

Newsletter of the ACIAR Pakistan profitable pulse project - CIM/2015/041

Issue 7 – August 2020

# **PULSE**

### In this issue

- From the project leader
- <u>COVID-19 and the science of</u> <u>communication</u>
- <u>Chickpea Seed Certification at</u> <u>Farmers' Fields</u> <u>A leading activity in the area</u>
- Mechanical Harvest The Need of the Hour

### From the project leader



Dear readers,

Welcome to our 7th edition of The Pulse newsletter.

The current circumstances related to Coronavirus has brought a number of challenges and obstacles to the project. In the face of this the entire project team is assertive in keeping the project on a trajectory by devising appropriate strategies, particularly the communication plan, to minimize the effect of the pandemic on project activities. This issue highlights some key achievements of the project, including timely interventions that have allowed the project team to communicate with all stakeholders with minimal disruption.

Dr Ata-ur Rehman Charles Sturt University







# PULSE

By Mr Umair Waqas, Project Officer, Multan

The emergence and spread of COVID-19 has impacted the way we live and work. Potentially, it will also affect the way we understand the world and behave to protect our families from this, and future disease outbreaks. The uncertainty around the COVID-19 outbreak is a test of our courage to breathe, live and work in unknown territory. As these are unprecedented times, so is our experience of a pandemic disease. This has raised a question mark on how we should work and communicate despite obvious hardship. Our project team, like many others, also went through a phase where we did not have a clue how to deal with our work, manipulate our resources, and continue giving our best efforts. Our experiences had a sense of unreality and a dream like quality with the associated hope of waking up and the world being back to the way it was. Our feelings and the rapidly changing COVID-19 context made it difficult to respond effectively to the threat from both personal and work perspectives. The situation developed rapidly. In the morning we were planning our trips to the six field sites but by 7pm all plans were irrelevant as the news broke that the government of Pakistan had officially banned all travel, putting the country into a complete lockdown. Our project plans were shattered, and the future became uncertain.

Over the following days came the realization that the COVID-19 world was totally different to pre-COVID times, forcing us to think differently to enable our project to continue. In particular, we needed to stay in touch with team members, stakeholders, and farmers. A major issue was that the lockdown occurred in the middle of collection, evaluation, analysis and translation of the essential field data. Our thinking was diverted to formulating new strategies. Those strategies needed to ensure the safety of our team, to communicate with our stakeholders and to collect the required data. The challenge was gigantic but so was our resolve. Therefore, a three-step strategy was devised that included communication

within the team, communication with farmers and stakeholders, and possible ways of safe data collection. Hence, standard operating procedures (SOPs) were designed to undertake the project activities using safe communication guidelines.

It was important to identify our key audiences and to ensure timely release of information to the team members for effective dissemination. It was recommended that the Australian team would communicate with the Pakistan team at least twice per week. Hence, a Zoom communication group for staying in touch was initiated. This strategy, that allowed a regular communication flow, built a much-needed trust and inspired confidence in the project team. The next important part of effective communication was to identify members of the team responsible for contacting key farmers. This was to ensure that the messages received from the Australian team via the Zoom meetings could be directed to the farmers, and back to the entire project team with the same effectiveness. This enabled us to disseminate reliable information through a single source to avoid any confusion.

We also established the SOPs for the content to be communicated, utilising various communication methods. We have put a lot of emphasis on the content reliability that is meant to be delivered; it must be clear, concise and easily accessible by the intended farmers. To counteract the obvious shortcomings of the linguistic skills of our farmers, we have communicated with them through local indigenous languages (Urdu, Sindhi, Punjabi, Saraiki). Project officers have made themselves easily accessible to the farmers by sharing their contact information and ensuring a prompt response to all enquiries. They are also encouraged to be empathetic. In our team, empathy means focusing on goodwill and doing no harm. It means prioritizing our farmers and their wellbeing and making decisions that are in the best interests of our stakeholders. Meanwhile, we have realized the importance of launching a YouTube channel. Although this idea hasn't been put into practice yet, we are very close to making use of this platform in the near future. The POs are already creating and proofreading content in this regard.

Based on the feedback from stakeholders, the project team has decided to continue collecting and analysing experimental data via WhatsApp. The project team and stakeholders have agreed to work together to prepare guidelines that would enable the resumption of the project team's visits to farmers, including farmer to farmer visits, as soon as the lockdown is relaxed. This includes determining how best to reduce the risk to communities and researchers. To achieve this, the research activities will be designed based on the lessons learnt from the pandemic, particularly in relation to the involvement of the farmer networks throughout future research undertakings.





### Chickpea Seed Certification at Farmers' Fields A leading activity in the area

Niaz Hussain, Muhammad Ramzan, Dr. Muhammad Aslam, Arid Zone Research Institute, Bhakkar and Abdul Manan Khan, MNS- University of Agriculture, Multan.

Despite being the major chickpea growing area, the majority of farmers in the district of Bhakkar lack access to certified seed available either through government departments or by private enterprise. The situational analysis conducted with the participating farm families has recognized the non-availability of the certified seed as one of the main reasons hampering the expansion of this crop in this part of the country. In collaboration with an NGO, National Rural Support Program (NRSP), the project team at the Arid Zone Research Institute (Site 3) has embarked on chickpea seed multiplication and certification activities consistent with the National Seed Act in the fields of selected farmers. It is expected that adopting legal procedures and lawfully selling the certified seed to seed procuring agencies will enable farmers to maximize their profit.

### Seed Certification

Seed certification is a legally binding quality assurance system carried out during multiplication and production of certified seed. It is a scientific and systematically designed process to secure, maintain, multiply and to make seeds of approved varieties available to farmers. It is performed by the Federal Seed Certification and Registration Department (FSC&RD), a department of the Ministry of National Food Security and Research. It is also an integral part of the plant breeding system and plant breeders' rights, plant genetic resources, biodiversity, and international trade. In Pakistan, the seed certification system has five recognised categories of seed as follows.

**Breeder Nucleus Seed (BNS).** The BNS is the purest seed of a particular variety raised normally by breeders of mostly government research stations/institutes. This category of seed is only identified by its corresponding research institute's testing report as it is not formally certified by FSC&RD.

**Pre-Basic Seed (PBS).** The PBS is normally a progeny of the BNS and is considered to be of highest genetic purity seed produced by the breeders of the respective research institutes. It is identified by a white colour label with diagonal violet line issued by FSC&RD. **Basic Seed (BS).** The BS is the progeny of pre-basic seed which is produced by an organisation of provincial government. The FSC&RD issues white colour labels certifying the basic seed.

**Certified Seed.** Progeny of basic seed and is produced with the registered growers of the seed producing agencies. Blue colour labels issued by FSC&RD distinguish it from other categories of seed.

Approved Seed. Seed true to species as approved by the FSC&RD. Pink colour labels issued by FSC&RD for its identity.

#### Seed Certification Objectives

- To maintain high genetic and physical purity of a variety.
- To ensure good germination capacity.
- To ensure availability of seed free from seed borne disease, weeds and other crop seeds.
- To guarantee provision of high quality seed to the growers.
- To maximise farmers' income through enhancement of crop productivity and profitability.

### Seed Certification Prerequisites

- Verification of seed source and class used for raising the crop by checking certification tags, labels, seed bags, cash memo or bills.
- Acreage and location of the seed field.
- Cropping history of the field where the seed crop is grown.
- Isolation distance of seed crops from other crops.
- Condition and health of the crop to carry out crop inspection properly
- Undamaged crop free of weeds.
- Lodgement of application by grower or seed agency requesting crop inspection.

### Seed Certification Phases

- 1. Crop inspection
- 2. Preliminary seed sampling
- Final seed sampling during processing

- 4. Packing, tagging, sealing and grant of the certificate
- 5. Re-testing of seed lots.

### 1. Crop Inspection

The purpose of crop inspection is to determine whether the crop is suitable for the production of seed to the required standard. The genetic purity of the seed crop is assessed through field crop inspection. This inspection is carried out only for notified varieties based on physiomorphology characteristics developed through Distinctness. Uniformity and Stability (DUS) studies. After the crop inspection, the grower or seed company is informed about the decision /recommendations, or other measures necessary to bring the crop up to the prescribed standards. Upon final inspection, a certificate is issued by the department on the prescribed format to the seed producer or their representative.

#### 2. Preliminary Seed Sampling

Seed testing is carried out to assess the analytical purity of the seed lot. The following steps are taken to ensure quality:

- Submission of application for sampling
- Requirement for seed lots to be sampled
- Seed analysis
- Issuance of seed analysis certificate and temporary labels.

## Submission of application for sampling

On the written request of the seed grower or seed agency, three samples of seeds harvested from the grower's seed lot are drawn by the officer of the FSC&RD according to the procedure specified in the seed testing manual. The composite samples are divided into three equal parts. One sample is sent for analysis to the respective seed testing laboratory, the second is handed over to the grower or seed agency while the third sample is submitted to the central seed testing laboratory for post control checks.









It should be ensured that the seed lot is homogeneous prior to seed sampling. Credibility of results depends upon the representative samples. Number of seed samples are drawn according to the size of the seed lot.

### Seed analysis

Working samples are made from the submitted samples in the laboratory. Each seed of the working seed samples is physically examined using a magnifying lens. Doubtful seeds are further examined under a stereomicroscope. Every crop seed is examined for purity on the basis of morphological characteristics of the particular crop variety. The seed sample is analysed for the assessment of the following factors:

- Purity
- Mixture of the crop seed (other distinguishable varieties)
- Presence of weeds
- Inert matter
- Seed-borne diseases
- Moisture test
- · Thousand seed weight
- Germination count.

Seed lots are rejected or accepted on the basis of seed standards prescribed by the National Seed Council for individual crops.





Subject to samples meeting all the above mentioned criteria, a certificate of fitness is issued by the FSC& RD along with temporary labels. These labels carry the following printed information:

- Federal Seed Certification and Registration Department
- Reference number
- Species
- Cultivar
- Number of bags/containers
- · Approximate weight of seed lots.

### 3. Final Seed Sampling During Processing

All the seed lots are processed at the processing setup of the respective grower or the seed company. The seed samples are drawn during the process and analyzed in the laboratory.

### 4. Packing, Tagging, Sealing and Grant of Certificate

On the receipt of the seed analysis report, results of the grow-out test (if required), and the fulfillment of seed prescribed standards the seed certifying agency ensures proper packing, tagging and sealing of the seed bags before issuing the certificate.

### 5. Re-testing of Seed Lots

To assess any deterioration during storage, a re-test sample is drawn from each lot two months prior to its actual distribution/sale. Seed samples are analysed for all the factors as mentioned above. Finally, the seed agencies are allowed to offer seed lots approved by the FSC&RD.





Field inspection with representative of FSC &RD, Site-3 Mankera



Tag issued by FSC & RD for different seed categories

Issue 7 - August 2020 The Pulse



### **Mechanical Harvest - The Need of the Hour**

Dr Ata-ur Rehman, Project Leader, CSU and Dr Shahid Riaz, Project Leader, PARC

Production of enough food to meet the needs of growing populations has long been the focus of governments. However over time Pakistan, despite its potential to serve as the food bowl for the region, has been struggling to produce enough food for its own populace. This emanates from the fact that the role of agriculture for a specific setting has long been ignored and that every situation was forced to adopt one solution for all. In contrast, agriculturally developed nations' tailored research for a productive outcome has been a hallmark of their success in agriculture. Pakistan's heavy reliance on large-scale import of pulses including chickpea and lentil is a typical example of how these nutritionally and economically important crops have been sidelined as marginal crops. Under the circumstances our aim should be to draw lessons from these failures to contribute to future thinking so that these crops could not only contribute to the country becoming self-reliant, but also earning precious foreign exchange through a regulated

#### export.

To help improve pulse production in Pakistan, the ACIAR pulses project was initiated to improve productivity and profitability in pulse production. This research project has provided a shining example on how farmers' livelihoods can be improved with the will and ability to convert research questions for practical enhancement of the production and profitability of pulses in a cropping system. The key to success was the application of an inclusive learning approach where researchers and farmers communicated and worked collaboratively to resolve on-farm issues. Through the application of participatory action research, the opinions and commitment of the participating farmers were considered the most important as they became research partners. In other words, the participating farmers were provided with an opportunity to take control of their own cropping system. As a result the bumper yield in the most recent growing season has provided farmers with hope, and more and more farmers have been incorporating these two crops into their farming systems. Participating farmers have played a pivotal role in the dissemination of the learning and practices from the project activities to their neighbouring farmers.

A major change for farmers has been centred on improved knowledge of seeds. Use of varietal seed in Pakistan has been limited to its use by progressive farmers who have access to certified seed that is available in restricted quantities from agricultural research institutes. In contrast, small landholders have relied on grain purchased in village markets. This grain is usually a mixture of several old varieties, and may be tainted with diseases. This grain often results in low yields and poor quality grain. The project undertook replicated varietal trials of the selected lentil and chickpea varieties continually for two years. These trials provided farmers with the best performing lentil and chickpea varieties suitable to their climatic conditions. To ensure the sustainable supply of quality seed of these improved varieties, the project stakeholders and an NGO called National Rural Support Program (NRSP) are working together to develop a village based seed system. Furthermore, weed management trials were conducted at farmers' fields in which a combination of pre-emergence herbicide application and one manual weeding was demonstrated, which showed good control. The capacity of farm families is being developed for seed production. By virtue of these activities, more and more farmers have access to certified seed produced through the village-based seed system, as well as seed production carried out by private enterprise.

Issue 7 - August 2020 The Pulse



Nevertheless, keeping the view that the majority of the Pakistani farmers are small landholders, production of large volumes of quality grain is still a far cry. This is due to the reason that compatibility of the equipment within the country's agricultural system doesn't coincide with the mechanization need of the small scale farmers. The lentil harvest of 0.8 ton/hectare in this season is unprecedented.

However, the process of hand harvesting has its limitations and thus cannot provide sustainable agricultural production to meet the country's rising demand for chickpea and lentil. Continuous increase of labour costs has made the manual harvesting an expensive field operation. It is therefore imperative that keeping in view small landholders potential to produce higher yields, agricultural machinery could be updated that could be efficiently used in smaller plots of small landholders. The available cultivars are not suited to mechanical harvesting because of their semi-erect and short height.

The pulses program at the National Agricultural Research Centre (NARC) is also breeding new cultivars with erect growth habit, adequate plant height and stiff stem (lodging resistant). Availability of such cultivars that are suited to mechanical harvesting will reduce production costs, thereby attracting farmers towards increased lentil cultivation. There is also a need to test different machines (small combine harvester, reaper and thresher) for harvesting suitable for lentil growing areas. The project considers the availability of newer varieties and agronomic interventions, including the compatibility of the equipment within the country's agricultural system, as the most important factors. This is in line with the United Nations Food and Agriculture Organization (FAO) and the United Nations Industrial Development Organization (UNIDO) goal of agricultural mechanization to reduce labour. This in turn would encourage farmers to increase their cultivated land, thereby strengthening the market for rural economic growth, and ultimately improving their livelihoods.









### Contact us

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