

## REPORT

### 13TH IUFRO CONFERENCE ON ROOT AND BUTT ROT OF FOREST TREES ITALY, SEPTEMBER 4–11, 2011

The 13th International Conference on Root and Butt Rot of Forest Trees (IUFRO Working Party 7.02.01) took place in Florence and San Martino di Castrozza (Trento), Italy, on September 4–11, 2011. It was organized by Prof. Paolo Capretti (University of Florence, Italy) and Dr. Nicola La Porta (Fondazione Edmund Mach – Istituto Agrario di San Michele all’Adige).

The conference was attended by about 100 participants, from all over the world, with the Polish group consisting of six researchers (Phot. 1).

The majority of lectures (over 80) presented considered *Heterobasidion* and *Armillaria* root rot. The presentations were focused, similarly to the 12th conference (Mańka 2007), on:

1. Genomics and plant–pathogen interactions.
2. Systematic, taxonomy and phylogeography.
3. Ecology.
4. Population genetics.
5. Aetiology and epidemiology.
6. Disease management and control.
7. New reports, diagnostics, and research applications of diagnostic methods.

The conference included both lecture sessions and field trips, and an extremely interesting Pre-Conference Field Trip “North American *Heterobasidion irregulare* spreading in Italy” on September 3rd.

A session on North American species of a severe pathogen of tree roots and butts – *Heterobasidion irregulare* spreading in Italy for the past several years was organized by Dr. Emma Motta (Centro di Ricerca per la Patologia Vegetale, CRA-PAV, Roma) and Prof. Paolo Capretti (University of Florence, Italy). Dr. Motta (Phot. 2) and her group have worked on *H. irregulare* in the coastal area for over ten years and the story of research itself and even more – of the fungus itself, proved very interesting and even dramatic. The story was presented in the forest and then in two presentations at the Florence session of the conference. Based on the presentations, it is as follows:

In 2000 a study on *Heterobasidion annosum* started (Motta et al. 2011) in Castel Fusano (Rome) in *Pinus pinea* stands after the fire (July 4th, 2000). The pinewood needed an important post-fire reclamation and thinning in nearly 500 ha. About



Phot. 1. Polish group in San Martino di Castrozza – from the left: Dr. Monika Małecka, Prof. Małgorzata Mańka, Prof. Hanna Kwaśna, Dr. Wojciech Szewczyk, Dr. Anna Żółciak and Prof. Piotr Łakomy



Phot. 2. Dr. Emma Motta presenting the results on North American *Heterobasidion irregulare* in Castelporziano pinewoods (photo by M. Mańka)

that time the presence of North American isolates of type P *Heterobasidion annosum* (NAM-P) was recorded in the neighbouring Castelporziano pinewoods. The species is known as *H. irregulare* and was most possibly introduced to Italy during World War II. Under the circumstances the researchers developed in Castel Fusano pinewood a new study in order to examine the kind and quantity of the airborne spores and to protect the stumps during thinning. It resulted in a surprising finding: all isolates studied (over 300) were *H. irregulare* (Phot. 3) and there was no interruption in spore production there. Less spores were produced in late spring-summer (with maximum temperature of 34°C) and three times more spores were produced in autumn-winter (with minimum temperature -2°C). Biological control of *H. irregulare* with a native isolate of *Phlebiopsis gigantea* proved successful, but the question about the pathogen presence in the neighbouring area was still hot. So, a survey was carried out to know the state of pinewoods in Lazio Region [fruit bodies, wood-disk traps, isolate characterization with mitochondrial DNA (mt-DNA) and pairings]. *Heterobasidion irregulare* isolates collected in five studied locations showed a poor genetic variability (low number of mating alleles) which pointed to one or few introductions only.

Further research covered the area of Rome. Objects varying from the point of view of pine species and age, localisation and stand character were taken into consideration: coastal pinewoods, *Fregene* (Rome) – 120/150-year-old *P. pinea* in urban park, *Rome* – *P. pinea* and *P. halepensis* in historical villas, *Anzio* (Rome) – 70/90-year-old *P. pinea* in private plantation, *Sabaudia* (Latina) – 60/90-year-old *P.*



Phot. 3. Basidiocarp of *Heterobasidion irregulare* on *Pinus pinea* stump (photo by M. Mańka)

*pinea* in National Park of Circeo and pines in littoral dunes, *Acquapendente* (Viterbo) – 40-year-old *P. nigra*, *P. pinaster*, *P. strobus* in Natural Reserve of Monte Rufeno, Itri (Latina) – 60/70-year-old *P. pinea*, *P. pinaster*, *P. halepensis*, *P. nigra* in Regional Park of Monti Aurunci.

The analyses of mitochondrial DNA showed that at least two separate introductions of *H. irregulare* must have had place.

It is supposed that it happened in the 1943–1944 when the U.S. Army landed in the coast there and its supplies, materials and equipment were contained in woody crates, at landings and during outdoor storage. Such materials had long stayed in contact with soil and trees.

After Salerno and Anzio landings (1943–1944), guns and armoured cars were often camouflaged under the tree canopy and army rest areas were settled at Sabaudia and in many other places near the coast.

After *in vitro* and *in vivo* tests, some differences in the behaviour of *H. irregulare* and *H. annosum* were found. The authors concluded that:

- *H. irregulare* is a tireless spore producer,
- *H. irregulare* grows (*in vitro* and in *P. pinea* seedlings) faster than *H. annosum*,
- *H. irregulare* is more efficient in penetrating *P. pinea* seedlings than *H. annosum*,
- *H. irregulare* damages pines in areas where *H. annosum* never established itself (dunes),
- *H. irregulare* can infect pine species never attacked by *H. annosum* in Mediterranean area (*P. halepensis*).

At present *H. irregulare* is well-established in coastal pinewoods, even much better than the native species, coming from regions with cooler and moister climate. *Heterobasidion irregulare* was never detected in the inland. Most probably, because it was never introduced there, there was no “suitable” inland pinewood in 1943–1944, neither long stays of infected army materials that would allow infections inland. The problem is being investigated now. It is an interesting instance of possible introduction of a new pathogen species that may be more expansive than the local one, having a chance to effect the local forest ecosystem with time.

At the Business Meeting closing the 13th IUFRO Conference the participants decided the 14th Conference of the IUFRO Working Party 7.02.01 will be held in Turkey in 2015.

## Literature

- Mańka M., 2007: 12th IUFRO Conference on Root and Butt Rots of Forest Trees, USA August 12–19, 2007. *Phytopathol. Pol.* 46: 67–71.
- Motta E., D’Amico L., Annesi T., Scirè M., 2011: *Heterobasidion irregulare* in central Italy: where have we got to? In: III Conference “Root and Butt Rot of Forest Trees” IUFRO Working Party 7.02.01. September 4th–10th 2011, Firenze – Auditorium di S. Apollonia, S. Martino di Castrozza, Palazzo Sass Maor (Trento) Italy. Conference programme and abstracts.

Małgorzata Mańka