

seedlings and heads *in vitro*. However, *F. pseudograminearum* isolates were the most pathogenic on the crown, whereas the isolates of *Microdochium* spp. were the least pathogenic in the three tests. The results obtained showed that there was no effect of the origin of the fungal isolates, whether taken from crown or head on their pathogenicity toward seedlings, crowns or heads. It was also found that the isolates obtained from crowns were also pathogenic on heads and those obtained from heads were pathogenic on crowns. High correlations were found between *Fusarium* isolates pathogenicity on the wheat seedlings *in vitro* and on the head for the two *F. culmorum* groups (crown origin:  $r=0.89$  and head origin:  $r=0.85$ ). These results provided a simple *in vitro* test to predict pathogenicity of *F. culmorum* isolates for head blight disease and then economize time by choosing the isolates in laboratory before field or greenhouse inoculation of wheat heads.

**F4**  
**MORPHOLOGICAL CHARACTERIZATION AND PATHOGENICITY OF NINE *FUSARIUM* SPP. ISOLATES COLLECTED FROM BARLEY SEEDS (*HORDEUM VULGARE* L.) IN MOROCCO.** Inaam El-Miziani<sup>1</sup>, Yassine Boukhou<sup>2</sup>, Sripada Udupa<sup>1</sup>, Jamal Ibjibjen<sup>2</sup>, Amine El Bouazaoui<sup>3</sup> and Safaa G. Kumari<sup>4</sup>. (1) International Center for Agricultural Research in the Dry Areas (ICARDA), Rabat, Morocco, Email: i.el-miziani@cgiar.org; (2) Moulay Ismail University, Faculty of Science, Meknes, Morocco; (3) Ibn Toufail University, Faculty of Science, Kenitra, Morocco; (4) ICARDA, Terbol Station, Beqa'a Valley, Zahle, Lebanon.

Barley (*Hordeum vulgare* L.) is the most produced and consumed grain in the world, and is an important source of food, forage and livestock feed in many developing countries including Morocco. Fusarium head blight (FHB) is one of the main fungal diseases of grain crops such as wheat, barley and maize caused by different species of the genus *Fusarium*. The FHB species complex produces mycotoxins that affect livestock feed, the baking, milling quality of wheat, the malting and brewing qualities of malt barley. Nine isolates of *Fusarium* spp. causing necrosis with typical FHB symptoms were isolated from infected barley genotypes planted at ICARDA's Merchouch station, Rabat, Morocco. After seeds harvesting, all nine FHB isolates were purified and morphologically identified by characterizing their culture appearance (colony color, texture, form, and margin), shape and size of the macroconidia, and presence or absence of microconidia. Pathogenicity of these isolates was studied under controlled conditions using two inoculation methods (soil inoculation and hydroponic culture) on 12 barley varieties (Flinders, Litmus, Oxford, Commander, Latrobe, Vlaming, Fleet, Granger, Rosalind, Buloke, Keel and Campus). Morphological characterization using the Leslie and Summerell key, implied 5 different macroscopic and microscopic morphologies very similar to: *Fusarium acuminatum* (two isolates), *F. crookwellense* (two isolates), *F. avenaceum* (two isolates), *F. sambucinum* (one isolate) and *Fusarium culmorum* (two isolates). All 9 isolates caused FHB symptoms on all 12 barley varieties tested in both inoculation methods and the number of infected spikelets was assessed. Four barley varieties (Keel, Buloke, Latrobe

and Commander) showed a heavy fungal infection (infected spikelet over 65%) and were considered susceptible to infection with the disease. Whereas, four barley varieties (Campus, Oxford, Vlaming and Granger) were resistant to the nine isolates compared to the other barley varieties (infected spikelet less than 35%). In addition, a significant difference ( $P < 0.05$ ) was observed between *Fusarium* species.

**F5**  
**INCIDENCE OF FOOT ROT DISEASE IN COMMERCIAL DURUM WHEAT GENOTYPES UNDER CONTINUOUS WHEAT CROPPING IN NORTHWEST TUNISIA.** Asma Bouatrous<sup>1,2,3</sup>, Kalthoum Harbaoui<sup>4</sup>, Samia Gargouri<sup>5</sup>, Amir Souissi<sup>1,2</sup>, Mohamed Salah gharbi<sup>6</sup> and Mohamed Annabi<sup>1</sup>. (1) Laboratoire Sciences et Techniques Agronomiques, Institut National de la Recherche Agronomique de Tunisie, Tunisia, Email: bouatrousasma@yahoo.fr; (2) Institut National Agronomique de Tunisie, Tunisia; (3) Centre Régional de Recherche en Grandes Cultures de Béja, Tunisia; (4) Ecole Supérieure d'Agriculture de Mateur, Tunisia; (5) Laboratoire de protection des végétaux, Institut national de la recherche agronomique de Tunisie, Rue Hédi Karray, Tunisia; (6) Laboratoire des Grandes Cultures, Institut National de la Recherche Agronomique de Tunisie, Université de Carthage, Rue Hédi Karray, Araina, Tunisia

Durum wheat is the main cereal crop in Tunisia. The increasing need for this food commodity leads to shorter rotation with frequent continuous wheat cropping. This would lead to increased incidence of soil-borne pathogens including *Fusarium* species responsible of foot and root rot. This study was designed to explore the incidence of foot rot caused by *Fusarium* species on five commercial durum wheat varieties (Karim, Nasr, Maali, Oum Rabiaa and Khiair) grown under one or two years of successive wheat cropping. The trial was conducted during three cropping seasons (2016-2019) at the Agricultural Experimental Station of the Regional Crop Research Center in Beja northwest Tunisia. The study results showed that the previous crop significantly ( $p < 0.001$ ) affected *F. culmorum* incidence. However, there was no significant differences between the cultivars. Average disease incidence reached 7.16% after one year of wheat cropping and to 20.01% after two years of continuous durum wheat cropping. Furthermore, significant interaction between the cultivars and the number of years of continuous wheat cultivation for the incidence of *F. culmorum*, Khiair and Maali varieties showed the lowest incidence with 10% and 15%, respectively, under two years of successive wheat cropping. In contrast, Karim and Nasr varieties showed the highest incidence (30% and 26%, respectively). The study results also showed that there was no significant differences in the measured yield parameters after one and two years of wheat cropping. The high significant differences ( $P < 0.001$ ) in grain yield means in the three cropping seasons indicates a potent effect of climate conditions on this parameter. The cultivars Khiair and Maali seemed to be the best choice for a continuous durum cropping. It would be useful to test this hypothesis under high foot and root rot pressure.