



MEDITERRANEAN
PHYTOPATHOLOGICAL
UNION

International MPU Workshop 2012

Plant Protection for the Quality and Safety of the
Mediterranean Diet



PROGRAMME & ABSTRACTS

24-26 October 2012 - Bari - Italy

DURUM AND BREAD WHEAT: CROP MANAGEMENT AND DISEASE PRESSURE IN ORGANIC AGRICULTURE

Quaranta F., Aureli G., Belocchi A., Camerini M., Casini F., Fornara M., Matere A., Melloni S., Pasquini M.

CRA, Research Unit for Cereal Quality, Rome, Italy

fabrizio.quaranta@entecra.it

Organic agriculture systems are based on minimising the use of external inputs, especially the use of chemical pesticides, and on using prevention rather than control measures, also to avoid the risk of mycotoxin contamination in the seeds. The aim of this work was to evaluate agronomic management measures to control plant/seed infections by different pathogens present in the wheat growing areas. Among fungal diseases, leaf rust, "Septoria" complex and Fusarium head blight are affecting wheat cultivation in Italy, with economic consequences due to their influence on yield and grain quality. Four durum wheat cultivars (Iride, Simeto, Creso, Dylan) and four common wheat cultivars (Blasco, Bologna, Sagittario, Serio) with different biological cycles and/or different sensibility to fungal diseases, were grown over two years (2010-2011) in Latium, on certified organic plots. Field experiments were carried out in two different environments (Rome and Tarquinia) using a randomized split-plot design with three replicates, with plot sized 10m². Two input levels were compared: high input (500 germinating seeds/m²; 60 Nitrogen units applied in covering; mechanical weed control by spring-tine harrow at tillering) and low input (350 germinating seeds/ m²; no N fertilization; no weed control). Two harvest dates (normal and delayed) were also considered at Rome. Agronomic and phytopathological data were collected throughout the course of the experiment and the analyses of deoxynivalenol (DON) using the ELISA assay were carried out. The two years showed different meteorological trends with too much frequent rainfall in 2009-10 in both environments and a less difficult climate in 2010-11. Low significant differences among cultivars were detected, although the better agronomic performance was obtained for Dylan, among durum wheats, and for Blasco, among bread wheats. The levels of DON contamination were negligible in both years; nevertheless in 2009-2010 the rate of contamination of durum wheat samples collected in Rome was slightly higher with high input system. A lower moisture content was detected in the grain of delayed harvest, without a significant variation of DON levels. On the other hand infections with *Fusarium* spp. were absent or very low in the two locations. The disease development was higher in 2009-10, especially at Tarquinia, where heavy infections of Septoria disease complex and leaf rust were detected. In this case the high disease incidence did not point out differences between the two agronomic management systems. The phytopathological data recorded in Rome in 2009-10 showed a higher sensibility to Septoria disease complex especially of durum wheats grown in high-input conditions. In the two locations the best performance in both years was obtained for common wheats when compared with durum ones. The high-input system was the best (positive effects on yield, plant height, number of spikes/m², kernel weight) for both species.