

Field equipment Report: Workshop and Testing Combine Harvester

Project “Increasing productivity of wheat and wheat based system in Iran”

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According to corresponding with Landforce company through Mr. Sarbjeet Singh and Dr. Mahesh Kumar Gathala, and as a part of implementation of the project “ Increasing productivity of wheat and wheat based system in Iran” four technicians from Land force company including: Mr. Pargat Singh, Mr. Bikramjit Singh, Mr. Rupinder Singh and Mr. Jaspal Singh came to Iran to assemble a combine harvester, 13 no-till planters and two drip liners that were purchased from Landforce company, Panjab, India in 2018. They arrived to IKH international airport on July 13, 2019.

All the machines assembled within two weeks then a workshop on: “Happy seeder and other no-till planters” was held in July 24, 2019 at Agricultural Mechanization Development Center (AMDC), Karaj-Iran (Fig. 1). It was attended by 42 participants including Learning and Scaling Platforms (LSP) Managers from seven targeted provinces, agricultural mechanization experts from Agricultural Engineering Research Institute (AERI), Dryland Agricultural Research Institute (DARI), private agricultural machinery manufacturers, and Agriculture-Jahad Organizations of seven targeted provinces. At first all machines were introduced and technical points explained well then participants made good discussion. In the following of the workshop field training for Happy Seeder conducted in the AMDC field (Fig 2). Happy seeder tested in canola residue, it chopped residues very well but the field was stony extremely so that it could not able work properly (Fig 3). Finally it has been decided that the Happy Seeder is not suitable for stony lands with low volume of residue (like drylands of Iran) therefore five set of Happy



Fig.1- Workshop on no-till planters. July 24, 2019 Karaj- Iran.



Fig.2- Participants in the Canola residue field to testing Happy Seeder.

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Seeders should distribute to irrigated areas with high volume of residue and without stone on the soil.

Testing Combine Harvester

The combine harvester was dispatched to Ghamlo Agricultural Research Station in Kurdistan province (west of Iran) on July 23, 2019, then after workshop Dr. Seyyed Saeid Pourdada, Mr. Pargat Singh and Mr. Jaspal Singh went to Ghamlo Agricultural Research Station to test the combine for harvesting chickpea on July 25, 2019. Almost all chickpea fields were harvested already in the Kurdistan province but in coordination with Dr. Ebrahim Rohi, Deputy of Kurdistan Agricultural and Natural Resources Research and Education Center, a chickpea farmer field in Ghamlo area selected and remain to test the combine (Fig.4). Before harvesting, chickpea head, sieve and main basket attached to the combine then harvest started (Fig.5). The chickpea variety was a Turkish variety named Goksu. Through measuring 20 plants it showed that average plant height was 25 cm and average height of the first pod from the ground was 10 cm. In general drylands of Iran are slope lands so, due to short plant height and unlevelled land combine could not able to harvest chickpea properly so that some plants were left or in some plants cutting height were more than 10 cm so, some pods has been left. In this situation combine's head was in touch with soil and sometimes soils came to cutter bar frame (Fig.6). In some parts of the field that was flat the harvest situation was good (Fig. 7). However blower, cutter and thrashing performance was well so that broken seeds did not observed in grain tank.



Fig.3- Position of Happy Seeder blades in canola residues



Fig.4- Chickpea field under rainfed condition in Ghamlo, Kurdistan, July 25, 2019.



Fig.5- Combine harvester with Chickpea head in the field harvesting rainfed chickpea in Ghamlo, Kurdistan, July 25, 2019.

As final decision it concluded that this combine should work in 1) chickpea fields with more than 30 cm plant height like Kamyaran in Kurdistan province where chickpea planted as winter crop or 2) in natural flat chickpea fields or leveled lands. So, maybe for next year we invite the Landforce experts to test the combine for harvesting chickpea in Kamyaran.



Fig.6- Soil in the combine's head due to short plant height and unlevelled land, rainfed chickpea field in Ghamlo, Kurdistan, July 25, 2019.



Fig.7- Chickpea head's cutting height was about 10 cm. When land is flat chickpea was harvested well, Ghamlo, Kurdistan, July 25, 2019.

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