Plant Breeding Working Group Meeting 2075

STATUS, ACHIEVEMENTS, CHALLENGES, OPPORTUNITIES FUTURE PROSPECTS OF PLANT BREEDING

RESEARCH AND DEVELOPMENT

Seed Science and Technology Division, Khumaltar

Introduction

First seed testing laboratory in 1962 (Agronomy Division)
Seed unit under Agriculture Botany Division (ABD) in 1966
Seed Technology and Improvement Program (STIP),
Central Seed Science and Technology Division (CSSTD)
Seed unit under Agri Botany Division
Seed Science and Technology Division (SSTD) in 2068 BS

Objectives

- Works in close collaboration with the crop improvement and agricultural development programs
  (a) adaptive research on seed technology
- production, seed quality parameters, storage and seed physiology
  (b) seed improvement through seed education, trainings and seed quality testing services.
  (c)Planning and monitoring of source seed production within NARC.

Research project and activities

1. Qualitative and quantitative characterization of pre-release varieties of agricultural crops

1.1 Agro morphological characteristics study of hill varieties of rice
1.2 Agro morphological characteristics study of wheat
1.3 Agro morphological characteristics study of finger millet
1.4 Agromorphological characteristic study of rapeseed

2. Seed variety identification and diversity analysis using DNA finger printing technology

1. Finger printing and diversity study of pre-release varieties of wheat

2. Diversity study of released and promising varieties of inbred/hybrid maize.

3. DNA profiling (fingerprinting) of lentil.

Achievements: 2071/72

- The highest level of dormancy was found in the Tarahara-1 and Sukhha dhan-4 and lowest in Khumal-4 and Khumal-10 in rice.
- Survey of indigenous crop varieties of naked barley, bean and lentil in Rasuwa and Mustang. Farmers training conducted on quality seeds production and maintenance.
- Descriptors of pre-release varieties of wheat (10 genotypes) and rice (7 genotypes) based on agro-morphological characteristics were prepared.
- A desirable diversity was detected in inflorescence, grain colour and grain quality attributes in bean

Achievements: 2072/73

- The highest level of dormancy in rice seed was found in the Sukhha dhan-4, Sukha dhan 5 and Sukha dhan 6 and lowest in Khumal-10, Khumal-4 and Khumal-8.
- Descriptors of thirteen finger millet genotypes prepared and pigmentation at leaf junction, internode, collar and glume found in genotypes GE 5016 and Sailu Kodo.
- Descriptors of seven pre-release varieties of rice and 10 genotypes of wheat based on agro-morphological characteristics were prepared.
- Out of 22 SSR markers, 13 SSR markers generated banding pattern in rice genotypes/varieties.
- Out of 15 SSR markers, 13 SSR markers generated banding pattern in soybean.

Achievements: 2073/74

- Descriptors of six pre-release varieties of rice , 10 genotypes of wheat and 8 genotypes of barley prepared based on agro-morphological characteristics.
- Out of 20 SSR markers, 13 SSR markers generated banding pattern in wheat genotypes.
- Out of 30 SSR markers, 12 SSR markers generated banding pattern in jute genotypes.

Achievements: 2074/75

- Descriptors of 7 hill genotypes of rice (NR 10676, NR 11082, NR 11011, NR 11105, 08 FAN-10 and Black rice) prepared.
- Descriptors of 10 hill genotypes of wheat (WK 1712, WK 2225, Chyakhura, WK 2123, WK 2278, WK 2286, WK 2370, WK 2414, WK-2422 and WK 1204) prepared.
- Descriptors of 8 genotypes of lentil (Black masuro, RL-4, ILL-6467, ILL-6819, ILL-7164, ILL-8006, ILL-7723, Sagun) prepared.
- Descriptors of 8 genotypes of barley (NB 1003-37/1034, Xveola-45, NB 1003-37/903, Xveola-38, Local uwa, local jau, Marpha uwa and Marpha jau) prepared.
- DNA finger prints of 25 Lentil genotypes (ILL-8006, RL-6, RL-12, ILL-7715, ILL-7164, ILL-3490, Khajura-2, Simal , Shital , Sagun , HUL-57, LG-12, PL-4, RL-11, RL-4, ILL-2712, Black Masuro, RL-79, ILL-6467, ILL-7979, ILL-6819, ILL-7723, WBL-77, ILL-4605 and RL-49) prepared by using 40 different SSR marker.
- DNA finger prints of 48 rapeseed genotypes prepared by using 20 different SSR marker.

Future strategies on crop improvement

Plan for coming year (projects and collaborative activities for FY 2076/77)

- Characterization of promising maize inbred/rice/wheat genotypes
- DNA finger printing of newly released, register and popular rice varieties
- Research on different disciplines : CA technology in source seed production
- On-farm: Maize Hybrid seed production technology verification
- Seed Production: Inbred/hybrid seed production of maize

- Training/ Publication etc

Key message and conclusion

Thanks