

Farmers' Field Day Demonstrates Improved Variety and Production Practices to Grow Mungbean Crops in Innovative Crop Rotations in Khorezm

Background

After wheat harvest in June, the farmers in Khorezm traditionally grow limited crops or leave the land fallow with or without ploughing till next spring when cotton is planted. A few farmers who grow mungbean use seed from the grain market. The mungbean seed purchased from the grain market produces uneven crop growth with plants creeping horizontally. Such a growth habit poses problem in machine harvesting and farmers must use manual labor that is also needed for cotton harvest at the same time. Also, the mungbean seed purchased from the grain market matures in almost 4 months, produce low yield and small grains. Small mungbean grains fetch low price in the local market and are not suitable for export. On the contrary, new mungbean variety Durdona has erect growth habit suitable for machine harvesting, matures in 70 to 75 days and produces high yield and larger grains.



Short duration, erect growing crop of Durdona mungbean variety, planted on 2 July 2022 in Khorezm, Uzbekistan (Photo taken on 12 August 2022 by Bakhtiyor Khamidov, ICARDA-Tashkent)

Status of mungbean crop in the field

For optimum yield mungbean should be planted as soon as possible after wheat harvest in Uzbekistan. Earlier planting ensures crop maturity before frost occurrence usually towards end of September and early October in the Aral Sea region. However, in practice farmers can plant mungbean only when water, machinery and labor are available for land preparation and planting. The farmers don't have control over water in the irrigation canal as well as water is also needed for irrigating cotton at the same time. Because of these factors often beyond the control of the

farmers, the five participant farmers planted mungbean between early July to middle of August. Therefore, the crops were at different growth stages during the field visit on 12 August 2022.

Organization of the farmers' field day event

All participant farmers gathered at Karavan Hotel in Urgench at 8:30 in the morning. There were 28 participants including farmers, researchers, and technical experts. The participants were registered for their participation which was followed by welcome addresses. The technical experts explained to the participants about the activity for the events. The participants also received information from the experts on different aspects of the mungbean crop that was planned to be observed during the field visit on the day.



Information Sharing by the expert with the participants (left) and group photo of the participants from Khorezm participating in Farmers' Field Day on mungbean production on 12 August 2022, Khorezm, Uzbekistan (Photos by Bakhtiyor Khamidov, ICARDA-Tashkent)



Mungbean sweets and salty snacks presented to the participants for testing during the Farmers' Field Day event in Khorezm, Uzbekistan on 12 August 2022 (Photos by Bakhtiyor Khamidov, ICARDA-Tashkent)

During the technical discussion two different sweets and three different snacks were displayed to motivate farmers to consider new products that can be prepared from mungbean. The sweets and snacks had been brought from Nepal for this event. The technical discussion was followed by a group photo and coffee break before heading to the field.

Activity in the field

The technical experts from ICARDA explained different parts of mungbean plants, adequacy of plant population and further development to follow on the plants in terms of flowers, pods and grains. A few plants in the field already had initial pods formed. Mungbean plants flower and form pod with grain inside over several days.

All participant farmers acknowledged that they had not seen such a robust crop of erect growing mungbean when they visited mungbean field planted in early July. The farmers who had planted mungbean late in their field wished that they had planted their mungbean crop in early July. The participants also asked the farmers with good crop in the field about management practices adopted to raise the robust crop. The participant farmers counted plant population which was 15 to 20 per square meter. The optimum plant population for maximum yield should be 20 to 30 depending upon number of branches produced on the plants.



Activities and discussion in the field during Farmers' Field Day in Khorezm on 12 August 2022 (Photos by Bakhtiyor Khamidov, ICARDA-Tashkent)

Farmers for the first-time observed friends of soil on the roots of mungbean

Farmers had heard from the experts in the training conducted in June that leguminous crops such as mungbean fix atmospheric nitrogen into the soil. This improves soil health and reduces the application of nitrogen for the following crop, cotton in this case. Thus, farmers save money spent on nitrogenous fertilizers to the succeeding crop. However, the farmers were completely unaware of the mechanism of such nitrogen fixation. During the field day, a plant of mungbean



Nodules present on the roots of a mungbean plant in a crop in Khorezm planted on 2 July 2022 (Photo taken by Ram Sharma on 12 August 2022 during a Farmers' Field Day, Khorezm, Uzbekistan)

was uprooted and soil removed gently. After that, the farmers were able to see nodules (small beads like structure) on the roots of the mungbean plants. Nodules contain symbiotic bacteria. A point was brought up that nodule formation needs presence of suitable bacteria in the field. If a given field had not been planted with any leguminous crop for 5 years continuously, it is likely that such soils may not have enough bacteria population for high level of nitrogen fixation. In such case, the mungbean seed should be coated with the culture of bacteria before planting.

Participants' impression at the end of field visit

All participants appreciated the opportunity of observing robust crops of the improved mungbean variety Durдона, and they thanked the farmers who produced such crops. All participant farmers expressed their willingness to grow Durдона mungbean variety in 2023 and benefit economically and improve soil health in their fields. However, the participants expressed concern if water would become available for timely sowing of mungbean and also, if there would be market available for selling the produce.

Next step

The next event of farmers' field demonstration will be organized in the last week of September when mungbean crop would have matured particularly in the timely planted fields. A training event will also be organized in the last week of September for providing information on proper harvesting using machine, and post-harvest management of seed and grain during storage.

