parasitic Plants. Mark the date in your calendar and register for the Congress. On behalf of the Organizing Committee and the Society, we are looking forward to meeting you in Kunming.

The Congress website is:  
http://wcpp13.csp.escience.cn/dct/page/65540

Professor Koichi Yoneyama IPPS President  
Professor Airong Li Local Organizer

PARASITIC PLANTS IN THE ALGARVE REGION OF SOUTHERN PORTUGAL

The Algarve of southern Portugal has one of the richest floras in Europe. The region has an Atlantic outlook; however its flora is typically Mediterranean, and noteworthy for its extraordinary diversity of parasitic plants in particular, a handful of which are described here. A full species list of the parasitic plants in the region is included in the recently published Field guide to the wildflowers of the Algarve (Thorogood and Hiscock 2014) – the most comprehensive field guide of the flora written to date.

One of the most spectacular parasitic plants which grows in the Algarve is Cistanche phelypaea, a striking yellow holoparasite of halophytic shrubs in the Amaranthaceae family, for example Arthrocnemum perenne and Atriplex halimus. The species is rare in Europe, but fairly frequent around the coasts of the Algarve, typically in estuaries, saltmarshes and dune systems. Indeed in some places such as on the saltmarshes of Faro (the Algarve’s administrative capital) it grows in great stands, and is a real spectacle in late March to early April. Like many parasitic plants in the region, the abundance of the plant varies from year to year, and in some years (for example in 2014), it can be very scarce. The large, bright yellow, campanulate corolla suggests that the plant is insect-pollinated, however little is known about the breeding system of this species. The seeds are much larger than those of related Orobanche species, and are presumably water-dispersed. Attempts by the author to cultivate Cistanche in pots of Atriplex halimus grown in brackish water have been unsuccessful. Another even rarer holoparasite that occurs in the region is the Maltese Fungus, Cynomorium coccineum. This peculiar and poorly understood species was previously more widespread in the Algarve, but has suffered a dramatic reduction through tourist-driven development of the region’s southern coastline in recent decades. For example, the plant appears to have all but vanished from a previous stronghold at Alvor, previously a quaint fishing village where it grew alongside C. phelypaea in the saltmarshes, which have now been developed beyond recognition. Cynomorium coccineum can still be found on a few unstable sea cliffs in the Portimão area on the south coast of the Algarve in April and May. Like C. phelypaea, C. coccineum is a halophytic holoparasite which is parasitic on shrubs in the Amaranthaceae family. Very little is understood about the ecology and host specificity of this curious parasite.

The Algarve is of particular interest for its diversity of broomrapes (Orobanche spp.). Orobanche foetida is among the most common species in the west, which parasitizes legumes such as Ononis natrix and sends up spectacular, blackish-purple spikes up to a metre tall in late spring.
The far southwest of the Algarve is also home to a myriad of host-specific ecotypes in the taxonomically complex Minores group, for which further systematic attention is required. Common ruderal habitats on exotic host species, for example on Gazania spp. and Tropaeolum majus on road cuttings and landscaped areas. Orobanche minor also grows on the windswept and isolated Cape St. Vincent on vetches such as Onobrychis humilis, alongside stands of an, as yet, undescribed taxon which shares morphological characteristics with both O. minor and O. picridis, and exclusively parasitizes carline thistles (Carlina corymbosa). These taxa co-occur with a third, poorly understood species, O. calendulae which has rather more robust spikes and a yellow (rather than pink) stigma, and infests clumps of calendula (Calendula suffruticosa). Gene flow amongst these co-occurring taxa cannot be ruled out. Like many of the rarer broomrapes, O. calendulae is poorly circumscribed and its relatedness within the Minores group remains unclear. It is uncommon in the region, and restricted to rocky sea cliffs and shale slopes in the far southwest. Finally, populations of a fourth cryptic taxon occur locally on dunes and coastal shales on the western sea belt of the Algarve which are parasitic on Plantago coronopus. This taxon is characterised by very dense, ovoid inflorescences and based on its morphology appears to be closely related to O. amethystea (typical populations of which occur further east in the Algarve) and also O. litorea, a coastal species occurring on Sicily and Sardinia. A holistic approach encompassing host specificity, morphometrics and DNA sequence data is required to tease apart the relationships of this taxonomically difficult group in the Algarve and further afield.

The curious red and yellow holoparasite Cytinus hypocistis is fairly frequent on rock roses (Cistus spp.) on dunes, garrigue and maquis in the Algarve. The closely related C. ruber which has pink flowers and parasitizes Cistus albidus also grows in the Algarve but is much less frequent. Surveys carried out by the author demonstrate that populations of C. hypocistis are host specific in the region, (Thorogood and Hiscock 2007) showing preferences for either C. monspeliensis, C. ladanifer (and sister species C. palhinae) or for Halimium halimifolium. Subtle morphological distinctions exist amongst these host-specific ecotypes, and it is possible that isolation by their respective hosts’ distinct ecologies is driving their genetic divergence; indeed genetic races of Cytinus associated with host lineages have been reported from across the Mediterranean basin (de Vega et al., 2008). Like many parasitic angiosperms, little is known about the ecology and life history of Cytinus, but it has been established that the plant is ant-pollinated (de Vega et al., 2009), and its minute, dust-like seeds appear to be wind-dispersed.

Among the most common hemiparasites in the Algarve are Osyris alba and O. quadripartita (also described as O. lanceolata). Osyris alba frequents the baroccal (eucalyptus forest fringes), whereas O. quadripartita is common to subdominant in sclerophyllous vegetation at sea level. Traditional morphological keys have placed importance on leaf dimensions and pinnate leaf venation which are continuous to a degree, at least in the Algarve, and flower morphology along with bract dehiscence in fruit, would appear to be more reliable diagnostics in the field. Vegetation surveys suggest that Osyris does not show strong host specificity in the region (Thorogood CJ and Hiscock SJ, unpublished data), and O. alba is established to parasitize a wide range of hosts (Qasem, 2006). However plants often appear in clumps alongside other berry-producing shrubs, presumably as a result of bird-mediated co-dispersion, which may be a catalyst for host availability.

References


Chris Thorogood
HELIXANTHERA CYLINDRICA IN CAMBODIA

Dr Chung Gait Fee recently sent us photos of this colourful mistletoe from about 160 km SW of Phnom Penh in Cambodia (70 km N. of Sihanoukeville through National Road No 4). Dr Don Kirkup has confirmed its identity as *Helixanthera cylindrica* and notes that there is nothing else much like it with the lax racemes, long pedicels and relatively slender large flowers. It is quite widespread and often found on cultivated trees. *Flora Malesiana* gives the distribution as Burma to Vietnam; Malesia: (Sumatra, Peninsular Malaysia, Borneo, Java, Celebes, Bali) and the recorded hosts include *Dalbergia, Eugenia, Garcinia, Hevea, Leptospermum, Mangifera, Parkia, Planchonlla, Schima* and *Tristania*. spp.

Photos Mr Chung Gait Fee

STRIGA GESNERIOIDES ON TOBACCO IN ZAMBIA

In December 2013, *Striga gesnerioides* was seen to be affecting tobacco on a farm in the Choma area, Southern Province, Zambia. A small number of crop plants were found to be infected. The parasite was then seen in a second field on the same farm in January, 2014 and was also found on a second farm where the infestation was much more extensive and the crop suffered serious symptoms of yellowing, wilting and eventually death.

The problem has been reported previously in Zimbabwe but this is thought to be the first report from Zambia.

With thanks to Messrs Peter Rorbye and Lars Gruner, Japan Tobacco International Zambia Ltd., for information and photos.

OROBANCHE CRENATA IN UK – AN UPDATE

A serious infestation of *Orobanche crenata* in faba beans in Kent, UK, was briefly reported in Haustorium 63 and later discussed at the *O. crenata* Workshop in Rabat, Morocco (reported on in issue 64). The Kent infestation involved several fields, the main one having a uniform, dense population exceeding 100 spikes per sq m in places, over an area of about 15 ha. The crop was reduced by at least 80%. The origin of the infestation has not been fully explained but appears to involve the use, some time in the past, of uncertified seed (on this or the adjacent farm) obtained from a local cooperative granary which stores grain for farmers who can later retrieve seed - not necessarily their own. Such retrievals should be used only for feed, but if used for seed, it provides a possible means of spread from a distant farm. For local spread it is thought combine harvesting will have been a big contributor as the thrashing involved throws seeds into the air to be taken by the wind.

Now a new infestation has been reported further north in Hertfordshire, but somewhat nearer (20 miles) to the historic occurrences in Essex which have been recorded sporadically since the 1950s. These have been very local and usually involved only garden vegetables or wild *Vicia* species. Only in 1997 when peas were sown on a farm scale in the neighbourhood, there was a massive infestation of several 100 thousand plants (Adams, 2003). Peas have not been grown again and records since then for that district have once more been sporadic, the last recorded in 2006 (Rumsey, 2014).

There is no evidence for any new introduction from abroad in recent years, so it is assumed that all these instances originate from the Essex focus. We await
DNA study of seed samples to confirm this. A further unresolved question is why we have these apparently successful populations so far north of any other in Europe. Global warming is one possibility, but this should not directly favour the weed. Evolution or adaptation to local temperature and moisture conditions would seem more likely, but again no work has yet been devoted to comparing the germination and dormancy behaviour of UK samples to those from the Mediterranean.

Now there is concern that the problem could become more important in UK as new EU regulations increase the popularity of peas and beans as a rotational crop.

Meanwhile attention is drawn to the situation in Ethiopia as described by Tekley Abebe et al. (2013), listed below. There the problem was first seen in the late 1980s but is now spreading alarmingly and threatening farmers’ ability to grow any pulse crops over a substantial and increasing area of Tigray and neighbouring Provinces.

References:


Chris Parker

PRESS REPORTS

Award for conservationist (extract)

Trevor Thompson has gone from trapping possums with his parents as a youngster to winning a national conservation award. Mr Thompson, of Mt Bruce, has been presented with New Zealand Forest & Bird’s annual Golden Spade award for his volunteer conservation projects in Wairarapa. At present, he is working on three major projects - with renga renga lilies on the Wairarapa coast, native species of mistletoe and the Ceprosma wallii shrub. Mr Thompson said he first developed a passion for conservation when he laid his first possum trap as a boy. ‘Like many kids of my generation, I went possum trapping for a bit of pocket money,’ said Mr Thompson. ‘After that, I just kept going. I’m interested in nature and protecting it because my parents brought me up to appreciate it.’

One of Mr Thompson’s most involved projects is propagating various species of mistletoe throughout Wairarapa, which he has been working on for 25 years. ‘I did some reading on mistletoe in Wairarapa and it said that the Tararuas should be ablaze with red with all the mistletoe plants,’ he said. ‘I knew that certainly wasn’t the case.’ There are currently nine species of native New Zealand mistletoe, but populations have declined since the early 1900s due to pests and a decline in native bird species, which act as pollinators. At one point, said Mr Thompson, only three examples of Alepis flava (yellow mistletoe) existed in Wairarapa, all living in one tree - but he since increased the number of host trees to seven and propagated a dozen plants. He runs workshops for people interested in planting and propagating mistletoe, which he said is ‘quite an involved process’.

Erin Kavanagh-Hall, The New Zealand Herald July 1, 2014

The hunt for Dendropemon caymanensis.1

The Cayman Islands Department of Environment (DoE) are currently collaborating on a project with longtime partner Royal Botanic Gardens Kew (RGB Kew), UK, to locate a mysterious mistletoe species – Dendropemon caymanensis (Loranthaceae) - known to be located only on Little Cayman. There is very little known about this parasitic plant but records from botanist George Proctor, author of Flora of the Cayman Islands, indicate that it is possibly located within the northeastern interior of Little Cayman and is a parasite of the Headache Bush (Capparis cynophallophora) and the Black Candlewood (Erithalis fruticosa). No one has seen this plant since 1991 and there is no photographic record – just a single herbarium collection as proof of its existence. In order to find this plant, the DoE and RGB Kew used a mini unmanned aerial vehicle (UAV). The UAV is a small flying vessel with a camera; it weighs less than a kilogram and is controlled by a sophisticated remote computer system. It takes aerial photographs on a pre-programmed course, mapped using GPS coordinates.
The search team included DoE's Research Officers Jessica Harvey and Jane Haakonsson, and GIS Officer Jeremy Olynik; and RGB Kew's Species Conservation Assessment Officer Steven Bachman and Kew's GIS Officer Justin Moat; and from the Blue Iguana Recovery Programme (BIRP), Frederic Burton, acting as the local plant specialist. Mr Moat and Mr Bachman are highly trained and certified UAV pilots with previous experience in the UK and Peru, and both are off to Burkina Faso after their trip to Cayman. The DoE worked closely with the Civil Aviation Authority (CAA) to establish and follow all safety protocols. This included ensuring all launch and search sites were inspected and approved by the CAA prior to the project start date. Approval also was granted by the Lands and Survey Department, and all flights were coordinated and approved by the Grand Cayman and Cayman Brac Air Traffic Control towers prior to takeoff. This is very important as flying UAVs without authorisation could be a hazard to all types of aircrafts, including police helicopters and mosquito jets. Launching and landing sites were also granted permission from the relevant land owners.

Survey areas included the Colliers Reserve and Salina Reserve in Grand Cayman, where locations of the host plant species are already known. Images taken from these areas will be compared with images taken in Little Cayman. The project will also allow the DoE to try a new method of monitoring the booby colony in the Booby Reserve on Little Cayman, which could prove highly time and energy efficient compared to previous monitoring techniques.

Upon completion of this project the DoE hopes to determine the true status of the endemic Dendropemon caymanensis in the Cayman Islands, while also gathering data on the current status of the booby breeding area in the Booby Pond Reserve. This project was possible with assistance from the Mohamed Bin Zayed Conservation Group, which donated just more than US$3,000 to the project through a grant; the Cayman Islands National Trust including BIRP; the CAA; and RGB Kew.

This project started on 12 June and was completed on 19 June. For more information, contact the DoE at doe@gov.ky, at 949-8469 during working hours or on our Facebook page.

Angela Piercy, Cayman Islands Government 4 July 2014

The hunt for Dendropemon caymanensis. 2

Extract from further press release: Researchers hunt down mystery plant

Although the search team was unable to see any signs of the species, Ms. Harvey said there is a chance it could show up in the footage captured through a mini aerial drone, which takes photographs on a pre-programmed course mapped out using GPS coordinates. ‘We are still waiting for all the imagery from the drone to be processed, which may take some time ... We hope to get it in the next couple weeks,’ she said.

Mr. Proctor discovered two specimens of the plant in Little Cayman, which he said was related to D. purpureus and D. rigidus but a lot smaller.

Jewel Levy, Cayman compass.com 18 July, 2014

NB See also the literature item Caraballo-Ortiz and Carlo, 2013.

Results show Africa can eradicate Striga

In the last three years, the ISMA project has deployed an integrated approach for managing Striga while improving soil fertility and reducing the Striga seed bank for sustainable increases in crop yields in some selected communities in Nigeria and Kenya. Dr David Chikoye, IITA Director for Southern Africa, said results from the project showed that the battle against Striga could be won. ‘We will eradicate Striga in Africa just as America did,’ he said at the Annual Review and Planning Meeting of ISMA in Abuja held 21-23 May.

IITA Deputy Director General for Research, Dr Ylva Hillbur, in her opening remarks called for concerted efforts from partners to tackle the Striga challenge. Over 70 stakeholders gathered in Abuja for the 3-day annual event which sought to evaluate the successes, challenges, and opportunities of the project, identify gaps, and plan how to implement the decisions to successfully scale out Striga management technologies to rural farmers in the next coming year.

Dr Mel Olouch, ISMA Project Manager, said ‘We have established partners and stakeholder capacity in Kenya and Nigeria and installed Striga seed processing facilities in Kenya; awareness is high. Already, registration of the herbicide has been
achieved in both countries and we expect to release two IR maize varieties in Nigeria in 2014 (see following item). He said that some of the scaling up approaches that need to be adopted include the use of volunteer farmers to reduce costs and increase ownership, and use of complementary inputs and empowerment of stakeholders to give farmers the best technologies.

Specifically, these included cultural practices such as intercropping maize with legumes (soybean and groundnut); crop rotation of maize with soybean; a ‘push-pull’ technology that involves intercropping cereals with *Striga*-suppressing *Desmodium* forage legume; using *Striga*-resistant maize and cowpea varieties; using maize varieties resistant to Imazapyr (IR)—a BASF herbicide (StrigAway®) which is coated on the maize seeds and which kills the *Striga*; and adopting *Striga* biocontrol technologies which uses a *Striga* host-specific fungal pathogen.

The Senior Program Officer for Agriculture Development of the Bill & Melinda Gates Foundation, Dr Yilma Kebede, in his address, looked at future plans for the project while expressing that the project is close to reaching farmers and addressing their concerns/problems due to *Striga*. He emphasized that there needs to be concerted efforts to profile the farmers reached such that the take-home message will be sustainable for them in the long run. ‘Demonstrations need to be focused and there is greater need to engage a wide range of stakeholders in controlling *Striga*. The various institutions involved should synergize to promote the project and scale out to farmers because no one partner will be responsible for the success of the technologies in the end,’ he said.

Infesting up to 4 million hectares of land under maize production in sub-Saharan Africa, *Striga* causes farmers yield losses of up to 80% representing about US$1.2 billion, and affects approximately 100 million people on the continent.

Project partners include CIMMYT, AATF, ICIPE, Bayero University, KNARDA, BSADP, seed and chemical companies, extension workers, scientists and the private sector.

Adeleke Mainasara, Africa Science News 26 May 2014

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**Nigeria releases first generation of herbicide-resistant hybrids**

The Nigerian National Variety Release Committee (NVRC) has released the first generation of maize hybrids, resistant to metsulfuron methyl herbicide, that are also endowed with resistance to the noxious parasitic weed *Striga hermonthica*. The hybrids were developed by the International Institute of Tropical Agriculture (IITA) in partnership with DuPont Pioneer Seeds using conventional breeding with funding from IITA and the Integrated *Striga* Management in Africa (ISMA) project as part of strategies to control *S. hermonthica* in maize. The hybrids were released as P48W01 and P48W02 and are recognized as IITA IR-Maize Hybrid 2 and IR-Maize Hybrid 4. The hybrids have a yield potential of up to 5 t/ha under *Striga* infestation in comparison with local varieties that produce less than 1 t/ha in such conditions. ‘These hybrids are the product of introducing a single nuclear gene that confers resistance to imidazolinone herbicides, including metsulfuron methyl (MSM), into inbred lines with known field resistance to *S. hermonthica*,’ IITA Maize Breeder, Dr. Abebe Menkir, said.

Recent baseline studies conducted under the ISMA project showed that farmers ranked *Striga* as the number one constraint to maize production in northern Nigeria, with 50 to 100% of the households reporting *Striga* incidence in their farms. The parasitic weed infests more than 9 million ha planted to millet, maize, and sorghum in Nigeria and severely lowers the production capacity of these crops. Dr Menkir said yield losses in maize from damage by *S. hermonthica* varied from 20 to 80% among subsistence farmers, but 100% loss could occur in susceptible cultivars under severe infestation in marginal production conditions.

The released herbicide-resistant hybrids allow seeds to be planted that have been treated with low doses of metsulfuron methyl herbicide. This targets *S. hermonthica* before or at the time of its attachment to the maize root, killing the parasite underground before it inflicts damage on the crop. These hybrids can thus be used to deplete the *Striga* seed bank in the soil and minimize yield losses in subsequent cereal crops. MSM-treated seeds of these hybrids can be integrated into the diverse farming systems in Nigeria because the herbicide effectively controls the parasite at a low rate of application.

The ISMA project works with the private sector to catalyze the process of producing and marketing
treated seeds of herbicide-resistant maize hybrids to smallholder farmers in Nigeria to control *S. hermonthica*. Other collaborating partners engaged in extensive testing of these hybrids include the Institute for Agricultural Research (IAR) and Agricultural Development Programs in Bauchi and Kano States. The ISMA project is being implemented by IITA in partnership with CIMMYT, ICIPE, BASF Crop Chemical, AATF and national partners in Kenya and Nigeria.

Crusoe Osagie, ThisDayLive
01 Jul 2014

**New initiative to upscale commercialisation of anti-striga weed in maize technology launched**

A new initiative has been launched to upscale use of commercialisation of *StrigAway™* – an herbicide-resistant seed and treatment – to improve productivity and competitiveness of smallholder maize farmers. The initiative funded by the USAID brings together the African Agricultural Technology Foundation (AATF) and Feed the Future Partnering for Innovation and will help AATF and its partners, BASF, International Maize and Wheat Improvement Center (CIMMYT), and six local seed companies, promote the technology package in Kenya, Tanzania, and Uganda.

‘This partnership is really about increasing the food security of thousands of smallholder farmers in East Africa. Farmers who have access to this technology will have better maize yields and higher earnings from the sale of excess produce,’ said Denis T. Kyetere, the Executive Director, AATF.

*StrigAway™* combats *Striga*, a parasitic plant that affects the agricultural productivity of approximately 1.4 million hectares in Kenya, Tanzania, and Uganda. Commonly known as witchweed, this parasitic plant can cause a 20 to 80 percent crop loss in maize, leading many farmers to abandon fields with heavy *Striga* infestation. *Maize*, the staple food for the majority of East Africans, is especially susceptible to *Striga* and continuous cereal monocropping has intensified the *Striga* problem. *StrigAway™*, which includes conventionally bred herbicide resistant maize varieties and an herbicide seed coating, was developed by BASF and CIMMYT.

As part of the United States government’s Feed the Future Initiative, Partnering for Innovation is expanding commercial access of transformational technologies to smallholder farmers to improve productivity and incomes quickly and sustainably. ‘Large problems can’t be solved alone, which is why this is Feed the Future Partnering for Innovation’s largest grant to date, totaling more than US$3 million. It involves multiple partners including an international NGO, a multi-national corporation, a research institute, and local private sector companies,’ said Brenna McKay, Partnering for Innovation Grants Program Director.

By the end of the three-year performance-based grant, there will be a total of 4,000 demonstration plots and nearly 1,000 metric tonnes of seed sold to over 20,000 smallholders in the target countries. Technical support for local seed companies will ensure the seed is commercially multiplied, treated, and available for purchase through a vast network of agricultural input retailers for smallholder farmer customers. AATF will work with partner seed companies to promote *StrigAway™*, including managing a discount programme for select agro-dealers, offering promotional seed packs to farmers, and leading a campaign to increase the understanding of the product.

Raymond Gichuki, Africa Science News
04 February 2014

**Finding a cure for cancer with mistletoe? Believe Big is helping to kiss cancer goodbye**

Mistletoe therapy is used widely in Germany and Switzerland for cancer treatment. However, until a clinical trial is done here in the United States, it cannot be offered to patients as standard of care. Studies in Europe have shown that mistletoe treatments along with a high alkaline diet are key components that can aid the body when fighting and overcoming cancer. The liquid extract of the mistletoe plant has been used as an alternative method to treat cancer for close to a century. Mistletoe injections are among the most widely used unconventional cancer treatments in Europe. In Europe, the most common commercial preparations are sold under the trade names Iscador and Helixor. Currently, only the European species of the mistletoe plant (*Viscum album*) is used for cancer.

Believe Big founder, Ivelisse Page, was cured of her stage 4 colon cancer by using mistletoe extract and a high alkaline diet. She is now 5 years cancer free. Clinical trials are typically funded by pharmaceutical companies but mistletoe is natural, so this is not an option. This is truly an historic event because this clinical trial is patient driven and
is being entirely funded by private donations. Currently only 50 Anthroposophic physicians are trained to treat with mistletoe in the U.S. ‘We have 90% of the money needed to start Phase I of the trial. We are thrilled to be taking the first steps towards a cure for this devastating disease,’ said Patty Buddemeyer, Assistant Director of Believe Big.

European oncologists have used extracts of mistletoe for the past 90 years. One study showed that individuals who took mistletoe extract in addition to their conventional treatment lived 40% longer. Currently, 1 out of every 3 oncologists in Germany prescribes mistletoe. Not only has mistletoe been found to diminish tumor-related pain, increase the immune response, prevent reoccurrence during the watchful waiting period, but it also offsets the terrible side affects of chemotherapy—nausea, vomiting, and lack of appetite.

Believe Big is a non-profit organization formed in 2011 to help families navigate the cancer journey by providing resources, direction and hope. Now Believe Big and Johns Hopkins are collaborating on a mistletoe clinical trial that brings the conventional and complimentary medical communities together. Johns Hopkins researchers say mistletoe treatment can change the way doctors go after cancer. 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 leading the clinical trial at Johns Hopkins. 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 an Anthroposophic 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 http://www.gofundme.com/believebig-mistletoeTrial.

Read the full story at http://www.prweb.com/releases/2014/02/prweb11548215.htm

Read more at:
http://www.digitaljournal.com/pr/1719032#ixzz2CLw025

Digital Journal, Baltimore, MD
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THESES


Abstract:
Lodgepole pine (Pinus contorta) forests are widely distributed throughout western North America. However, the lodgepole pine forests of central Oregon are ecologically unique to the region, with a mixed severity fire regime, low cone serotiny, and their presence as a climax species. Although much research has been conducted regarding the stand structure and disturbance regimes of lodgepole pine, most of the research regarding lodgepole pine has occurred in the intermountain west. Research findings from other geographical locations may not be applicable to central Oregon lodgepole pine forests, given their distinctive ecological attributes. Lodgepole pine forests are subject to three widespread disturbance regimes: mountain pine beetle, dwarf mistletoe, and fire. Although much is known about each of these disturbances in lodgepole pine, little is known about their interactive effects. These disturbances occur pervasively in lodgepole pine and are known to co-occur on the landscape, so their effects must be investigated and interpreted simultaneously. This thesis describes the combined influences of dwarf mistletoe and mountain pine beetle on stand structure, canopy fuels, and fire behavior in central Oregon lodgepole pine forests.

We randomly selected and sampled 39 0.075-hectare plots within 13 stands in the Deschutes National Forest in central Oregon. The plots varied from 0 to 4 in average dwarf mistletoe rating (DMR) and all had experienced a mountain pine beetle mortality event 21 to 28 years prior to sampling. In Chapter 2, we compared stand density, stand basal area, canopy volume, proportion of the stand in dominant/codominant, intermediate, and
suppressed cohorts, and average height and average diameter of each cohort, across the range of DMR. We found strong evidence of a decrease in canopy volume, suppressed cohort height, and dominant cohort diameter with increasing DMR. There was strong evidence that as DMR increases, proportion of the stand in the dominant/codominant cohort decreases, while proportion of the stand in the suppressed cohort increases. Structural differences associated with dwarf mistletoe create heterogeneity in this forest type and may have a significant influence on the productivity, resistance, and resilience of these stands. These findings show that it is imperative to incorporate dwarf mistletoe effects when studying stand productivity and ecosystem recovery processes.

In Chapter 3, we compared canopy base height, the fuel parameter that drives passive crown fire, and canopy bulk density, the fuel parameter that drives active crown fire, over the range of DMR to determine the effect of dwarf mistletoe on canopy fuels. We then used BehavePlus to model passive crown fire and active crown fire in our plots. We found strong evidence of a decrease in canopy base height with increasing DMR. There was suggestive evidence of decrease in canopy bulk density with increasing DMR, after accounting for stand density. The results of the fire behaviour modelling suggest that at low to moderate wind speeds, likelihood of passive crown fire increases with increased DMR. However, under more extreme weather (wind speeds >20 mph), the effect of dwarf mistletoe on passive crown fire potential was not shown to be important. The potential for active crown fire was extremely low in our plots, regardless of DMR. These findings show that dwarf mistletoe is having a significant effect on the potential for passive crown fire in lodgepole pine forests 21 to 28 years post-mountain pine beetle epidemic, and should be considered in future research regarding post-mountain pine beetle epidemic, and should be considered in future research regarding post-

Resistance of chickpea (Cicer arietinum) and tomato (Solanum lycopersicum) to field dodder (Cuscuta campestris). Hadas Miryamchik. MSc Thesis Hebrew University of Jerusalem July 2013. Supervisors Raruch Rubin and Yaakov Goldwasser

Summary
Field dodder (Cuscuta campestris Yunccker), is a worldwide troublesome above-ground holoparasite that sustains on plants and substantially reduces crop yields. Field dodder seedlings coil around host stems and leaves, produce pre-haustoria that establish a connection to the host plant by haustoria that penetrate and fuse into the host vascular tissues. The parasite then exploits the host plant by withdrawing assimilates and other solutes causing severe damage to the host plant.

At first I scanned a wide range of chickpea genotypes in order to reveal resistant genotypes to field dodder infection. Those genotypes were determined by using a parasitic development index set by visual parameters. Two genotypes which exhibited good tolerance to the parasite were found: the variety ‘ICCV 95333’ from ICRISAT and the Israeli variety ‘Hazera 4’ from ‘Hazera Genetics’. In addition- two dodder-resistant , ‘Heinz’ canning tomato varieties were included. Both genotypes were grown in pots sown with field dodder. In the resistant genotypes the parasite failed to penetrate the epidermis and the vascular systems of the host. We found that this phenomenon also occurs but at less intensity in secondary attachments obtained by placing coiling field dodder stem segments on the mature resistant chickpea and tomato host plants.

Anatomic sectioning and microscopic examination- This staining was carried out by the assumption that woody materials such as lignin contribute to the resistant mechanism in the resistant genotypes. Samples of tomato and chickpea stems infested by field dodder were collected and fixed in FAA, embedded in paraffin and in the end were sliced by microtome (Leica RM2245) at a thickness of 12 microns. The samples were stained in safrnin and fast green and then examined under a light microscope. I found that the internal structure of the stems was similar in the susceptible genotype and resistant genotype whether parasitized or non-parasitized with field dodder. These data suggest that the observed tolerance is due to factors in the outermost stem layer that separate the plant from the surrounding environment. In the resistant tomato genotype, pre-haustoria could not penetrate through the epidermis. Cells in the outer layer of the pre-haustoria turned black, which indicates cell death resulting from a HR (Hypersensitive Response) reaction at the contact area.

Image processing system LC-Polscope- This system was used in order to evaluate the cellulose fibers content. This image processing system helps calculate the Retardance parameter which indicates cellulose fiber layer thickness and density. I found that the resistance mechanism in tomato and chickpea is not associated with the thickness of the cellulose crystal structure in the stems.
Removal of the epicuticular layer and epidermis of the host plant - This experiment was carried out by applying a uniform layer of cellulose acetate dissolved in acetone on the plant stem or by fine cutting with a scalpel. The results suggest that those layers in chickpea and tomato plants may have a partial role in the mechanism of resistance. While working on this thesis I found that in some experiments the resistance phenomena decreased. So I decided to examine the influence of different environmental factors on the resistant phenomena and tried in parallel to increase the parasite control by combining the resistant genotype with selective herbicides as described below.

Environmental factors: temperature, day length and shading - Each of these factors was examined separately in a controlled Phytotron. High temperatures of 43/82 °C (day/night) negatively affected dodder germination, penetration and later on the development of attachments to the host. All the environmental factors affected the vitality of the host and thus indirectly affected the development of the attached parasite. A short day regime (8 light hours) influenced the development of chickpea plants by encouraging vegetative growth but did not affect the resistance mechanism to field dodder. Light intensity (shading) affected plant growth and development and as the shading increased, the vitality of the host plant reduced, resulting in a concomitant parasite-inhibited growth. These experiments that were conducted under controlled environment conditions did not reveal differences between susceptible and resistant genotypes. Although I could not detect a specific factor affecting the resistance phenomenon, it is likely that environmental factors influence host-parasite interaction. Further studies should focus on the interaction of these environmental factors in order to elucidate the role of environmental factors involved in this phenomenon.

In addition to the studies mentioned above I examined the effect of various herbicides including cell division inhibiting herbicides (pendimethalin, trifluralin, pronamid and isoxaben) and ALS (acetolactate synthase) inhibiting herbicides (imazapic, imazamox, sulfosulfuron and rimsulfuron) by direct application to field dodder seedlings, host foliage, and root application by drench to tomato and chickpea plants parasitized by dodder.

Cell division inhibitors applied directly to dodder seeds in Petri-dish experiments delayed dodder seedling early development, and inhibited their growth when applied post emergence on chickpea grown in pots. Pronamid direct application to germinating field dodder seedlings in Petri-dish experiments reduced dodder shoot length to about 40% of the untreated control. Post-emergence application of pronamid in pot experiments caused lesser damage to the parasitized chickpea host than to the non-parasitized control plants, probably due to the fact that some of the herbicide was drawn from the host by the parasite as the parasite employs a strong metabolic sink in host-parasite interactions. Nevertheless in some of the plants, after a short period I observed a regeneration of treated dodder. ALS- inhibiting herbicides did not inhibit the growth of germinating dodder seedlings when applied directly to the seeds in Petri dish. However, they were quite effective on dodder when applied on the host foliage or roots (by drench) to chickpea and tomato genotypes. The application of ALS-inhibiting herbicides on field dodder that did succeed to parasitize resistant tomato plants, in most cases significantly reduced field dodder weight in a higher manner then the reduction of field dodder weight parasitizing the susceptible tomato genotypes treated with the same herbicides. This was evident especially with the herbicide rimsulfuron. It seems that application of these herbicides on resistant genotypes results in better dodder control along with minimal damage to the host. In the majority of herbicides applied on dodder-parasitized chickpea and tomato plants we observed initial inhibition of field dodder but after a certain period stem regeneration occurred. Total parasite control was achieved only in imazapic application on tomato and chickpea plants.

The approach of combining repeated applications of reduced herbicide rates on resistant crop genotypes is promising, but further research is needed before implementing this approach safely and effectively under field conditions.

OTHER FORTHCOMING MEETING

5th International Conference on Alternative Methods of Crop Protection. Lille, France, 11-13 March, 2015. Sessions will include one on resistance and varietal selection.

For information contact AFPP, 42 rue Raymond Jaclard, F-94140 Alfortville. Email afpp@afpp.net. Website www.afpp.net.
In the inaugural issue of Haustorium (December 1978) the purpose of the newsletter was stated as serving ‘. . . a useful purpose in keeping workers in contact with each other and with research results which are not always readily available to all concerned.’ From the beginning, an emphasis of our newsletter has been to provide reviews of parasitic plant research, research that has grown exponentially in the more than 35 years we have published Haustorium.

In a continuing commitment since then, Chris Parker has assiduously searched archival and non-archival literature for Haustorium and with characteristic pith and clarity has written brief summaries that are published in each issue of the newsletter. On few occasions, he asks other experts to write them. These entries provide the world’s most extensive review of the literature on parasitic plants, a database of inestimable value for researchers. Recently, he collated all the published issues into two large, searchable pdf files. Issues 1 through 48 can be accessed at http://ww2.odu.edu/~lmusselm/haustorium/pdf/haustorium1-48.pdf and issues 49 through 64 at http://ww2.odu.edu/~lmusselm/haustorium/pdf/haustorium49-64.pdf! New issues will be added to the latter, as they are published.

We hope this resource will enhance the value and accessibility of this literature.

Lytton John Musselman, Old Dominion University

GENERAL WEB SITES

For individual web-site papers and reports see LITERATURE

For information on the International Parasitic Plant Society, current issue of Haustorium, etc. see: http://www.parasiticplants.org/ (N.B. currently a little out of date)

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

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

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

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

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

For information on the COST/STREAM conference see: http://streamisrael2013.wix.com/stream-israel-2013

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

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

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

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

For The Mistletoe Center (including a comprehensive Annotated Bibliography on mistletoes up to 1995, but apparently incomplete since then) see: http://www.rmrns.nau.edu/mistletoe/

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)

NEW ISSUES

A record 346 items are listed below. Those in bold are the editors’ (but mainly one editor’s) personal selection of the top twenty.


LITERATURE


Agbenin, N.O. 2014. Effect of aqueous extract of some plants on soil micro-fauna and micro-flora in vitro. Archives of Phytopathology and Plant Protection 47(2): 205-211. [High doses of Viscum album were somewhat toxic to a range of nematodes.]


Akinwale, R.O., Badu-Apraku, B., Fakorede, M.A.B. and Vroh-Bi, I. 2014. Heterotic Plants Research 7(45): 3332-3336. [Confirming anti-microbial activity in extracts of L. micranthus (= Leosystylus micranthus) and providing results from chemical analyses.]


grouping of tropical early-maturing maize inbred lines based on combining ability in Striga-infested and Striga-free environments and the use of SSR markers for genotyping. Field Crops Research 156: 48-62. [Correlation analyses showed that grouping using GD was more consistent with grouping based on SCA under Striga-free than under Striga-infested environments. The HSGCA method was the most effective in classifying early maturing maize inbreds under Striga-infested and Striga-free environments. A total of 4 and 8 inbred testers were identified under Striga-infested and Striga-free environments, respectively.]

Aksoy, E., Arslan, Z.F., Tetık, Ö. and Eymirli, S. 2014. Soil landscape and stand conditions in Cola attiensis in Côte d'Ivoire. International Journal of Biosciences (IJB) 4(5): 102-113. [Surveying the flora associated with the IUCN red-listed C. attiensis, a plant with valuable medicinal uses, and finding an association with the parasitic Okouba aubrevillei (‘Ochotonemataceae’ in the abstract but more correctly Santalaceae or Cervantesiaceae).]


Ančič, M., Pernar R., Bajić, M., Seletković, A. and Kolić, J. 2014. Detecting mistletoe infestation on Silver fir using hyperspectral images. iForest 7: 85-91. [Silver fir (Abies alba) is one of the most important commercial and ecological species in Croatia, and is damaged by Viscum album ssp. abietis. Surveying for mistletoe were used a hyperspectral scanner and spectral signatures for fir and mistletoe were obtained. The results were also confirmed by aerial surveying with a non-pilot aircraft from a height of ca. 30 m above the crowns.]

Armbruster, W.S., Shi XiaoQing and Huang ShuangQuan. 2014. Do specialized flowers promote reproductive isolation? Realized pollination accuracy of three sympatric Pedicularis species. Annals of Botany 113(2): 331-340. [Studies on P. densisipica, P. tricolor and P. dichotoma in China suggest that the specialized flowers of this group are unlikely to have increased the potential for reproductive isolation or influenced rates of speciation.]


Badu-Apraku, B., Fakorede, M.A.B. and Oyekunle, M. 2014. Agronomic traits associated with genetic gains in maize yield during three breeding eras in West Africa. Maydica 59(1): 49-57. [A review concluding that substantial progress has been made in breeding for cultivars with combined tolerance/resistance to the three stresses – Striga, drought and low nitrogen - during the past 22 years.]

Atera, E.A., Kondo, F. and Itoh, K. 2013. Evaluation of intercropping and permaculture farming system for control of Striga asiatica in maize, Central Malawi. Tropical Agriculture and Development 57(4): 114-119. [A cowpea intercrop reduced S. asiatica but failed to increase yield. ‘Permaculture’ (maize planted in the same plot with soybean, bambara bean, cotton, pigeon pea and marigold) reduced Striga and increased maize yield by 28%.

Austad, I. and Rydgren, K. 2014. Establishment of herb-rich hay-meadows. Results from a field experiment at the The Heiberg Collection-Sogn Folk Museum. Blytta 72(1): 3-18. [Rhinanthus minor among species used to enrich hay meadows and relatively easy to introduce.]


Arroyo, J.M., Munguia-Vega, A., Rodríguez-Estrella, R. 2014. Bascompte. J. 2013. Isolation of 18 microsatellite loci in the desert mistletoe Phoradendron californicum (Santalaceae) via 454 pyrosequencing. Applications in Plant Sciences 1(12): 1300048. [Concluding that levels of polymorphism are adequate for studies of diversity and fragmentation in natural populations of P. californicum. Cross-species amplifications in P. juniperinum and P. duguetianum only showed four markers that could be useful in P. duguetianum.]

Cistanche deserticola. International Proceedings of Chemical, Biological and Environmental Engineering (IPCBBEE) 50: 157-162. [Tests indicated that extracts of C. deserticola presented significant effect on the mouse spleen index, increasing the phagocytosis activity of macrophages and stimulating antibody-producing cell proliferation.]


Barbu, C. 2013. Radial increments distribution on silver fir trees’ stems affected by mistletoe (Viscum album L.) infection in the castle park in Lednice. Acta Universitatis Agriculturae et Silviculturae Mendelianae Brunensis 61(6): 1565-1574. [Assessing the levels of infection of Acer campestre and Tilia cordata by V. album in the Czech Republic and finding a general correlation with tree age and (lack of) tree vitality.]


Bellot, S. and Renner, S.S. 2014. The systematics of the worldwide endoparasite family Apodanthaceae (Cucurbitales), with a key, a map, and color photos of most species. Phytotaxa 36: 41-57. [Using morphological, nuclear 18S, and mitochondrial matR data, the taxonomy of Apodanthaceae was revised. The 36 names published in the family where reduced to ten biological species in two genera, Apodanes and Pilostyles. Berolinianche aethiopica is now recognized as Pilostyles aethiopica.]


Carballo-Ortiz, M.A. and Carlo, T.A. 2013. Resurrection of Dendropemon sintenisii (Loranthaceae): an endemic mistletoe from Puerto Rico. Phytotaxa 82(1): 1-6. [D. sintenisii was thought to be known only from its original collection in Puerto Rico in 1885 and Kuijt (2011) (see Haustorium 61) included it in D. caribaeus, but the authors have re-identified it as D. sintenisii.]
40 specimens as *D. sintenisii* that were collected in Puerto Rico from 1913 to 2012. They explain the taxonomic confusion and provide illustrations, information on morphology, distribution, host plants and an updated key of the 4 species found in Puerto Rico.

Cardoso, C. And 16 others. 2013. Natural variation of rice strigolactone biosynthesis is associated with structural variation and the deletion of two MAX1 orthologs. *PNAS* 111: 2379–2384.

Chaskda, A.A., Mwansat, G.S. and Ottosson, U. 2013. Implications of flower developmental stage, plant isolation and microclimatic condition on a hemiparasitic plant-avian pollinator interaction. *Journal of Natural Sciences Research* 3(15): 26-32. [Visits by pollinating birds in Nigeria are shown to be maximum when flowers of *Tapinanthus sessilifolius* are ripe but unopened. Higher temperatures decreased visits.]


Chen JiHang, Wong HoiShan and Ko KamMing. 2014. Ursolic acid-enriched Herba Cynomorii extract induces mitochondrial uncoupling and glutathione redox cycling through mitochondrial reactive oxygen species generation: protection against menadione cytotoxicity in H9c2 cells. *Molecules* 19(2): 1576-1591. [Herba Cynomorii (*C. songaricum*), is used for treating impotence in Chinese medicine and is also a popular health-promoting food, particularly in Inner Mongolia.]

Chen JiHang, Wong HoiShan, Leung HoiYan, Leong PouKuan, Chan WingMan, Chen Na and Ko KamMing. 2014. An ursolic acid-enriched *Cynomorium songaricum* extract protects against carbon tetrachloride hepatotoxicity and gentamicin nephrotoxicity in rats possibly through a mitochondrial pathway: a comparison with ursolic acid. *Journal of Functional Foods* 7: 330-341. [*C. songaricum*, is used for treating impotence in Chinese medicine. It is also a popular health-promoting food, especially in Inner Mongolia.]

Chen Rong, Zhang XinHua and Ma GuoHua. 2014. (Studies on parasitic relationship between *Santalum album* L. and leguminous plants.) (In Chinese) *Journal of Tropical and Subtropical Botany* 22(1): 53-60. [Showing that excellent hosts for *S. album* were *Calliandra haematocephala*, *Caesalpinia sappan*, *Acacia confusa*, *Erythrina corallodendron* and *Acacia mangium*, while *Dalbergia odorifera* and *Cassia surattensis* were intermediate and *Delonix regia*, *Ormosia pinnata*, *Leucaena leucocephala* and *Bauhinia blakeana* were unsuitable.]
referring to an older record (pre-1952) of Corallorrhiza trifida.


de Vega, C., Herrera, C.M and; Dötterl, S. 2014. Floral volatiles play a key role in specialized ant pollination. Perspectives in Plant Ecology, Evolution and Systematics 16(1): 32-42. [The volatiles 4-oxoisophorone, (E)-cinnamaldehyde, and (E)-cinnamyl alcohol were the most abundant compounds in Cytinus hypocistis flowers, attracting 4 ant pollinator species.]

Demey, A., Rütting, T., Huygens, D., Staelens, J., Hermey, M., Verheyen, K. and Boeckx, P. 2014. Hemiparasitic litter additions alter gross nitrogen turnover in temperate semi-natural grassland soils. Soil Biology & Biochemistry 68: 419-428. [Results support the hypothesis that litter from hemi-parasitic plants increases soil N availability more than non-parasitic litter, but contradicts the expectation that the hemiparasitic litter effect would be more pronounced in an oligotrophic system (involving a Pedicularis sp.) as compared to a mesotrophic one involving a Rhinanthus sp.]


Dicu, G., Teodorescu, E.A., Dumitrescu, N.C., Boaghe, N. and Ionita, M. 2011. Research regarding the virulence of broomrape parasite (Orobanche cumana Wallr.) in southeastern of Romania. Scientific Papers - Series A, Agriculture 54: 256-261. [While O. cumana races E and F have been well controlled by resistant varieties. Race G is proving more difficult and it is suspected that a new race G+ may have evolved, partially overcoming the resistance in variety PR64A71.]


Dimitrijević’, A., Pejović´, I., Imrovoški, I., Dedic´, B., Pajevíc´, S. and Miladinovic´, D. 2013. DNA isolation from dry samples of broomrape - the effect of isolation method and sample storage on DNA yield and quality. Romanian Agricultural Research 30: 349-357. [DNA isolation with DNeasy® Plant Mini Kit, Qiagen and a protocol by Rogers and Bendich (1985) could be recommended for future studies based on dried material of Orobanche cumana.]

Domina, G., Greuter, W., Marino, P. and Schäfer, P.A. 2013. Types of names of Orobanche taxa described from North Africa. Plant Biosystems 147(3): 758-766. [Accepted names and synonyms of the recognized taxa are given. Three species are illustrated, and one new combination (O. inexspectata) is proposed.]

Dong ShuQing, Gao RuiBin, Yang Yan, Guo Mei, Ni JingMan and Zhao Liang. 2014. Phelipanche aurea and (Pomegranate (Punica granatum) as host of the broomrapes Phelipanche aegyptiaca and Orobanche crenata in Israel. Plant Disease 98(6): 859. [A first report of Orobanche spp. on pomegranate.]

parasitises Notobasis syriaca and Cirsium phyllocephalum but is shown to be able to
parasitise safflower, lettuce, gazania (Gazania uniflora), vetch (Vicia sativa) and artichoke.
Sunflower, tomato, carrot, chrysanthemum and cabbage did not support the parasite.]

populations of Thesium ebracteatum at the edge of its distribution range. Conservation Genetics
15(1): 75-86. [Populations of the endangered T. ebracteatum in Central Europe occupying an
area greater than 300 m² showed high genetic diversity, whereas small populations contained
less genetic diversity. Conservation priorities are discussed.]

Duca, M., Glijin, A. and Acciu, A. 2013. The broomrape effect on some physical and mechanical properties of
[Reviewing the biology of Orobanche cumana.]

Drumeva, M., Yankov, P., Nenova, N. and Shindrova, P. 2014. Investigation on the
resistance of doubled haploid sunflower lines to some biotic factors. Agricultural Science and Technology 6(1): 11-13. [Gamma-
induced parthenogenesis was applied to 15 doubled haploid fertility restorer sunflower
lines. Seven lines showed resistance to Orobanche cumana (races A-F) and 4 of these were also resistant to downy mildew.]

Du You. Wei Min, Ma Zhao and Guo YuHai. 2013. Effects of paclobutrazol on growth
characteristics and dry matter distribution of Tamarix chinesis and Cistanche tubulosa.
Journal of China Agricultural University 18(6): 107-112. [Suggesting that paclobutrazol could
increase the dry matter of C. tubulosa by inhibiting plant height and improving net
photosynthetic rate of T. chinesis.]

effect of early-stage restoration plant species on recruitment of late-stage restoration species.
Aspects of Applied Biology 115: 151-156. [Sowing Rhinanthus minor at 10 kg/ha was
among treatments used in a study which concluded that the hypothesis that generalist
species used in the early stage of biodiversity restoration act as facilitators for the
establishment of late-stage habitat specialists, is wrong.]

Cameroonian dietary spices. BMC Complementary and Alternative Medicine 14: 58. [Oxal subscorpioides extract exhibited the
highest antifungal activity particularly against Candida albicans and C. tropicalis.]

Effiong, O.O., Udo, N.V. and Monday, E.N. 2014. Reduction in serum bilirubin concentration
following administration of crude leaf extract of Viscum album (Mistletoe) in high salt fed rats.
British Journal of Pharmaceutical Research 4(3): 352-361. [Concluding that oral administration of V. album reduces serum bilirubin concentration
in high salt fed animals.]

cultures of Rhizobium leguminosarum, Azotobacter chroococcum and compost tea as
biocontrol agents for faba bean broomrape (Orobanche crenata Forsk.). Journal of Plant
Pathology and Microbiology 4(1): 205. [Some reduction of O. crenata obtained (in Egypt) but
exact nature of treatment not clear.]

Encheva, J. 2013. Application of embryo culture method in combination with gamma irradiation
and ultra sounds (Part I). Helia 36(59): 71-83. [Mutation caused by gamma ray and ultra sound
respectively contributed to the paternal components of sunflower hybrids Rada and
Yana, each showing immunity to Orobanche cumana race G.]

fractions of Cuscuta campestris and two different hosts on peripheral blood mononuclear
cells and HIV replication. International Journal of Biosciences (IJBJ) 4(9): 83-89. [Concluding
that lutein and lupeol, in extracts of C. campestris (on hosts Alhagi muorum and
Calendula officinalis) are good candidates for proliferation of peripheral blood mononuclear
cells, and hence of interest in the treatment of HIV.]

Evans, B. and Borowicz, V. 2013. Verbascina alternifolia tolerance to the holoparasite Cuscuta
gronovii and the impact of drought. Plants 2(4): 635-649. [Parasitism by C. gronovii reduced
both shoot and root mass of V. alternifolia more.
strongly in well-watered conditions than those under drought stress, indicating reduced tolerance to parasitism when water was readily available.

Fadini, R.F., Mellado, A. and Ghizoni, L.P. 2014. A host creates an enemy-free space for mistletoes by reducing seed predation caused by a woodboring beetle: a hypothesis. Biotropica 46(3): 260-263. [An intriguing report suggesting that the beetle *Psitacanthus plagiophyllus* in Brazil, as it preys on the parasite seeds on non-host trees but avoids the main host tree (sadly un-named in the abstract) apparently because of its gum exudates.]


*Fant, J.B., Weinberg-Wolf, H., Tank, D.C. and Skogen, K.A. 2013. Characterization of microsatellite loci in *Castilleja sessiliflora* and transferability to 24 *Castilleja* species (Orobanchaceae). Applications in Plant Sciences 1(6): 1200564. [http://www.bioone.org/doi/full/10.3732/apps.1200564] [Twelve loci were identified in *C. sessiliflora* and found effective on 24 additional *Castilleja* species.]

Fernando, H.S.D. and Karunaratne, M.M.S.C. 2013. Mella (*Olax zeylanica*) leaves as an eco-friendly repellent for storage insect pest management. Journal of Tropical Forestry and Environment 3(1): 64-69. [Results confirm that the powder or methanol extracts of *O. zeylanica* act as repellants for the rice weevil *Sitophilus oryzae*.]


*Filella, I., Primante, C., Llusíà, J., González, A.M.M., Seco, R., Farré-Armengol, G., Rodrigo, A., Bosch, J. and Peñuelas, J. 2013. Floral advertisement scent in a changing plant-pollinators market. Scientific Reports 3(3434): srep03434. [http://www.nature.com/srep/2013/131205/srep03434/full/srep03434.html] [Showing that scent advertisement is higher in species that bloom early in the flowering period when pollinators are scarce than in species blooming later in the season (including *Orobanche latisquama*) when there is a surplus of pollinators relative to flowers.]


*García, M.A., Costea, M., Kuzmina, M. and Stefanovic, S. 2014. Phylogeny, character evolution, and biogeography of *Cuscuta* (dodders; Convolvulaceae) inferred from coding plastid and nuclear sequences. American Journal of Botany 101(4): 670-690. [This is the first phylogenetic study (using *rbcl* and *nrLSU*) of *Cuscuta* that sampled all recognized sections and subsections of the genus. After removing discordant taxa, 4 well-supported major clades were recovered. Ancestral state analyses showed dehiscent fruits and globose stigmas to be ancestral whereas style number was ambiguous. Biogeographical reconstructions suggest an Old World origin for the genus and subsequent spread to the Americas as a consequence of one long-distance dispersal.]

Gaudin, Z., Cerveau, D., Marnet, N., Bouchereau, A., Delavault, P., Simier, P. and Pouvreau, J.B. 2014. Robust method for investigating nitrogen metabolism of *15N*-labeled amino acids using AccQ.Tag ultra performance liquid chromatography-photodiode array-electrospray ionization-mass spectrometry: application to a parasitic plant-plant interaction. Analytical Chemistry (Washington) 86(2): 1138-1145. [Showing that young parasite tubercles assimilate inorganic N as *15N*-ammonium when supplied directly through batch incubation but not when supplied by translocation from host root phloem, whereas *15N*-glutamine mobility from host roots to parasite tubercles suggests that the host-derived glutamine acts as an important nitrogen-containing storage compound in the young tubercle of *Phelipanche ramosa*.]

commenting on the presence of mistletoe (presumably *Viscum album*) as a symptom, rather than a cause of crown decline.\n
Gebretsadik, R., Shimelis, H., Laing, M.D., Tongoa, P. and Mandefro, N. 2014. A diagnostic appraisal of the sorghum farming system and breeding priorities in *Striga* infested agro-ecologies of Ethiopia. Agricultural Systems 123: 54-61. [Noting the importance of resistance to *S. hermonthica* as a priority for farmers in several districts.]

Geminiani, E., Campagna, G. and Fabbri, M. 2012. (Verification of different ways of use of benfluralin, propyzamide and imazamox on new alfalfa stands.) (in Italian) Giornate Fitopatologiche 2012, Milano Marittima (RA), 13-16 marzo, 2012: 587-594. [Noting that ‘post-emergence applications of imazamox showed an interesting side action against *Cuscuta campestris*, optimizing the activity of preventive propyzamide-based treatments.]

Geminiani, E., Polo, A. and Fabbri, M. 2012 (Comparison among mixtures of residual herbicides for pre-emergence weed control in potato.) (in Italian) Giornate Fitopatologiche 2012, Milano Marittima (RA), 13-16 marzo 2012: 607-614. [Includes reference to *Cuscuta* sp. but no information in the abstract.]

Gnanasekar Sathishkumar, Chandrakasan Gobinath, Wilson, A. and Sivaperumal Sivaramakrishnan. 2014. *Dendrophthoe falcata* (L.f) Ettingsh (Neem mistletoe): a potent bioresource to fabricate silver nanoparticles for anticancer effect against human breast cancer cells (MCF-7). Spectrochimica Acta Part A: Molecular and Biomolecular Spectroscopy 128: 285-290. [In this study an aqueous leaf extract of *D. falcata* was employed as a reducing and stabilizing agent to fabricate nanosilver particles for biomedical applications which showed useful activity against human breast carcinoma cell line (MCF-7).]


Gu Li, Xiong WenTing, Wang Chao, Sun HongXia, Li GuoFu and Liu Xin. 2013. *Cistanche deserticola* decoction alleviates the testicular toxicity induced by hydroxyurea in male mice. Asian Journal of Andrology 15(6): 838-840. [Extracts of *C. deserticola* alleviated the spermatogenetic cell degeneration induced by hydroxyurea and modulated the serum sex hormone levels to some extent.]

Guerra, T.J. and Pizo, M.A. 2014. Asymmetrical dependence between a Neotropical mistletoe and its avian seed disperser. Biotropica 46(3): 285-293. [Concluding that the mistletoe *Struthanthus flexicaulis* in SE Brazil depends more on the main bird fruit disperser *Eluenia cristata*, responsible for 96% of its dispersal, than the bird depends on the mistletoe, which represents only 34% of its diet.]

Gutiérrez, N. and 14 others. 2013. QTLs for *Orobanche* spp. resistance in faba bean: identification and validation across different environments. Molecular Breeding 32(4): 909-922. [Seven QTLs for *O. crenata* were identified but differed between Spain and Egypt. Three QTLs for *O. foetida* were detected. Co-localization of Oc8 and Oj3 in chromosome V confirms a common resistance against both *O. crenata* and *O. foetida*, as previously reported.]


Hadizadeh, F., Mehrvarz, S.S. and Mirpour, M.S. 2014. Effect of *Bacillus* spp. on seed germination of selected species of the genus *Cuscuta* (Convolvulaceae). Modern Phytomorphology 6: 97-101. [Germination of *C. monogyna*, *C. europaea* and *C. campestris* was inhibited by *B. pumilus*, *B. megaterium* and *B. licheniformis*.]

types of non-glandular and 7 types of glandular trichomes are described from *E. stricta.*]  
He LiLi, Lv WenLiang and Sun GuiZhi. 2014. Nutritive value of winter-collected annual twigs of main European woody species, mistletoe and ivy and its possible consequences for winter foddering of livestock in prehistory. Holocene 24(6): 659-667. [Confirming the superior nutritive value of *Viscum album* (and *Hedera helix*) compared with other woody species.]  
Hemant Nagar, Tiwari, D.K., Gaurav Dwivedi, Tripathi, R.K. and Jitendra Jena. 2013. *Loranthus longiflorus* protect central nervous system against oxidative damages of electromagnetic radiation on rat. International Journal of Green Pharmacy 7(4): 328-331. [Claiming that *L. longiflorus* (in India) may protect the central nervous system against oxidative damage from mobile phone electromagnetic field.]  
Hou XiaolI, Sun MingXue, Gao HuanHuan, Cui Yan and Xiao Kai. 2013. Chemical constituents from the stems of *Dendrotroupe frutescens.* Biochemical Systematics and Ecology 51: 156-159. [Identifying 8 compounds including a furan-2-carbonyl C-glycoside together with a series of polyphenols and their glycosides.]  
Hu Yang, Tian ChengMing, Cairangdanzhou, Li ZhouYuan, Li Tao, Hu Yue and Li JiRun. 2014. (Spatial distribution pattern of *Arceuthobium sichuanense* and its correlation with environment in Xiamn forest region of Qinghai, northwestern China.) (in Chinese) Journal of Beijing Forestry University 36(1): 102-108. [Concluding that crown density, slope, slope position, elevation and stand type were the main factors dictating the frequency of *A. sichuanense.*]  
IITA. 2014. Research-for-development project chalks up significant progress to save maize from parasitic Striga weed in Nigeria. IITA The Bulletin No 2219:1. [Reporting on the...
Integrated Striga Management in Africa (ISMA) project being implemented in Nigeria and Kenya, funded by the Gates Foundation. See Press Release ‘Results show Africa can eradicate Striga’.

Inoue, T., Yamauchi, Y., Eltayeb, A.H., Samejima, H., Babiker, A.G.T. and Sugimoto, Y. 2013. Gas exchange of root hemi-parasite Striga hermonthica and its host Sorghum bicolor under short-term soil water stress. Biologia Plantarum 57(4): 773-777. [The higher transpiration rate of S. hermonthica even under water stress, thanks to higher stomatal density, induces continued transfer of water and solute from the host to the parasite leading to severe damage to the host.]

Ismail, A.E.A. 2013. Integration between nitrogen, manure fertilizers, cultural practices and glyphosate on broomrape (Orobanche crenata Forsk) control in faba beans (Vicia faba L.). Bulletin of Faculty of Agriculture, Cairo University 64(4): 369-378. [Field experiments involving 56 treatments repeated over two seasons supported the use of N fertilizer, and fenugreek inter-cropping, as alternatives to glyphosate which also gave good selective control.]


Jamil, M., Charnikhova, T., Verstappen, F., Ali, Z., Wainwright, H. and Bouwmeester, H.J. 2014. Effect of phosphate-based seed priming on strigolactone production and Striga hermonthica infection in cereals. Weed Research (Oxford) 54(3): 307-313. [A very interesting demonstration that seed priming with phosphate can result in lower exudation of strigolactones and less S. hermonthica seed germination and may hence be an effective and affordable strategy to reduce S. hermonthica infection in cereals. Further results awaited with interest.]


Jia YaMin, Guan QuNong, Jiang Yong, Salh, B., Guo YuHai, Tu PengFei and Du CaiGan. 2014. Amelioration of dextran sulphate sodium-induced colitis in mice by echinacoside-enriched extract of Cistanche tubulosa. Phytotherapy Research 28(1): 110-119. [Results support the potential of C. tubulosa extracts for clinically treating inflammatory bowel disease.]


Johri, P.K., Ruchita Tripathi and Reeta Johri. 2014. Testicular protein profile (SDS-PAGE) study of
tested reversible male antifertility and aphrodisiac polyherbal preparation fed albino rats with special reference to zinc deficiency. Biochemical and Cellular Archives 13(2): 277-279. [Santalum album among 24 aphrodisiac medicinal plants shown to have no undesirable toxic effects on testicular proteins.]

Joshi, P.N. and Soni, H.B. 2013. Host plants of Dendrophthoe falcata (L.F) Etinghsh. - a parasite plant in GSFC township, Vadodara, Gujarat, India. Lifesciences Leaflets 5(5): 50-59. [Recording some 35 host species of D. falcata and the birds associated with those hosts; confirming Nectaria spp. and Dicaeum spp. as the main seed-dispersers or pollinators for the mistletoe.]


*Jung HoeYune and 9 others. 2014. The Korean mistletoe (Viscum album coloratum) extract has an antiobesity effect and protects against hepatic steatosis in mice with high-fat diet-induced obesity. Evidence-based Complementary and Alternative Medicine 2013: Article ID 168207. (http://www.hindawi.com/journals/ecam/2013/168207/) [Confirming the inhibitory effects on obesity and non-alcoholic fatty liver disease in mice, apparently mediated through an enhanced mitochondrial activity.]


Kamara, A.Y., Ekeleme, F., Jibrin, J.M., Tarawali, G. and Tofa, I. 2014. Assessment of level, extent and factors influencing Striga infestation of cereals and cowpea in a Sudan Savanna ecology of northern Nigeria. Agriculture, Ecosystems & Environment 188: 111-121. [A survey in Jigawa State, showed that the severity of S. hermonthica attack on sorghum and millet was high in all the communities studied. Also, most cowpea plants in fields surveyed in most communities were attacked by S. gesnerioides. Field infestation was largely related to poor soil fertility.]


Kannan, C. and Zwanenburg, B. 2014. A novel concept for the control of parasitic weeds by decomposing germination stimulants prior to action. Crop Protection 61: 11-15. [Demonstrating that aqueous solutions of either borax or thiourea rapidly decompose typical strigolactone analogues, including GR 24 and Nijmegen-1, within an hour, suggesting a possible means of control in the field.]

Karanja, J., Njuluu, S.N., Wambua, J. and Gatheru, M. 2013. Response of cowpea genotypes to Alectra vogelii parasitism in Kenya. African Journal of Biotechnology 12(47): 6591-6598. [Cowpea yield losses due to A. vogelii have been estimated to range from 50 to 100% in Mbeere, Kitui and Makueni districts. Among 123 lines tested, Kir/Nya-005 and Mbe/Mach-022 showed complete resistance to Alectra. Sia/Cia-004, Mbe/Mach-014 and Kib-006 were tolerant giving high grain yields despite heavy infestation.]
Karaya, H., Njoroge, K., Mugo, S., Ariga, E.S., Kanampiu, F. and Nderitu, J. 2014. Combining ability of maize (Zea mays) inbred lines resistant to Striga hermonthica (Del.) Benth evaluated under artificial Striga infestation. African Journal of Agricultural Research 9(16): 1287-1295. [Results suggest a predominance of additive genetic effects in the inheritance of Striga resistance traits as opposed to dominance gene effects. Inbred lines with good GCA for yield and resistance traits were identified as TESTR 151, TESTR 156 and OSU231//56/44-6-4-17-3.]


Khalil, N.A.A., Dagash, Y.M. and Yagoub, S.O. 2013. Effect of sowing date, irrigation intervals and fertilizers on safflower (Carthamus tinctorius L.) yield. Discourse Journal of Agriculture and Food Sciences 1(5): 97-102. [Results were incidentally affected by serious infection of safflower with Orobanche crenata which was the first record in Sudan.]


Kołodziejek, J. and Kołodziejek, A. 2013. The spatial distribution of pine mistletoe Viscum album ssp. australiacum (Wiesb.) Volmann in a Scots pine (Pinus sylvestris) stand in central Poland. Polish Journal of Ecology 61(4): 705-714. [A survey of V. album in Scots pine showed 46% trees infected, including 3% severely. Parasitized trees were more prevalent in low-density stands than in high-density stands. Mistletoes occurred mainly on the outer branches within trees crowns.]


Kong XiangPei, Zhang MaoLin and Ding ZhaoJun. 2014. D53: the missing link in strigolactone signaling. Molecular Plant 7(5): 761-763. [A study of some new structures with strigolactone activity. They possess a common dimethylbutenolide motif but their structure varies in the ABC part of the molecules: one, ‘23’ has the same ABC part as GR24, while ‘31’ and AR36 carry, respectively, an aromatic ring and an acyclic carbon chain.]


Kouakou, C.K., Akanvou, L., Zoro Bi, I.A., N’Da, H.A. and Akanvou, R. 2014. The use of genetically tolerant maize (Zea mays L.) in the control of Striga hermonthica in Northern Côte d’Ivoire. American Journal of Experimental Agriculture 4(5): 563-574. [The yield of the Striga-tolerant IWD STR was reduced up to 60% by a range of 6 strains of S. hermonthica but were still 50% higher than the susceptible variety. Northern strains of S. hermonthica were more virulent than southern strains but strains from millet, sorghum or maize were equally tolerated.]


Kujić, J. 2013. A brief taxonomic history of neotropical mistletoe genera, with a key to the genera. Blumea 58(3): 263-266. [Contains the author’s perspective on the taxonomic history of Loranthaceae, Viscaceae, and the clematidaceous mistletoes (Misdendraceae not discussed). The key is the first published that incorporates all the small-flowered X=8 neotropical Loranthaceae genera, including the recently resurrected genera Peristethium and Passovia.]

Kumar, A.M. 2014. Recurrence of sandal spike disease in Karnataka - an alert. Current Biotica 7(4): 253-255. [Reviewing the occurrence of this phytoplasma disease in sandal (presumably Santalum album) in Karnataka.]


Kurt, G. and Tepe, I. 2014. (Determination of seed dispersal mechanisms of smoothseed alfalfa dodder (Cuscuta approximata Bab.) in Van.) (in Turkish) Yüzüncü Yıl Üniversitesi Journal of Agricultural & Environmental Sciences 13(12): 1622-1625. [In a 1999 study, the number of pods per plant of Striga-infested field at Samaru, Nigeria.]

Kwaga, Y.M. 2013. Direct and indirect contributions of yield attributes to the kernel yield of groundnut (Arachis hypogaea L.) grown under Alectra infestation at Samaru, Nigeria. American-Eurasian Journal of Agricultural & Environmental Sciences 13(12): 1622-1625. [In a 1999 study, the number of pods per plant exhibited the highest percentage yield contribution to kernel yield.]


LeBlanc, M., Kim, G.J., Patel, B., Stromberg, V. and Westwood, J. 2013. Quantification of tomato and *Arabidopsis* mobile RNAs trafficking into the parasitic plant *Cuscuta pentagona*. New Phytologist 200(4): 1225-1233. [Proposing that mRNAs traffic into *C. pentagona* via multiple routes, or that other mechanisms for selective uptake and mobility exist between host and parasite.]

Lee ShinHae, Kim InBo, Kim JongBae, Park DongHo and Min KyungJin. 2014. The development of microsatellite markers in the branched broomrape *Phelipanche ramosa* L. (Pomel) and evidence for host-associated genetic divergence. International Journal of Molecular Sciences 15(1): 994-1002. [Individuals collected on oilseed rape were strongly differentiated from individuals collected on hemp or tobacco, suggesting that *P. ramosa* infecting oilseed rape forms a genetically diverged race.]


Mapongmetsem, P.M. and Diksia, M. 2014. Vegetative propagation of local fruit trees by air layering in the Guinean Savannah Highlands (GSH). Journal of Sustainable Forestry 33(1): 21-32. [Reporting that rooting of layered *Ximenia americana* was lower than for some other woody species.]

Masciadi, S., Stutz, S. and García-Rodríguez, F. 2013. Modern pollen-vegetation relationship of plant communities in the Uruguayan Atlantic coast. Brazilian Journal of Botany 36(1): 31-44. [In a study of pollen capture by lakes (as a guide to palaeo studies), *Tripodanthus acutifolius* (Loranthaceae) was among good indicators of the coastal forest.]

activity against *Anopheles arabiensis* of 10 South African plants that are traditionally used as mosquito repellents. South African Journal of Botany 88: 86-89. [The bark extract of *Olax dissitiflora* exhibited the highest larvicidal activity and may have the potential to be used as a larvicide against *A. arabiensis*.]


Misra, B.B. and Satyahari Dey. 2013. Quantitative and qualitative evaluation of esquiterpenoids from essential oil and *in vitro* somatic embryos of east Indian Sandalwood (*Santalum album* tree by HPTLC and GC. Open Access Journal of Medicinal and Aromatic Plants (OAJMAP) 4(1): 1-9. [Meaning sesquiterpenoids?] Misra, B.B. and Satyahari Dey. 2014. Culture of East Indian sandalwood tree somatic embryos in air-lift bioreactors for production of santalols, phenolics and arabinogalactan proteins. AoB Plants 2013, plt025. (http://aobpla.oxfordjournals.org/content/5/plt025.full) [Results indicate that 10-L-capacity air-lift bioreactors are capable of supporting somatic embryo cultures of *Santalum album*, while the extracellular medium provides opportunities for production of industrial raw materials such as santalols, phenolics and arabinogalactan proteins.]


Molina, J. and 16 others. 2014. Possible loss of the chloroplast genome in the parasitic flowering plant *Rafflesia lagascae* (Rafflesiacae). Molecular Biology and Evolution 31(4): 793-803. [Illumina whole genome sequencing was used to generate a sequence which was assembled into a draft mitochondrial genome. Only fragments of plastid genes were detected
and one third of these were derived from the host via horizontal gene transfer. These data suggest *Rafflesia* lacks a plastid genome or, if it is present, it is in cryptic form at very low levels.]

Molinero-Ruiz, L., García-Carneros, A.B., Collado-Romero, M., Barancić, S., Domínguez, J., and Melero-Vara, J.M. 2014. Pathogenic and molecular diversity in highly virulent populations of the parasitic weed *Orobanche cumana* (sunflower broomrape) from Europe. Weed Research (Oxford) 54(1): 87-96. [Analyses of *O. cumana* populations confirmed race F present in Spain, Hungary and Turkey and race G also in Turkey. Populations within South Spain, Central Spain, Hungary and Turkey were each genetically uniform.]

Montejo Valdés, L.A., Muñoz, B.C., Sánchez, J.A. and Gamboa, A. 2014. (Seed variability among plant species from a tropical evergreen forest in Sierra del Rosario, Cuba.) (in Spanish) Bosque 35(1): 37-47. [Undeveloped embryos of rudimentary types, linear or capitative, were found in *Schoepfia didyma* (Olacaceae).]

*Morawetz, J.J. 2013 A clearing protocol for whole tissues: an example using haustoria of Orobanchaceae. Applications in Plant Sciences 1(1): 1200361. (http://www.bioone.org/doi/full/10.3732/apps.12-00361) [Stockwell’s bleach proved to be useful in removing tannins from haustoria within 3-10 days, after which they were successfully cleared in a solution of lactic acid saturated with chloral hydrate at 42°C.]

Moupela, C., Doucet, J.L., Daïnou, K., Tagg, N., Bourland, N. and Vermeulen, C. 2014. Dispersal and predation of diaspores of *Coula edulis* Baill. in an evergreen forest of Gabon. African Journal of Ecology 52(1): 88-96. [Camera-trap photographs have shown 7 animal species involved in the dispersal/predation of *C. edulis* (Olacaceae), bush pig being the main consumer and predator of seeds. No seeds emerged intact from elephant faeces.]

Mudrňák, O., Mládek, J., Blažek, P., Lepš, J., Doležal, J., Nekvapilová, E. and Těšíél, J. 2014. Establishment of hemiparasitic *Rhinanthus* spp., in grassland restoration: lessons learned from sowing experiments. Applied Vegetation Science 17(2): 274-287. [Concluding from a range of field studies in the Czech Republic that mowing or grazing, litter removal, proper timing of sowing, and use of the seeds from local seed sources should considerably increase probability of the successful introduction of *Rhinanthus*.]


Muniappan Ayyanar, Savarimuthu Ignacimuthu and Houghton, P.J. 2014. Threat status of medicinal plants used by the tribal people in Kalakad Mundanthurai Tiger Reserve, Southern Western Ghats, India. Proceedings of the National Academy of Sciences India. Section B, Biological Sciences 84(2): 419-429. [Noting the urgent need for conservation of plants used in traditional medicine; *Santalum album* among those ‘red-listed’.]


Musselman, L.J. 2013. Senna Seymeria. Chinquapin. The Newsletter of the Southern Appalachian Botanical Society 21(4): 27. [Describing *Seymeria cassinoides*, which can cause severe damage to pine species in USA, and the less common *S. pectinata* which has a wider host range.]


[Nikolov, L.A., Endress, P.K., Sugumaran, M., Sasirat, S., Vessabutr, S., Kramer, E.M. and Davis, C.C. 2013. Developmental origins of the world's largest flowers, Rafflesiaceae. Proceedings of the National Academy of Sciences of the United States of America 110(46): 18578-18583. [Comparative studies of structure, development, and gene-expression patterns were used to investigate the homology of floral organs in Rafflesiaceae. The diaphragm in Rafflesia is derived from the petal whorl whereas in Sapria it develops from a ring structure located between the perianth and the stamen whorl; thus these tissues are not homologous.]

[Nikolov, L., Staedler, Y., Manickam, S., Schönenberger, J., Endress, P., Kramer, E. and Davis, C.C. 2014. Floral structure and development in Rafflesiaceae with emphasis on their exceptional gynoecia. American Journal of Botany 101: 225–243. [Serial sectioning, SEM, and x-ray tomography of floral buds were employed to study the structure and development of all three Rafflesiaceae genera. The shoot apex of Rafflesiaceae forms secondarily via internal cell separation (schizogeny) along the distal boundary of the host-parasite interface. Similarly, the clefts of the gynoecium form via schizogeny within solid tissue, and no carpels are initiated from the floral apex. Secondary derivation of the inner gynoecium surface is otherwise unknown in angiosperms.]]


Pan ShaoBin, Wang Xiao, Duan WenJuan, Yu ZongYuan, Zhang Lin and Liu Wei. 2014. Preparative isolation and purification of flavonoids from Cuscuta chinensis Lam. by high-speed countercurrent chromatography. Journal of Liquid Chromatography & Related Technologies 37(15): 2162-2171. [Five flavonoids, quercetin-3-O-β-D-apiofuranosyl-(1-2)/β-D-galactoside, hyperoside, kaempferol-3-O-β-D-glucoside, kaempferol, quercetin, and...
chlorogenic acid isolated from the seeds of *C. chinensis.*

**Parker, C. 2014.** The continuing threat from parasitic weeds. *Outlooks on Pest Management* 25(3): 237-242. [Here he goes again – trying to scare us into thinking parasitic weeds are important! Reviewing the on-going menace from spread and/or intensification of *Striga, Orobanche, Alelecta, Cuscuta and Arceuthobium* spp. Nice pictures.]


Pelser, P.B. and Barcelona, J.F. 2013. Discovery through photography: *Amyema nickrentii,* a new species of Loranthaceae from Aurora Province, Philippines. *Phytotaxa* 125: 47-52. [*A. nickrentii* differs from all other described *Amyema* species in having a whorled leaf arrangement with mostly nine flat linear leaves per node. NB Congratulations to Dan on the second species to be named in his honour, the first being *Phoradendron nickrentii* (Kuijt, 2011, *Novon* 21:444-462).]


Pereira, R.N., Delistostianov, N., Perotta, J.H., Magalhães, G.M., Favoretto, S.M. and Alessi, A.C. 2014. Catuama and bilobalide on peripheral nerve regeneration in rats following sciatic nerve section. *Ciência Rural* 44(5): 860. [Extracts of *Ptychopetalum olacoides* (Olacaceae) is one of 4 components in 'Catuama', used in Brazil for its neuroprotector, anti-inflammatory, antioxidant and antidepressant effects. But not showing significant effect in this study.]


Pineda-Martos, R., Velasco, L. and Pérez-Vich, B. 2014. Identification, characterisation and discriminatory power of microsatellite markers in the parasitic weed *Orobanche cumana.* *Weed Research (Oxford)* 54(2): 120-132. [SSR markers showed high resolving power; UPGMA cluster analysis allowed proper classification of *Orobanche* spp. samples into species (*O. cumana* and *O. cernua*), geographical origin and host.]

Pop, C., Ranga, F., Fetea, F. and Socaciu, C. 2013. Application of three alternative technologies (spray drying, fluid bed drying and freeze drying) to obtain powdered formulas from plants with antimicrobial potential. *Bulletin of University of Agricultural Sciences and Veterinary Medicine Cluj-Napoca.* Animal Science and Biotechnologies 70(1): 95-103. [Spray drying and freeze drying were superior to fluid bed as techniques for preparation of extracts including those from *Viscum album.*]

Pop, C., Vodnar, D., Ranga, F. and Socaciu, C. 2013. Comparative antibacterial activity of different plant extracts in relation to their bioactive molecules, as determined by LC-MS analysis. *Bulletin of University of Agricultural Sciences and Veterinary Medicine Cluj-Napoca.* Animal Science and Biotechnologies 70(1): 86-94. [Extracts of *Viscum album* were active against *Escherichia coli.*]


Pride, J. and Williams, A. 2014. Using dazomet to reduce broomrape seed banks in soils with low moisture content. *Crop Protection* 59: 43-50. [Pot and field studies in Australia confirmed the effectiveness of dazomet for control of *Orobanche ramosa* but noted that it took longer to be effective under drier conditions.]

of Pharma and Bio Sciences 4(4): P-413-P-428. [A review including mention of Dwendrophthoe falcata.]


Quan JiShu, Jin MeiHua, Xu HuiXian, Qiu DeLai and Yin XueZhe. 2014. BRP, a polysaccharide fraction isolated from Spondias pinnata and Yin XueZhe. 2014. BRP, a polysaccharide fraction isolated from Spondias pinnata. Journal of Clinical Biochemistry and Nutrition 54(3):181-189. [Results suggest that a polysaccharide fraction isolated from B. rossica alleviates galactosamine/lipopolysaccharide induced liver injury by enhancing antioxidative defense system, suppressing inflammatory responses and reducing apoptotic signaling.]


Quan JiShu, Jin MeiHua, Xu HuiXian, Qiu DeLai and Yin XueZhe. 2014. BRP, a polysaccharide fraction isolated from Spondias pinnata. Journal of Clinical Biochemistry and Nutrition 54(3):181-189. [Results suggest that a polysaccharide fraction isolated from B. rossica alleviates galactosamine/lipopolysaccharide-induced liver injury by enhancing antioxidative defense system, suppressing inflammatory responses and reducing apoptotic signaling.]


Rahmad, Z.B., Addo-Fordjou, P., Asyraf, M., Fadzly, N. and Rosely, N. 2014. Mistletoe abundance, distribution and associations with trees along roadsides in Penang, Malaysia. Tropical Ecology 55: 255-262. [1431 mistletoes in 5 species, 4 genera and 2 families were identified. These were found on 29 tree species belonging to 24 genera and 13 families. The most abundant species was Scurrula ferruginea (718 individuals) followed by Dwendrophthoe pentandra (585 individuals).]


Robertson, O., Maron, M., Buckley, Y. and McAlpine, C. 2013. Incidence of competitors and landscape structure as predictors of woodland-dependent birds. Landscape Ecology 28(10): 1975-1987. [Abundance of the noisy miner is more important than other factors, including unspecified mistletoe abundance, in the decline of woodland bird diversity.]


mainly for maintaining plant water level and reducing water stress and the raised K status of the leaf played a significant role in this.

*Rumpf, S.B., Semenchuk, P.R., Dullinger, S. and Cooper, E.J. 2014. Idiosyncratic responses of high Arctic plants to changing snow regimes. PLoS ONE 9(2): e86281. (http://www.plosone.org/article/info%3Adoi%2F10.1371%2Fjournal.pone.0086281) [Reduced snow levels and earlier as well as later snowmelt had a negative effect on the average plant size of Pedicularis hirsuta.]

Rumsey, F. 2014. Orobanche crenata Forssk. (carnation-scented or bean broomrape) – a growing problem? BSBI News 125: 46-47. [An account of the outbreak of O. crenata in faba bean in UK last year with an outline of the previous history of the weed going back to 1950 in Essex, UK but not seen in that area since 2006 (until this year – see Update above).]

Sadananda, T.S., Govindappa, M. and Ramachandra, Y.L. 2013. Isolation and characterization of D-isolation and characterization of D-galactose, N-acetylglactosamine, fructose, maltose specific lectin from eight different endophytic fungi of Viscum album L. Asian Journal of Biomedical and Pharmaceutical Sciences 3(26): 11-20. [Confirming the presence of lectins in V. album and in a range of endophytic fungi including Aspergillus flavus, Fusarium moniliforme, F. oxysporum and Trichotheceum sp.]

Sakulnarmat, K., Srednicki, G. and Konczak, I. 2014. Composition and inhibitory activities towards digestive enzymes of polyphenolic-rich fractions of Davidson's plum and quandong. LWT - Food Science and Technology 57(1): 366-375. [A polyphenolic-rich fraction from the fruits of quandong (Santalum acuminatum) comprising quercetin and cyanidin 3-glucoside, was the most effective inhibitor of pancreatic lipase.]


Saric ’Krsmanovic’, M., Božic’, D., Pavlovic’, D., Radiovojevic’, L. and Vrbnčanin, S. 2013. Temperature effects on Cuscuta campestris Yun. seed germination. Pesticidi i Fitomedicina 28(3): 187-193. [Over 90% germination of acid-scarified seed of C. campestris was obtained at 25 and 30°C. Without scarification, germination was improved by stratification at 4°C for 30 days but did not exceed 40%.


Semercı̇, A. 2913. Economic analysis of sunflower production in the view of orobanche resistance conditions. Pakistan Journal of Agricultural Sciences 50(3): 499-504. [In a detailed economic analysis, O. cumana-resistant sunflower gave
higher yields and economic return than imidazolinone (IMI)-resistant or non-resistant sunflower in Thrace, Turkey. No indication of Orobanche control by IMI herbicide.]


Singh, L.J. and Vinay Ranjan. 2013. Dendrophthoe glabrescens (Blakely) Barlow (Loranthaceae) - an addition to the flora of Tamil Nadu, India. Indian Journal of Forestry 36(4): 523-524. [Including illustrations.]


Smith, R.G. and Cox, D.A. 2014. Effects of soil amendments on the abundance of a parasitic weed, yellow rattle (Rhinanthus minor) in hay fields. Weed Science 62(1): 118-124. [Amending hay fields with wood ash or sawdust may be an effective strategy for managing R. minor infestations which are becoming increasingly problematic in fields in the northeastern United States.]


Soudzilovskaia, N.A., Elumeeva, T.G., Onipchenko, V.G., Shidakov, I.I. Salpagonova, F.S., Khubiev, A.B., Tekeev, D.K. and Cornelissen, J.H.C. 2013. Functional traits predict relationship between plant abundance dynamic and long-term climate warming. Proceedings of the National Academy of Sciences of the United States of America 110(45): 18180-18184. [Pedicularis comosa and P. caucasica among species studied from which it is concluded that In this mountain belt, traits that promote conservative leaf water economy (higher leaf mass per area, thicker leaves) and large investments in belowground reserves to support next year’s shoot buds (root carbon content) were the best predictors of the species increase in abundance along with temperature increase.]

Stavi, I., Silver, M. and Avni, Y. 2014. Latitude, basin size, and microhabitat effects on the viability of Acacia trees in the Negev and Arava, Israel. Catena, 2014, 114, 149-156. [Including observations on Plocosepalus acaciae which occurred in 8% Acacia spp. A. radiana, A. tortilis, and A. pachyclados.]

Stöckel, M., Těšitelová, T., Jersáková, J., Bidartondo, M.I. and Gebauer, G. 2014. Carbon and nitrogen gain during the growth of orchid seedlings in nature. New Phytologist 202(2): 606-615. [Concluding that partial mycoheterotrophy among saprotroph-associated orchids cannot be identified unequivocally based on C and N isotope compositions alone. Thus, partial mycoheterotrophy may be much more widely distributed among orchids than hitherto assumed.]


Sui XiaoLin, Li AiRong, Chen Yan, Guan KaiYun, Zhuo Lu and Liu YanYan. 2014. Arbuscular mycorrhizal fungal: potential biocontrol agents against the damaging root hemiparasite Pedicularis kansuensis? Mycorrhiza 24(3): 187-195. [Showing that P. kansuensis which causes loss of herbage yield in China, can be suppressed by the AM fungus Glomus mosseae with significant benefit to the host Elymus nutans.]

Sulborska, A., Konarska, A. and Chmielewski, P. 2014. Morphology and histochemistry of glandular trichomes of Orobanche alsatica Kirschl. Modern Phytomorphology 6: 21. [Hosts of O. alba in Poland include Tymus polytrichus, Clinopodium vulgare and Origanum vulgare. The peltate glandular trichomes were composed of one basal epidermal cell, 1-3 hyaline stalk cell, a neck cell and a globose head formed of 8-18 secretory cells in a circle.]


Sun SiSheng, Chen XiaoMei and Guo ShunXing. 2014. Analysis of endophytic fungi in roots of Santalum album Linn. and its host plant Kunhia rosmarinifolia Vent. Journal of Zhejiang University (Science B) 15(2): 109-115. [Surveying the wide, but different, ranges of endophytic fungi found in S. album and K. rosmarinifolia.]


Wallace, L.E. and Oja, T. 2014. Population genetic diversity and species relationships in the genus Rhinanthus L. based on microsatellite markers. Plant Biology 16(2): 495-502. [Microsatellite primers used to show that R. javorkae and R. minor were genetically most differentiated. Section Cleistolemus is weakly structured genetically, indicating close affinity between R. osiliensis, R. rameicus, R. wagneri and R. angustifolius.]


Teklay Abebe, Hadas Beyene and Yemane Nega 2013. Distribution and economic importance of broomrape (Orobanche crenata) in food legumes production of south Tigray, Ethiopia. eScien Journal of Crop Production 2(3): 101-106. [An alarming description of the increasing threat from O. crenata in Tigray, Ethiopia, where a random survey indicated 30-80% of faba bean crops infested. Farmers are having to give up growing legumes with detriment to the crop rotation and local diets. It is believed the original introduction was via contaminated food aid, while local spread occurs via contaminated seed in markets, and via farm machinery.]


Tennakoon, K.U., Chak, W.H., Lim, L.B.L. and Bolin, J.F. 2014. Mineral nutrition of the hyperparasitic mistletoe Viscum articulatum Burm. f. (Viscaceae) in tropical Brunei Darussalam. Plant Species Biology 29(1): 101-107. [Studying V. articulatum, hyperparasitic on the primary parasite Dendroptphoe curvata, parasitic on Mangifera indica; and V. articulatum, hyperparasitic on Macrosolen cochinichensis, parasitic on Durio zibethinus. V. articulatum had consistently higher contents of all major and minor elements compared to the primary parasite and the tree host branch. The primary parasite had lower contents of Cu, Mg, Mn, N, and Z than the tree host branch, suggesting nutritional stress applied by the hyperparasite. P and K increased from tree host, to primary mistletoe, and finally the hyperparasitic.]

Thorogood, C.J. and Hiscock, S.J. 2014. Field Guide to the Wild Flowers of the Algarve. Royal Botanic Gardens, Kew. 280 pp. [A comprehensive identification guide to over 1000 species of the Algarve region of southern Portugal. There are no keys but it is richly illustrated with photographs and hundreds of superb additional line drawings to emphasise differences between species. Including a wide range of parasitic speceis (see text item above). Highly recommended.]


Torres-Vera, R., García, J.M., Pozo, M.J. and López-Ráez, J.A. 2014. Do strigolactones contribute to plant defence? Molecular Plant Pathology 15(2): 211-216. [A strigolactone-deficient tomato line was more susceptible to Botrytis cinerea and Alternaria alternata, apparently due to interaction with the jasmonic signal pathway.]

Trestić, T., Mujezinovic, O., Čabaravdic, A. and Muratagic, I. 2013. (Impact of micro-locality factors to the intensity of infestation of silver fir trees with white mistletoe.) (in Croatian) Sumarski List 137(11/12): 575-582. [Finding that the level of shading is the main factor modifying intensity of Viscum album in silver fir in Croatia.]

Tröger, W., Galun, D., Reif, M., Schumann, A., Stankovic, N. and Milic’evic, M. 2013. Viscum album [L.] extract therapy in patients with locally advanced or metastatic pancreatic cancer: a randomised clinical trial on overall survival. European Journal of Cancer 49(18): 3788-3797. [Findings suggest V. album extract to be a non-toxic and effective second-line therapy that offers a prolongation of overall survival as well as less disease-related symptoms for patients with locally advanced or metastatic pancreatic cancer.]

Türkseven, S., Molaei, P., Nemli, Y., Keçecioğlu, O. and Aksan, E. 2013. (The effect of solarization and some fumigants on broomrape (Phelipanche ramosa (L.) Pomell/P. aegyptiaca (Pers.) Pomel) in tomatoes greenhouses.) (in Turkish) Ege Universitesi Ziraat Fakültesi Dergisi 50(3): 285-289. [Lodometane and methamsodium reduced P. ramosa by over 90%. Solarization was 77% effective alone, and slightly increased effects of fumigant.]


[The early branching clades of Euphorbiaceae s.l. are here recognized as two monophyletic families: Peraceae and Rafflesiaeaceae.]

Varga, I., Baltazár, T. and Pejchal, M. 2013. Optimisation of growing conditions of European mistletoe hyperparasitic fungus (Phaeobotrysphaeria visci); effect of different media and antibiotics. Acta Horticulturae et Regiotecturae 16(2): 44-47. [Oatmeal agar and potato-dextrose agar were found suitable to maintain the fungus, while all tested antibiotics are useful, except nystatin.]

Varga, I., Baltazár, T. and Poczai, P. 2014. (Effect of different solid and liquid media on the growth of the hyperparasitic fungus (Phaeobotrysphaeria visci) on European mistletoe (Viscum album).) (in Hungarian) Növényvédelem 50(5): 214-224. [Exploring the optimum means of propagating P. viscid as a potential biocontrol agent for control of V. album.]

Vivek Sharma, Gupta, R.C., Santosh Bala and Bikram Singh. 2013. New chromosome number reports in some medicinally important angiosperms of North India. Cytologia 78(3): 285-296. [Reporting chromosome numbers for Euphrasia himalaica (2n=22) and Pedicularis longiflora (2n=14).]

*Vogl, S. and 14 others. 2013. The herbal drug Melampyrum pratense L. (Koch): isolation and identification of its bioactive compounds targeting mediators of inflammation. Evidence-based Complementary and Alternative Medicine 2013: Article ID 395316. (http://www.hindawi.com/journals/ecam/2013/395316/) [Results validate the e ethnomedical use of M. pratense in Austria for the treatment of inflammatory conditions and point to the active compounds being the flavonoids apigenin and luteolin.]

Wang GuangYan, Han Xi, Meng Ying and Yang YongPing. 2013. Cytogeographical study on Pedicularis longiflora from the Qinghai-Tibetan Plateau, China. Guangxi Zhiwu / Guihai 33(5): 657-662, 650. [All 9 populations of P. longiflora had chromosome numbers of 2n=16. Relationship with populations in Yunnan and Qinghai is discussed.]

Wang TianJing, An Jin, Chen XiaoHui, Deng QiuDi and Yang Liu. 2014. Assessment of Cuscuta chinensis seeds' effect on melanogenesis: comparison of water and ethanol fractions in vitro and in vivo. Journal of Ethnopharmacology 154(1): 240-248. [Exploring the contrasting effects reported for C. chinensis – it may be used to treat freckles and melasma in Asia, while it can also promote melanogenesis – and concluding that there are differences between water and ethanol fractions.]


*Weissenstein, U., Kunz, M., Urech, K. and Baumgartner, S. 2014. Interaction of standardized mistletoe (Viscum album) extracts with chemotherapeutic drugs regarding cytostatic and cytotoxic effects in vitro. BMC Complementary and Alternative Medicine 14(6): (8 January 2014) [http://www.biomedcentral.com/1472-6882/14/6] [Results suggest no interference or safety risk when V. album extracts are combined with standard chemotherapy drugs applied to a range of cancer cell and at higher doses the extracts showed additive effects.]

White, D. W., A. J. Alversor, A. O. Richardson, G. J. Young, M. V. Sanchez-Puerto, J. Munzinger, K. Barry, J. L. Boone, Y. Chang., C. W. dePamphilis, E. B. Knox, J. D. Palmer. 2014. Horizontal transfer of entire genomes via mitochondrial fusion in the angiosperm Amborella. Science 342: 1468-1473. [Amborella trichopoda is ancestral to all flowering plants and is endemic to New Caledonia. Through the process of lateral gene transfer, vast amounts of genetic material from algae, fungi, mosses, and parasitic angiosperm have been incorporated into Amborella. The Santalalean families are well represented in New Caledonia and have contributed considerable genetic material.]

Wicke, S., Müller, K.F., de Pamphilis, C.W., Quandt, D., Wickett, N.J., Zhang, Y., Renner, S.S. and Schneeweiss, G.M. 2013. Mechanisms of functional and physical genome reduction in photosynthetic and nonphotosynthetic parasitic plants of the broomrape family. Plant Cell 25(10): 3711-3725. [Describing the changes in the chloroplast genome in plants that specialise in parasitism., specifically those in Orobanchaceae including Conopholis americana. With the loss of the need of photosynthesis many chloroplast genes are lost resulting in very small chloroplast genomes. Interestingly, also intact genes are still found in the chloroplasts and are conserved among different parasites, such as ATP synthease. The loss or retention of chloroplast genes seems to depend both on function and organisation of the chloroplast genome.]

Wilson, B.L., Brainerd, R.E. and Otting, N. 2014. Identification and taxonomic status of Cordylanthus tenuis subsp. pallescens (Orobanchaceae). Madroño 61(1): 64-76. [Recommending that the name C. tenuis. ssp. pallescens should be restricted to populations of this Californian rarity in which all or most plants have the combination of traits expected of this taxon, including yellow-green foliage, four to eight flowers per cluster, and short, mostly non-glandular calyx hairs.]


Wu Zhi, Guo Qiang, Li MingGuang, Jiang Lu, Li PengLan, Zan QiJie and Zhang Jie. 2013. Factors restraining parasitism of the invasive vine Mikania micrantha by the holoparasitic plant Cuscuta campestris. Biological Invasions 15(12): 2755-2762. [For maximum effectiveness as a biological agent for M. micrantha (a severe problem in S. China) C. campestris must be within 4 cm of M. micrantha stems more than 3 mm in diameter.]

Xing YaChao. Liao Jing, Tang YingZhan, Zhang Peng, Tan ChengYu, Ni Hui, Wu XueQin, Li Ning and Jia XiaoGuang. 2014. ACE and platelet aggregation inhibitors from Tammarix hohenackeri Bunge (host plant of Herba Cistanche) growing in Xinjiang. Pharmacognosy Magazine 10(38): 111-117. [Studying the active flavonoid components in T. hohenackeri but not clear what relevance this has as the host of Cistanche spp.]

and dyslipidemia in diabetic mice, without, however significantly affecting serum insulin levels or hepatic and muscle glycogen levels.]

Yang ChunFeng, Wang QingFeng and Guo YouHao. 2013. Pollination in a patchily distributed lousewort is facilitated by presence of a co-flowering plant due to enhancement of quantity and quality of pollinator visits. Annals of Botany 112(9): 1751-1758. [Pollination of Pedicularis densisipica was higher when in mixture with Astragalus pastorius, as a result of increased numbers of Bombus spp. and differential placement of pollen on the bee.]

Yıldırım, S. and Tepe, I. 2014. (Distribution and impairment, dementia, and stress.)

Yu WenBin, Kuss, P., Wang Hong, Ree, R.H. and Yu WenBin, Wang Hong and Li DeZhu. 2013. Proposal to conserve the name Pedicularis densisipica (Orobanchaceae) in Turkey. Plant Systematics and Evolution 300(5): 783-802. [Reporting a study of 40 species of Cistanche, Diphelypaea, Orobanche and Phelipanche native to Turkey. Some characters are significant at the levels of genera and sections and results support the division of the two genera, Phelipanche and Orobanche.]


Zare, G., Dönmez, A.A. and Dönmez, E.O. 2014. Pollen morphology and evolution in the genus Orobanche L. s.l. and its allied genera (Orobanchaeae/Orobanchaceae) in Turkey. Plant Systematics and Evolution 300(5): 783-802. [Transcriptome screening revealed that a strictosidine synthase-like (SSL) gene in the root parasitic plant O. aegyptiaca and the shoot parasitic plant C. australis showed much higher sequence similarities with those in Brassicaceae than with those in their close relatives, suggesting independent gene horizontal transfer events from Brassicaceae to these parasites. Also, the foreign genes may still retain certain functions in the recipient species.]

Zhang DaLe and 12 others. 2014. Root parasitic plant Orobanche aegyptiaca and shoot parasitic plant Cuscuta australis obtained Brassicaceae-specific strictosidine synthase-like genes by horizontal gene transfer. BMC Plant Biology 14(19): 14 pp. (http://www.biomedcentral.com/content/pdf/1471-2229-14-19.pdf) [Transcriptome screening revealed that a strictosidine synthase-like (SSL) gene in the root parasitic plant O. aegyptiaca and the shoot parasitic plant C. australis showed much higher sequence similarities with those in Brassicaceae than with those in their close relatives, suggesting independent gene horizontal transfer events from Brassicaceae to these parasites. Also, the foreign genes may still retain certain functions in the recipient species.]

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