Fusarium head blight and crown rot of wheat in Algeria

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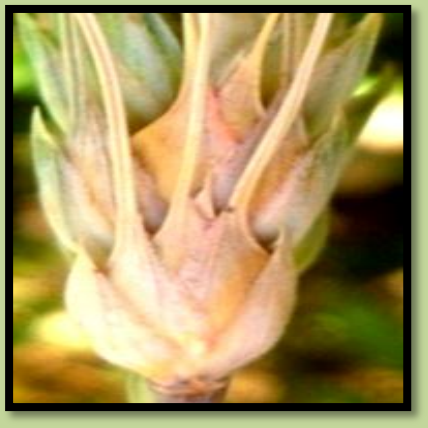
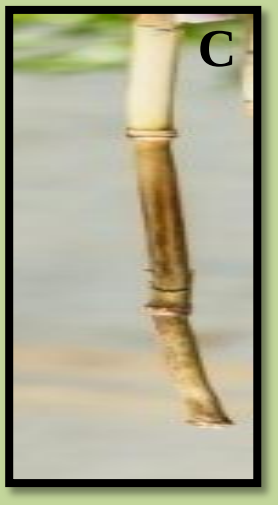


An overview on Fusarium head blight (FHB) and crown rot (CR) of wheat

Fusarium head blight (A) and crown rot (B,C) are two worldwide diseases that affect wheat, leading to loss of yield and the accumulation of mycotoxins in wheat kernels which is harmful to human and animal health. CR is a chronic problem where dry climatic conditions are present and monoculture is adopted. FHB is favored by prolonged humidity and precipitation during anthesis.

Crown rot on wheat seedlings



Crown rot on wheat plant

***Fusarium culmorum*, *F. graminearum* and *F. pseudograminearum* are the worldwide and the most common pathogenic species associated with both diseases on wheat.**

In Algeria, climatic conditions are conducive for both diseases, FHB and CR on wheat. Crown rot is present in all the surveyed regions of the northern of the country (Center, East and West), and therefore in the humid, sub-humid and semi-arid bioclimatic stages. However, Fusarium head blight is confined mainly to the humid and sub-humid bioclimatic stages located in the central and eastern regions of northern Algeria. In these two regions, both diseases have sometimes been found associated in the same field. According to the authors, rarely both, but FHB and CR can be a serious problem when the two diseases are associated, because of yield losses and mycotoxins accumulation.

Fusarium head blight (FHB)

Fusarium head blight occurs mainly in the central and eastern region of northern Algeria. Precipitation and prolonged humidity during anthesis are main factors in disease development.

Symptoms

The disease is initiated by a whitening of the spike beginning in the center (A) and extends upwards and downwards (B) Under humid conditions after infection a pinkish discoloration of the spikelets may appear, due to the production of conidia and sporodochia (C). The seeds produced in diseased spikes are shriveled and sometimes with pinkish color (D) compared to healthy ones (E)

Causal agent

***F. culmorum and F. pseudograminearum* are the main species associated with FHB in Algeria**

Source of inoculum

- **Crop residues**
- **The conidia transported by air**

Control

- **Seed treatment by fungicide**
- **Application of fungicide at the start of flowering**
- **Rotation with non-cereal crops**
- **Balanced nitrogen fertilization**
- **Tilling**
- Use of tolerant or resistant varieties when available

Wheat crown rot (CR)

The crown rot is associated with wheat in all the cereal regions prospected in the north of the country. Drought during the grain filling period (late spring) is conducive for disease occurrence

Symptoms

Wheat can be threatened by crown rot agents from seed germination to maturity. In the early stages of the wheat cycle, pre- or post-emergence seedling loss associated with browning of the coleoptile may occur (A), rot appear at the heading stage or during the grain filling period with necrosis (B) and browning of the basal part and the internodes (C and D), and the appearance of premature whitish spikes (E), individually or as patches in the fields (F).

Photo:Syngenta. fr/ Maladie du blé

Causal agent

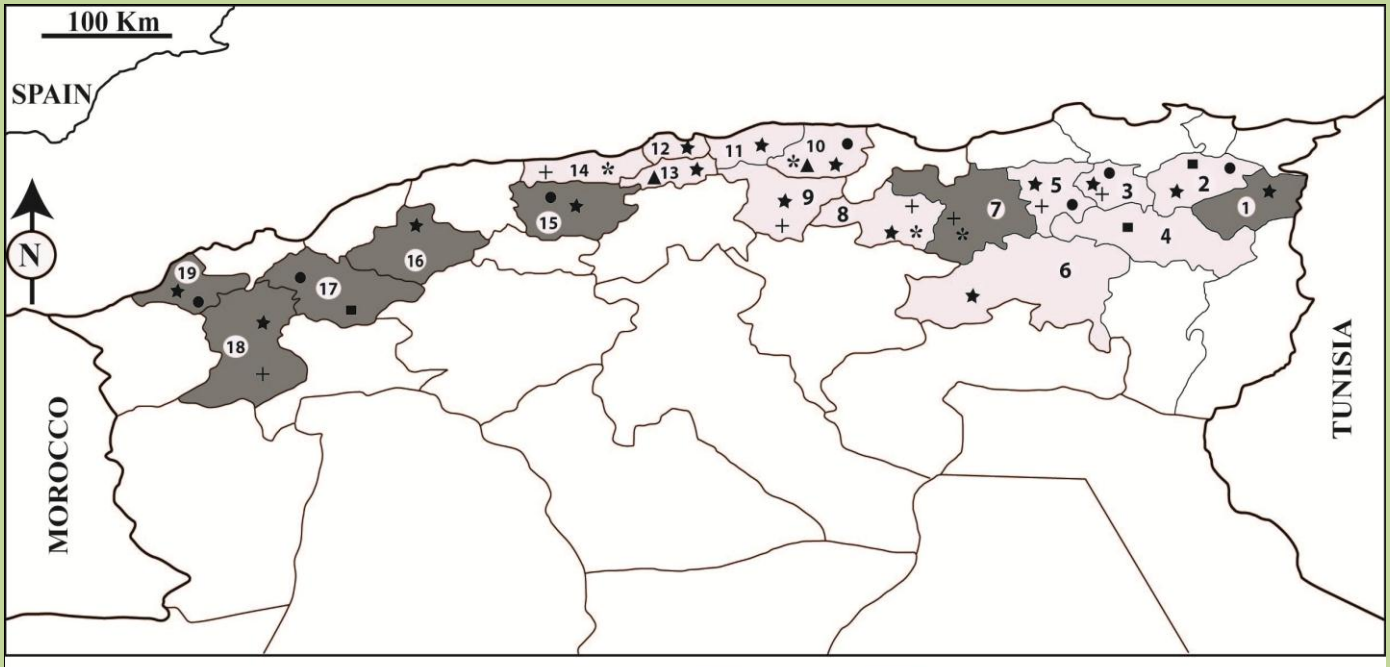
F. culmorum **is the main species associated with CR in Algeria, with the presence of** ***F. pseudograminearum*****,** ***Microdochium nivale*** **and** ***M. majus*** **as also important species .**

Source of inoculum

- **Infected seeds**
- **Soil**
- **crop residues**

Control

- **Seed treatment with fungicides**
- **Rotation with non-cereal crops**
- **Burial of crop residues**
- **Balanced nitrogen fertilization**
- **Tilling**
- **Use of tolerant or resistant varieties when available**



FCR: Fusarium crown rot FHB: Fusarium head blight
FC*: F. culmorum*, FP: *F. pseudograminearum*, FA*: F. avenaceum*, FV: *F. verticillioides*, MN*: Microdochium nivale* , MM: *M.majus.*
1(Souk Ahres), 2 (Guelma), 3(Constantine), 4 (Oum El Bouaghi), 5 (Mila), 6(Batna), 7 (Sétif), 8 (Bordj Bou Arreredj), 9 (Bouira), 10 (Tizi ouzou), 11 (Boumerdes). 12(Alger), 13(Blida), 14(Tipaza), 15(Aïn El Defla),16 (Relizane), 17(Mascara),18 (Sidi Bel Abbes), 19 (Aïn Témouchent).

Distribution of Fusarium head blight (FHB) and crown rot (FCR) of wheat and their associated species in northern Algeria (Abdallah et al., 2019)

References used

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