PLANTING CHICKPEA IN OCTOBER SHOWS PROMISE IN THE COLD WINTER DESERT CLIMATE OF UZBEKISTAN

BACKGROUND

Chickpea is a popular food legume used in numerous Uzbek cuisines. It is a rich source of protein and can substitute partially for meat consumption at a cheaper cost. Chickpea being a drought tolerant crop can be successfully grown under rainfed farming in Central Asia ***(Figure 1)***. Chickpea is traditionally planted in spring after melting of snow and when land becomes suitable for tillage operation. However, a chickpea crop planted in spring can fail to produce grain in the absence of late spring precipitation, as was the case in Uzbekistan in 2018 ***(Figure 2)***. Through collaboration with ICARDA, cold tolerant chickpea varieties have been released in Uzbekistan. These cold tolerant chickpea varieties (Malhotra, Khalima and Obod) can be planted in October-November and the seedlings are established before onset of the winter in December. Such a crop is less likely to fail due to dry condition in late spring because it can mature earlier compared to a spring planted crop.

CHALLENGE

The farmers in Chuya village of Nurata district of Navoi province of Uzbekistan were skeptical about winter survival of a chickpea crop planted in autumn months. Their argument was based on the observation that the freezing winter temperatures in the cold desert climate results in freezing of surface soil, which in turn can cause death of the chickpea seedlings.

EXPERIMENTAL SETUP IN THE FARMER'S FIELD

Cold tolerant chickpea variety 'Obod' which had originated from ICARDA germplasm and released by the Kashkadarya Branch of Grain and Leguminous Crops Research Institute in Uzbekistan was planted on 20 October, 20 February and 20 March on the forestland in Chuya village. The soil type in the forestland is a mixture of sand, loam and small gravels. All crop management practices were as per farmers' practice for chickpea production in locality of Chuya.

RESULTS TODATE

The chickpea crop planted on 20 October germinated well and survived the winter temperatures. The observations recorded on 16 May 2020 of the crop stands in the field for the three planting dates have been shown in ***Figure 3***. The crop planted on 20 October, 20 February and 20 March were in grain formation, flowering and early vegetative growth stages respectively. Higher biomass accumulated by the 20 October planted crop is an indicator of its higher grain yield compared to the two spring planted crops. The rest of the spring and summer are likely to be much hotter when the two spring planted crops will undergo grain development. The autumn planted crop will escape the terminal heat stress that is so common in the cold desert winter climate that experiences sudden rise in temperatures.

Figure 1. Chickpea cultivation under rainfed cold winter desert climate

Figure 2. Chickpea crop planted in early spring germinated well but failed due to a lack of rain in the late spring, 2018

Figure 3. Chickpea plants from 3 seeding dates, samples collected on 16 May 2020

Figure 4. Taller plants of autumn planted chickpea (A) than that of spring planted (B) crop.

MESSAGE TAKEN BY THE FARMERS

Plant chickpea in autumn using cold tolerant varieties for a more productive crop compared to a spring planted crop.

ADDITIONAL ADVANTAGE OF AUTUMN PLANTED CHICKPEA

i) Autumn planted chickpea grow taller and thus suitable for machine harvesting ***(Figure 4)***, manual harvesting involves higher cost than machine harvesting, and (ii) Higher biomass produced suitable for animal feed.

ICARDA
Science for resilient livelihoods in dry areas

This activity was conducted under funding support from FAO within the framework of "Central Asian Desert Initiative (CADI)".

For Further Information, contact:
Ram Sharma, ICARDA-Tashkent,
Email: r.c.sharma@cgiar.org