IAS 2005

XIth International Asparagus Symposium

June 16th - June 19th, 2005
Horst, The Netherlands

Program and Abstracts

ASPARAGUS

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Hosted by: Asparagus BV - Horst; Under the auspices of: The International Society for Horticultural Science; In association with: Wageningen University and Research Centre and Universiteit Maastricht

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Investigations on Endophytic Fungi and Contamination by Mycotoxins of Asparagus Spears during the Main Harvest

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During the main harvest in May and June in the years 2003 and 2004 asparagus (*Asparagus officinalis*) spears (n= 814) from different regions in Austria were collected at two fixed dates, respectively, and were subsequently investigated for the presence of endophytic fungi, in particular species of *Fusarium*. In both years, sampling of the harvested spears was carried out in the same area comprising maximally 25 sampling locations within a distance of up to 50 cm between each other. After incubation of 0.2 cm thick asparagus slices cut from the top, middle and bottom part of the spear, the fungus was isolated and identified based on morphological characteristics, whereas at the same time also contamination of the spears with mycotoxins was determined. 57% of the samples (n= 211) taken in May 2003 were infected by *Fusarium*, whereas in June this was 62%. Among the samples, *Fusarium oxysporum* was prevailing in 2003, followed by *F. proliferatum, F. sambucinum* and *F. culmorum*. Both single and multiple infections by these *Fusarium* species were detected. In May 2004, 40% of the investigated spears (n= 194) was infected by *Fusarium*, whereas in June the amount of infected spears was as high as 57% (n= 200). Next to *F. oxysporum*, *F. proliferatum* is the main cause for asparagus root- and crown rot and was recently detected in perennial asparagus plants in Germany and Austria. In 2003 infection by *F. proliferatum* increased from 13% in May to 19% in June. In May 2004, 11% of the investigated spears appeared to be infected by *F. proliferatum* which increased to 17% in June. In 2003, the content of the mycotoxin fumonisin (FB_1) in asparagus spears infected by *F. proliferatum* was determined by HPLC. An average FB_1 concentration of 100-200 µg/kg fresh weight was found. Further research will be needed to elucidate the impact of *F. proliferatum*-infected asparagus spears on product quality.