Surveillance and Monitoring the Cereal Rust Diseases in Lebanon, Morocco and Tunisia in 2024

Kumarse Nazari, PhD, International Center for Agricultural Research in the Dry Areas – ICARDA, Regional Cereal Rust Research Center (RCRRC), Izmir, Türkiye, k.nazari@cgiar.org
Rola El Amil, PhD, Lebanese Agricultural Research Institute (LARI), Lebanon, ramil@lari.gov.lb
Muamar Al-jaboobi, International Center for Agricultural Research in the Dry Areas - ICARDA, Morocco, moumr@hotmail.com
Maafa Ilyass, International Center for Agricultural Research in the Dry Areas - ICARDA, Morocco, I.Maafa@cgiar.org
Seid Ahmed, PhD, International Center for Agricultural Research in the Dry Areas - ICARDA, s.a.kemal@cgiar.org
Abdel Hamid Ramdani, Institut National de la Recherche Agronomique (INRA), Morocco, ramdani.abdelhamid@gmail.com
Hafid IBRIZ, Institut National de la Recherche Agronomique (INRA), National Agricultural Research Institute of Morocco, Regional Center of Meknès – Morocco, hafid.ibriz@inra.ma
Ibtihel SBAI, Institut National Des Grandes Cultures (INGC), Tunisia, sbaibtihel@gmail.com
Nasraoui Ramdhane, Institut National Des Grandes Cultures (INGC), Tunisia ramdhanasraoui@yahoo.fr
Bouslimi Abdsattar, Institut National Des Grandes Cultures (INGC), Tunisia, abdessatarbouslimiingc@gmail.com.

Summary

Achieving durable resistance to wheat rust disease and effectively managing it requires continuous monitoring of pathogen movement and analyzing their pathogenic variations. Despite the severe drought in wheat-growing areas across CWANA in 2024, the Regional Cereal Rust Research Center in Turkey, along with national rust surveillance teams, conducted rust monitoring in Morocco, and the rust surveys in Lebanon and Tunisia were conducted by the national rust survey teams, adhering to BGRI surveillance guidelines. Surveillance data were collected from 35, 64, and 27 locations in Lebanon, Morocco, and Tunisia, respectively. The ODK rust survy mobile application was use during the rust survey in Morocco, National teams from the Lebanese Agricultural Research Institute, Morocco's Institut National de la Recherche Agronomique, and Tunisia's INSTITUT NATIONAL DES GRANDES CULTURES carried out rust surveys in wheat-producing regions. They recorded GPS coordinates, rust disease status, and crop phenology, then shared this data with the online Global Cereal Rust Surveillance and Monitoring System (https://rusttracker.cimmyt.org) in accordance with BGRI's standard protocol (https://rusttracker.cimmyt.org/wp-content/uploads/2011/11/2013-Updated-BGRI-protocols-v2-web.pdf).

Materials and Methods

Rust surveillance was carried out in farmer's fields and research stations using the BGRI rust surveillance form (https://rusttracker.cimmyt.org/wp-content/uploads/2011/11/2013-Global-Cereal-Rust-Survey-Form- v2.pdf) by national rust survey teams at LARI-Lebanon, INRA-Morocco, and INGC Tunisia. The IPM group of ICARDA in Morocco were also participated into the rust survey. Geo-referenced information, crop phenology, disease status during rust

severity, and disease incidence were recorded in provided survey forms. Data were shared as excel files with the Global Cereal Rust Monitoring System and RustTracker (https://rusttracker.cimmyt.org). We used the ODK rust surveillance mobile application during the rust survey in Morocco.

Results

Wheat growing areas in north Africa including the major wheat growing areas in Morocco and Tunisia experienced severe drought conditions. There has been a significant crop loss and hence the occurrence of wheat rust diseases was restricted to small areas. The national survey teams in Lebanon and Tunisia, along with ICARDA's pathology team in Morocco (Figure 1), conducted in-country rust surveillance across wheat-growing areas in Morocco and Tunisia, following the BGRI rust surveillance protocol. The mobile rust surveillance application (ODK) was used in Morocco for collection survey information. In total surveillance data were collected from 35, 64, and 27 locations in Lebanon, Morocco, and Tunisia, respectively.

Despite the historical evidence of widespread yellow rust in Morocco and Tunisia, yellow rust infection was not observed across all wheat growing areas in both countries whereas, the stem rust and leaf rust were the most common rust diseases of bread and durum wheat fields in Morocco and Tunisia, respectively. In contrast, the environmental conditions in Lebanon were favorable for yellow rust resulted in observations of 21 infected locations with yellow rust out of the 30 survey sites. The GPS coordinates of survey sites, the status of rust diseases, and crop phenology were collected and shared with the online Global Cereal Rust Surveillance and Monitoring System. For the third consecutive year, despite drought conditions, the presence of stem rust in farmers' fields remains a significant concern. If environmental conditions become favorable, there is a high risk of a stem and leaf rust outbreak due to the susceptibility of the currently grown wheat cultivars. Yellow rust continues to pose a significant threat to wheat production in Lebanon. The 2024 rust survey in Morocco revealed a notable increase in the incidence of stem and leaf rust compared to 2023 (Figure 2).

Despite various challenges, including drought conditions, the persistent presence of stem and leaf rust particularly in Morocco and Tunisia and the yellow rust in Lebanon highlights the need for vigilant monitoring and effective management strategies to protect wheat crops.

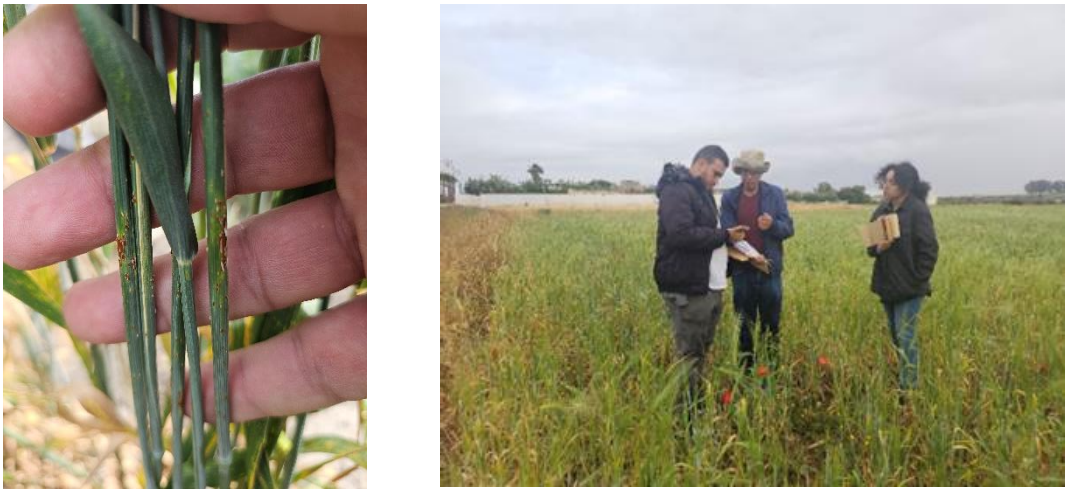

Figure 1. Monitoring rust disease at wheat field, Lebanon (left) and Morocco (right) 2024.

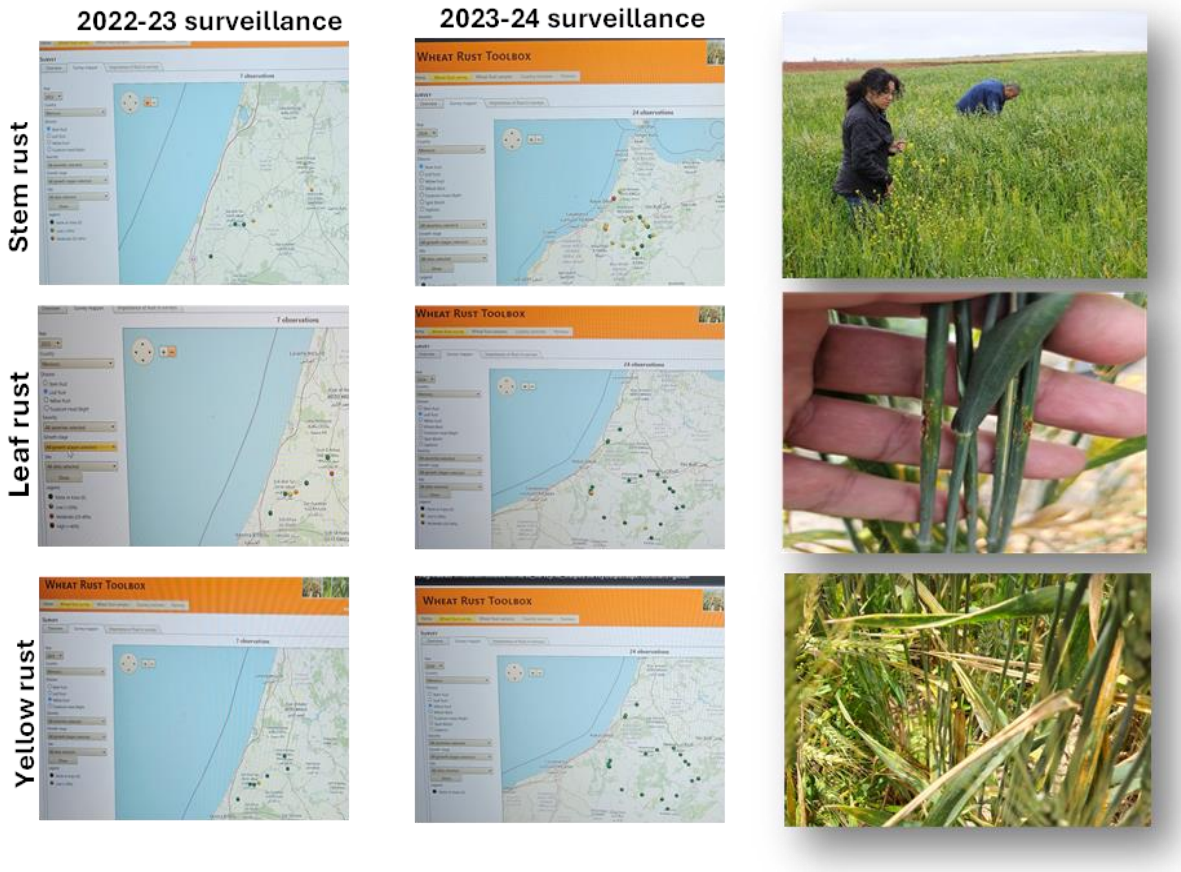

Figure 2. Comparison of disease incidence at farmer's field in 2023 and 2024 in Morocco.