similar to that used by Parry and coworkrs taking as reference a tow-row barley cultivar artificially inoculated in an experimental field. This rating scale can be useful also to the breeders to evaluate the different susceptibility of barley cultivars.

OCCURRENCE OF *PHYTOPHTHORA RAMORUM* IN TUSCAN NURSERIES: RESEARCH EFFORTS TO FACE THIS SERIOUS THREAT. B. Ginetti, S. Carmignani, A. Ragazzi and S. Moricca. *Dipartimento di Scienze delle Produzioni Agroalimentari e dell'Ambiente, Sezione di Patologia Vegetale ed Entomologia, Piazzale delle Cascine 28, 50144 Firenze, Italy. E-mail: beatrice.ginetti@unifi.it*

Phytophthora ramorum, the quarantine pathogen agent of "sudden oak death", is responsible for the extensive mortality of a number of plant species in the northern hemisphere. This oomycete induces bleeding cankers on trees and leaf necrosis and aerial twig dieback on ornamental shrubs. The microorganism was recently found on *Viburnum tinus* plants in a nursery of ornamentals in Pistoia (Tuscany, central Italy). Symptoms on *V. tinus* include shoot folding and blight, brown-bronze lesions on petioles and leaves. On the leaf lamina, lesions extend from the petiole towards the midrib or develop from the tip and the edge. Difficulties inherent to a proper identification of the microorganism could cause its uncontrolled spread in the area, both in nurseries and on the local flora. If this would happen, the damage would be incalculable for the nursery industry and the environment. We have developed conventional and molecular methods for the accurate and reliable identification of the pathogen. These assays are helping the regional Plant Protection Services with the identification of the oomycete in suspected areas and nurseries. Our diagnostic protocols have greatly enhanced pathogen monitoring efforts and enable prompt action of the authorities for its eradication. Such research achievement could help safeguarding forests as well as the economy of nursery activities in the Pistoia district. It is a known fact that many countries have decided of no longer importing a wide range of species and varieties of ornamentals from areas were *P. ramorum* is known to occur epidemically.

EFFECT OF VOLATILES PRODUCED BY ANTAGONISTIC RHIZOBACTERIA ON *ARABIDOPSIS THALIANA* GROWTH. A. Giorgio[1], P.A.H.M. Bakker[2] and N.S. Iacobellis[1]. *[1]Scuola di Scienze Agrarie, Forestali, Alimentari ed Ambientali, Università degli Studi della Basilicata, Viale dell'Ateneo Lucano 10, 85100 Potenza, Italy. [2]Plant-Microbe Interactions, Institute of Environmental Biology, Utrecht University, Padualaan 8, 3584 CH Utrecht, The Netherlands. E-mail: iacobellis@unibas.it*

Recent studies have shown that rhizobacteria may employ volatiles as signals in their interactions with plants and rhizosphere microbial communities. In this study we investigated the *in vitro* effect of volatiles from selected antagonistic bacteria isolated from bean rhizosphere and identified as *Pseudomonas* and *Bacillus* spp., on the growth of *Arabidopsis thaliana* Col-0. The effects of bacterial volatiles on *A. thaliana* seed germination and plant growth depended on the bacterial isolate used, but also on the growth conditions for the bacteria and on the plant growth stage at which they are exposed to volatiles. Contrasting effects ranging from inhibition of seed germination to a moderate growth inhibition as well as to an augmented plant biomass were observed. The former effect was observed for some *Pseudomonas* spp. isolates which produced, beside other volatiles, hydrogen cyanide which may be responsible for the toxic effect on seed germination. Other *Pseudomonas* spp. isolates, which did not produce hydrogen cyanide, showed slight inhibition of *A. thaliana* growth. In contrast, volatiles from a *Bacillus* spp. isolate caused a huge biomass increase. Plant growth and development is endogenously regulated by hormones such as SA, JA and ET that are also involved in plant responses to abiotic and biotic stresses. To study the contribution of SA, JA and ET signaling pathways on the growth of *A. thaliana* mediated by bacterial volatiles, a set of plant hormone mutants, including NahG, jar1-1 and ein2-1, defective in mentioned hormones signaling, were evaluated for their responses to inoculation with these bacteria.

DEFINE: A MULTIDISCIPLINARY RESEARCH PROJECT TO INVESTIGATE THE EFFECTS OF EXOTIC PLANT PATHOGENIC FUNGI AND INSECTS ON NATIVE ECOSYSTEMS. P. Gonthier[1], N. Luchi[2], E. Petrucco Toffolo[3], R. Balestrini[4], S. Colazza[5], M. Faccoli[3], M. Garbelotto[6], A. Giorcelli[7], L. Giordano[1], S. Guarino[5], G. Lione[1], F. Loreto[2], A. Mello[4], M. Michelozzi[2], A.L. Pepori[2], A. Santini[2], F. Sillo[1], A. Vizzini[8] and E. Zampieri[1,8]. *[1]Dipartimento di Scienze Agrarie, Forestali e Alimentari, Università degli Studi di Torino, Via L. Da Vinci 44, 10095 Grugliasco (TO), Italy. [2]Istituto per la Protezione delle Piante del CNR, Via Madonna del Piano 10, 50019 Sesto Fiorentino (FI), Italy. [3]Dipartimento di Agronomia Animali Alimenti Risorse Naturali e Ambiente Agripolis, Università degli Studi di Padova Viale dell'Università 16, 35020 Legnaro (PD), Italy. [4]Istituto per la Protezione delle Piante del CNR, UOS Torino, Viale Mattioli 25, 10125 Torino, Italy. [5]Dipartimento di Scienze Agrarie e Forestali, Università degli Studi, Viale delle Scienze, 90128 Palermo, Italy. [6]Department of Environmental Science, Policy and Management, University of California, 54 Mulford Hall, 94720 Berkeley, California, USA. [7]CRA, Unità di Ricerca per le Produzioni Legnose Fuori Foresta, Strada Frassineto 35, 15033 Casale Monferrato (AL), Italy. [8]Dipartimento di Scienze della Vita e Biologia dei Sistemi, Università degli Studi, Viale Mattioli 25, 10125 Torino, Italy. E-mail: paolo.gonthier@unito.it*

The effects of biological invasions have been mostly studied in terms of financial losses and ecological impact on native species. However, there is a lack of information on the extent to which invasive organisms may determine physiological and genetic changes in native components of the ecosystems. A research project named DEFINE (Deciphering the Effects of invasive Fungi and Insects on Native Ecosystems) was recently granted by the Italian Ministry of University and Research (MIUR), within the FIRB program. The project aims at investigating the potential impact of invasions by fungal plant pathogens and phytophagous insects on the main components of the native ecosystems: plants, their pathogens, pests and symbionts. Three model systems are studied, each including either an exotic pathogen or an exotic insect in Europe (the tree pathogen *Heterobasidion irregulare* and the phytophagous insects *Hyphantria cunea* and *Bagrada hilaris*) and its main host in the invasion area (*Pinus pinea*, *Populus nigra*, *Brassica oleracea*). Effects of invasive organisms on a range of native components, including infected/infested hosts and neighbouring healthy plants (inter-plant signalling), are determined by conducting comparative inoculation/infestation experiments with native host-associated pathogens and insects. Host responses are assessed by analysing volatile organic compounds (VOCs) and gene transcripts in plant tissues. Effects are also investigated on the occurrence and gene expression of native ecto- and endo-mycorrhizal fungi, and on genomics of native species that may have experienced allelic introgression from the invasive organism. For this purpose, whole-genome genotyping of 15 *Heterobasidion* isolates is in progress in order to clarify allelic introgression between invasive and native species.