Pre-plant soil fumigation against *Armillaria mellea* on peach, apricot and apple trees in Italy

S. Foschi[1], R. Zelger[2], C. Spotti[3], A. Minuto[4]

[1] Miltonia consulting – Ravenna, Italy.
[2] Centro per la Sperimentazione Agraria e Forestale Laimburg, Laimburg 6, Posta Ora (BZ), Italy.
[3] Società Italiana Sterilizzazioni S.p.A. – Via Palestro 241, Vittoria (RG), Italy.
[4] Centro regionale di Sperimentazione e Assistenza Agricola (Ce.R.S.A.A.) "Franco Ugo", Regione Rollo, 98, Albenga (SV), Italy.

Since 2002 chloropicrin was registered in Italy and primarily used for pre-plant soil fumigation in vegetable sector. Several area of Northerm Italy, such as Emila Romagna, Piedmont, Trentino Alto Adige, due to the intense cultivation of perennial crops, replant disease and disorders are increasing, particularly in peach sector, where replants are often carried out after the 3rd or the 4th crop cycle that means more than 60 years of monocolture. *Armillaria mellea* has been associated with the occurrence of replant disease particularly on peach and apple. Five field trials (trial 1,2,3 peach; trail 4 apricot; trial 5 apple) have been carried in Emilia Romagna in Forlì-Cesena, Ravenna Province and in Trentino Alto Adige. Fields were selected on the basis of previous cropping history. A commercial formulation of chloropicrin (Tripicrin™, 94% a.i., Trical, Hollister, CA, USA) and 1,3 dichloropropene (Condor SIS 94% a.i., SIS) were used throughout the work. The fumigant was applied by soil injection with a commercial equipment used for CP and 1,3 D cold injection with plastic mulch (Virtually impermeable film). In all trials the experimental design was the complete randomised blocks with three replicates per each treatment. The disease development was evaluated at regular intervals by counting and eliminating infected and wilted plants. The trunk diameter and plant height were regularly evaluated after leaf falling together with the plant height after bud sprouting. The yield was evaluated on the healthy plants by counting the number of fruits per plant and by weighing the fruits. All data collected were statistically analyzed, according to T test and Duncan's Multiple Range Test. Even though the collected data are still preliminary they show the positive effect of the soil fumigation on plant development and yield. Moreover a significant reduction of plant collapses due by *A. mellea* infection was consistently recorded. No differences in term of efficacy were observed between 400 and 800 kg/ha of CP, while 400 kg/ha of CP performed better than 200 kg/ha in term of disease control, yield and plant development. Moreover the effects due by the adoption of fumigation were enhanced on the basis of the rootstock adopted.