Annual Report

2080/81 (2023/2024)

Government of Nepal

Nepal Agricultural Research Council

National Agricultural Research Institute

National Seed Science Technology Research Centre

Khumaltar, Lalitpur, Nepal

2024

National Seed Science Technology Research Centre (NSSTRC)

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Cover Page Photo: Office building of National Seed Science Technology Research Centre, Khumaltar, Lalitpur

FOREWORD

It is my great pleasure to present the annual report 2080/81 of National Seed Science Technology Research Centre (NSSTRC) highlighting the accomplished major activities and their achievements in the fiscal year 2080/81. NSSTRC is the pioneer seed institution of Nepal started with country's first seed testing laboratory since 1962 at Khumaltar, Lalitpur. It still imparts seed quality testing services to the different seed stakeholders. It is working in collaboration and coordination with seed research groups, seed producers, distributing agencies, quality regulators, policy makers and seed users. NSSTRC has actively involved in undertaking problems based research on seed quality in a variety of crop species (field crops, horticultural crops, forage crops etc.) in different aspects viz., seed production, seed morphology, seed physiology, post-harvest handlings, storage and molecular level for diversity analysis. It also provides the technical supports / services to strengthen national seed system using the quality seed which is produced within and outside the NARC.

Qualitative and quantitative characterization to develop descriptors and DNA finger printing of different released and pipeline crop varieties/genotypes of cereals, pulses, oil seeds etc. for seed variety identification and maintenance breeding. Hybrid seed production of maize using different female to male ratios, technology generation on quality seed production of cereals were studied seed testing (germination, viability, moisture, purity etc) in laboratory during 2080/81. Source seed production by different commodity programs, DoAR and ARS were monitored to ensure the source seed quality.

I am thankful to Dr Pallavi Kumari Singh (former chief of NSSTRC) and all staffs of NSSTRC for their untiring hard works and meticulous efforts to accomplish the field research and laboratory works on time. My special thank goes to Mr. Arjun Prakash Poudel (S2) and Dr. Sarita Manandhar (S2) for compiling and presenting this report in this form. Thanks also goes to Bishes Rijal (T5), Supritee Karmacharya (Account officer), Indra Devi Upreti (Administrative Officer), and all supportive staffs Lahani Tharuni, Bishnu Maharjan, and Madan Man Dangol for their kind cooperation for the completion of research, lab and production activities. I would like to express my sincere gratitude to the Executive Director of NARC, Dr. Surendra Lal Shrestha, Director of Crops and Horticulture Research, Dr. Tika Bahadur Karki and Director of Planning and Coordination, Dr. Luma Nidhi Pandey Laudhary for their guidance and continuous support. I hope that, achievements of all activities presented in this report will useful to all researchers, extension workers, planners, policy makers, farmers, developmental partners, academicians, NGOs/INGOs, students and other stakeholders. I look forward to receive constructive comments and suggestion regarding this publication will be highly appreciated.

Mr. Netra Hari Ghimire
Chief, NSSTRC, NARC, Khumaltar, Lalitpur

ABBREVIATIONS & ACRONYMS

ABD	Agriculture Botany Division
AFU	Agriculture and Forestry University
AKC	Agriculture Knowledge Centre
MASL	Above mean sea level
B	Boron
Bp	base pair
BS	Bikram Sambat
BW	Buckwheat
CBSP	Community Based Seed Production
CDD	Crop Development Directorate
CEAPRED	Center for Environmental and Agricultural Policy Research, Extension and Development
CS	Certified seed
CTAB	Cetyl- Trimethyl-Ammonium bromide
Cu	Cupper
CV	Coefficient of variation
DNA	Deoxyribonucleic acid
DoA	Department of Agriculture
DoAR	Directeorte of Agricultural Research
DoLS	Depatment of Livestock Services
DUS	Distinctness Uniformity and Stability
EC	Electrical conductivity
Fe	Iron
FFTs	Farmers' Field Trial
FS	Foundation seed
FY	Fiscal year
FYM	Farm yard manure
ha.	Hectare
HCRP	Hill Crop Research Program
HICAST	Himalayan College of Agricultural Science and Technology
HRs	Human Resources Strength
ISTA	International Seed Testing Association
JTA	Junior Techinical Assistant
K_2O	Potassium oxide
LSD	Least Significant Difference
MAS	Marker Assisted Selection
MC	Moisture content
mg.	Milligram
mm	Millimeter
Mn	Manganese
Mo	Molybdenum
MoALD	Ministry of Agriculture & Livestock Development
N	Nitrogen

NAGRC	National Agronomy Research Centre
NARC	Nepal Agricultural Research Council
NARI	Nepal Agricultural Research Institute
NGO	Non-Government Organization
NGRC	National Genetic Resource Centre
NHA	Net Harvest Area
NMRP	National Maize Research Program
NPBGRC	National Plant Breeding and Genetic Research Centre
NR	Nepal Rice
NRRP	National Rice Research Program
NSB	National Seed Board
NSCL	National Seed Company Limited
NSSTRC	National Seed Science Technology Research Centre
NWRP	National Wheat Research Program
PCR	Polymerase Chain Reaction
PIC	Polymorphism Information Content
PICS	Purdue Improved Crop Storage
PMAMP	Prime Minister Agriculture Modernization Project
PPP	Public Privet Partnership
P_2O_5	Phosphorus Pentoxide
PSQCC	Provincial Seed Quality Control Centre
RCBD	Randomized Complete Block Design
SCoT	Start Codon Targeted
SEAN	Seed Entrepreneurs Association Nepal
Se	Selenium
SPAD	Soil Plant Analysis Development
SQCC	Seed Quality Control Centre
SSR	Simple Sequence Repeat
SSTD	Seed Science & Technology Division
STIP	Seed Technology and Improvement Program
TE	Tris-EDTA
TGW	Thousand Grain Weight
UPOV	International Union for the Protection of New Varieties of Plants
UV	Ultraviolet Radiation
Viz;	Namely
WK	Wheat Khumal
Zn	Zinc
IS	Improved seed
(L.)	Linnaeus
@	At the rate of
^0C	Degree centigrade/degree celcius

संक्षिप्त बार्षिक प्रतिबेदन

यस बार्षिक प्रतिबेदनमा राष्ट्रिय बीउ बिज्ञान प्रबिधि अनुसन्धान केन्द्रको आ.ब. २०८०/८१ को स्वीकृत बार्षिक कार्यक्रम अनुसार उन्मोचन भएका तथा उन्मोचन हुने क्रममा रहेका बालीहरु (धान, भट्टमास र गहुँ) को मात्रात्मक तथा गुणात्मक चरित्रिकरण विवरण तयार गर्ने, बर्णशंकर धान र मकैको उत्पादन प्रबिधि सम्बन्धि बृहत बाली प्रदर्शनी गर्ने र बीउ उत्पादन प्रविधि सम्बन्धि नेपाली भाषामा लेख रचना प्रकाशित गर्ने, बालीहरुको जातीय पहिचान गर्न डि. एन. ए. औँठाछाप तयार गर्ने, गुणस्तरीय बीउ उत्पादन प्रविधिको विकास गर्ने, खाद्यान्न बालीको श्रोत बीउ सुरक्षित भण्डारण गर्ने र विभिन्न सेवाग्राहीद्वारा तथा अनुसन्धान केन्द्रबाट पठाईएका बीउको नमुनाहरुको परिक्षण गर्ने सम्बन्धि परियोजनाका क्रियाकलापहरु संचालन गर्दा प्राप्त प्रतिफलहरु यस प्रतिवेदनमा निम्न अनुसार प्रस्तुत गरिएका छन् ।

- मध्य पहाडको लागि उन्मोचन गर्न सकिने धान बालीका ७ वटा उत्कृष्ट तथा सिफारिस उन्मुख जातहरु (एन. आर. ११२७१-बि-बि-६, एन. आर. ११३०१-बि-बि-१५-४, एन. आर.११५१८-बि-बि-१५, एन. आर. १११०५-बि-बि-२७, एन. आर.११३०१-बि-बि-१, एन. आर. १०६७६-बि-५-३ र खुमल ४) को चरित्रिकरण विवरण तयार गरियो ।

- मध्य पहाडको लागि उन्मोचन गर्न सकिने गहुँ बालीका १२ वटा उत्कृष्ट तथा सिफारिस उन्मुख जातहरु (डब्लु. के. ३२२३, डब्लु. के. ३३२१, डब्लु. के. ३५२३, डब्लु. के. ३५५०, डब्लु. के. ३०९२, डब्लु. के. ३११८, डब्लु. के. ३३२०, डब्लु. के. ३०१५, डब्लु. के. ३०२०, डब्लु. के. ३५३४, डब्लु. के. १२०४, र च्याखुरा) को चरित्रिकरण विवरण तयार गरियो ।

- मध्य पहाडको लागि उन्मोचन गर्न सकिने भटमासका ८ वटा उत्कृष्ट तथा सिफारिस उन्मुख जातहरु (चैंगमो ६०६३, सि.एन.६०, जि.सि.८२२३४-२२सि, जि.-४५०८, सि.एम.९१३३, एल.एस.७७-१६-१६, कलेक्सन ३ ३ र कालो भटमास) को चरित्रिकरण विवरण तयार गरियो ।

- विभिन्न एस. एस. आर. मारकरको प्रयोग गरि धान बालीका २९ वटा, गहुँ बालीका ६० वटा, तोरीको ११ वटा, सरसोको ७ वटा र रेपसिडको १७ वटा उत्कृष्ट तथा सिफारिस उन्मुख जातहरुको डी. एन. ए. औठा छाप तयार गरियो ।

- मकैको नेपाली बर्णशंकर जात रामपुर हाइब्रिड-१० को बीउ उत्पादन केन्द्र परिसरमा प्रदर्शनी गरियो जस बाट करिब ०.४ रोपनी क्षेत्रफलमा ६० के.जी. बर्णसंकर मकैको बीउ उत्पादन गरियो ।

- काभ्रेपलान्चोक जिल्लाको कुन्ताबेसीमा मकैको नेपाली बर्णशंकर जात (रामपुर हाइब्रिड-१०) १ हे. र धानको हर्दिनाथ (हाइब्रिड-१) १ हे. क्षेत्रफलमा कृषकस्तरमा बृहत बाली प्रदर्शनी सम्पन्न गरियो । उक्त प्रदर्शनी गर्दा मकैको औषत उत्पादकत्व ७.८५ मेट्रिक टन/हे. भएको पाईयो भने त्यस क्षेत्रको किसानले लगाउने गरेको मकैको बर्णसंकर जात

सि.पि. ८०८ को उत्पादन ८.५० मेट्रिक टन/हे. भएको पाईयो । त्यसैगरी धानमा हर्दिनाथ बर्णशंकर १ को उत्पादकत्व ६.५० मेट्रिक टन/हे दखियो भने शंकर भन्ने बर्णसंकर जातको धान उत्पादकत्व ७.२० मेट्रिक टन/हे पाईयो । यी दुवै प्रदर्शन/परिक्षणमा संलग्न कृषकहरुको प्रतिक्रिया अनुसार यी दुवै बालीका जात त्यस क्षेत्रको लागि उपयुक्त देखिएकाले नेपाली बर्णसंकर जातहरु पनि मध्य पहाडी भू-भागमा बिस्तार गर्न सकिने सम्भावना उच्च देखियो।

- त्यसै गरि कृषकहरुले बीउको लागि भण्डार गरि राखेको प्रमुख खाद्यान्न बालीको बीउको ७१ वटा नमुना संकलन गर्दा ५९.१६% बीउको नमुनामा चिस्यान बढी देखियो भने ४३.६६% नमुनाहरुको उमारशक्ति कम रहेको पाइयो ।

- मधेश प्रदेश अन्तर्गत धनुषा र महोत्तरी जिल्लामा **"गुणस्तरीय बीउ उत्पादन तथा भण्डारण बिषयक"** सम्बन्धि १ दिने तालिम जम्मा ८४ जना सहभागीहरुको उपस्थितिमा सम्पन्न गरियो । त्यसै गरि गण्डकी प्रदेश अन्तर्गत तनहुको पुर्कोट र कास्कीको आर्वामा **"सामुदायिक बीउ बैंक संचालक, बीउ उत्पादक सहकारी/समूहहरु लाई गुणस्तरीय बीउ उत्पादन सम्बन्धि प्राबिधिक तालिम"** ७० जना सहभागीहरुको उपस्थितिमा सम्पन्न गरियो । त्यसै गरि प्रति "धान, मकै र आलुबालीको गुणस्तरीय बीउ उत्पादन सम्बन्धि प्रोटोकल" नेपाली भाषामा तयार गर्न राष्ट्रिय बाख्रा अनुसन्धान कार्यक्रम, बन्दीपुर, तनहुँमा राईटसप (लेखन कार्यशाला गोष्ठी) को आयोजना गरि सम्पन्न गरियो । उक्त लेखन कार्यशाला गोष्ठीमा १८ जना बिषयविज्ञ हरुको उपस्थितिमा रहेको थियो । गत आ.व. मा प्रस्ताव लेखन कार्य सम्पन्न गरि कार्यालय स्तरीय समीक्षा सम्पन्न गरियो ।

- नार्क अन्तर्गतका बिभिन्न केन्द्रहरु तथा श्रोत केन्द्रहरुबाट संकलन गरिएको प्रमुख खाद्यान्न बाली, कोसेबाली र तेलबालीको ३७८ वटा अनुसन्धान नमुनाहरुको प्रयोगशालामा परिक्षण गरियो । ती मध्ये ६४.५% नमुना तोकिएको स्तर भन्दा चिस्यान प्रतिशत बढि भएको पाईयो भने ३२.२८% नमुनाहरुमा उमारशक्ति तोकिएको स्तर भन्दा कम देखियो ।

- केन्द्रद्वारा प्रबिधि प्रसार गर्ने उद्देश्य अनुरुप १०० प्रति "धान, मकै र आलुबालीको गुणस्तरीय बीउ उत्पादन सम्बन्धि प्रोटोकल" नेपाली भाषामा तयार गरि प्रकाशन तथा बिक्रि वितरणको लागि तयार पारियो । त्यसैगरि यस केन्द्रको गत आ.व मा भए गरेका कामहरुको प्रतिफल प्रस्तुत गर्ने उद्देश्यका साथ ७५ प्रति बार्षिक प्रतिवेदन प्रकाशित गरियो ।

- विभिन्न सरोकारवाला निकायबाट प्राप्त भएका जम्मा १४२ वटा सेवा नमुनाहरु प्रयोगशालामा परिक्षण गरि सरोकारवालालाइ नतिजा उपलब्ध गराइयो। त्यसैगरी केन्द्रीय कृषि प्रयोगशाला, हरिहर भवनबाट समय समयमा प्राप्त दक्षता नमुनाहरु प्रयोगशालामा परिक्षण सम्पन्न गरि सोको नतिजा केन्द्रीय कृषि प्रयोगशाला, हरिहर भवनमा पेश गरियो।

  ती १४२ नमुनाहरु मध्ये ३०.४% नमुना तोकिएको स्तर भन्दा चिस्यान प्रतिशत बढि भएको पाईयो भने २३.२३% नमुनाहरुमा उमारशक्ति तोकिएको स्तर भन्दा कम देखियो ।

- जाईका को प्राविधिक सहयोगमा शुरु गरिएको नाभिक तथा प्रजनन् बीउ उत्पादन सम्बन्धि परियोजनाको फिल्डमा संचालन गरिएको क्रियाकलापको अनुगमन गरि प्रतिबेदन तयार गरि जाईका परियोजनालाई बुझाईएको । परियोजनाको अन्य क्रियाकलापमा सहभागी भई आवश्यक सुझाव समेत दिईएको थियो ।

EXECUTIVE SUMMARY

This is the Annual report of National Seed Science Technology Research Centre (NSSTRC), NARC for the fiscal year 2080/81 (2022/2023). There were six research projects on problems related to quality seed production, varietal identification and verification of hybrid seed production technology of maize and demonstration of hybrids of maize and rice in farmers' field. Experiments were carried out in field as well as in the laboratory of NSSTRC, Khumaltar. Major research areas were; seed production, genuineness of crop varieties and their morphology, DNA profiling, Agromorphological profilings and seed quality enhancement techniques. Crops under study were rice maize, wheat, major grain legume and oilseeds crops. The key findings of these research studies are as follows:

- Descriptors of 7 mid hill rice genotypes (NR-11271-B-B-6, NR-11301-B-B-15-4, NR-11518-B-B-15, NR-11105-B-B-27, NR-11301-B-B-1, NR-10676-B-5-3 and standard check-Khumal 4) prepared
- Descriptors of 12 promising wheat genotypes for mid hills viz; WK-3223, WK-3321, WK-3523, WK-3550, WK-3092, WK-3118, WK-3320, WK-3015, WK-3020, WK-3534, WK-1204 and Chyakhura (check) prepared
- Descriptors of 8 promising genotypes of soybean for mid hill condition (Chaingmow 6063, CN-60, GC-82234-22C, G-4508, CM-9133, LS-77-16-16, Coll#3 and Black soybean as local check) prepared
- DNA finger prints of 29 rice genotypes, 60 wheat genotypes, 11 mustard genotypes, 7 sarson genotypes, and 17 rapeseed genotypes prepared by using different SSR markers
- Demonstration of F1 seed production of Nepali hybrid maize (Rampur Hybrid 10) was carried out in office premises. About 60 kg F1 seed were harvested from 0.4 ropani of land.
- Nepali hybrid maize (Rampur Hybrid 10) and Nepali hybrid rice (Hardinath hybrid-1) were demonstrated in area of 1 ha each under farmers field. On an average 7.85 mt/ha grain yield was found in demonstration block of hybrid maize variety Rampur Hybrid 10 while popular hybrid CP 808 produced 8.50 mt/ha. Similarly 6.50 mt/ha grain yield of hybrid rice namely Hardunath Hybrid 1 was found in demonstration block of hybrid rice at Kuntabesi of Kavrepalanchowk district where as popular hybrid Shankar of rice produced 7.20 mt/ha grain yield. Performance of Rampur Hybrid 10 of maize and Hardinaath hybrid-1 of rice was excellent. The performance of these hybrids and positive feedback from farmers, verification of maize hybrid (Rampur hybrid-10) and rice hybrid (Hardinath hybrid 1) was found successful in mid-hill and foot hills of Kavrepalanchowk districts.
- About 71 seed samples of farmers' save seed were collected from farmers' household. Out of these collected samples, 59.16% seed samples having high moisture content and 43.66% samples were found below standard regarding germination.

- Different trainings, writeshop and review workshop were organized by NSSTRC in last fiscal year. Around 180 participants were participated in training and workshop organized by NSSTRC. On the spot training was also provided to the farmers' groups and seed producers of cooperatives in OR sites and NARC Technology Village through out the country during field visit.
- Out of 378 collected seed samples from source centers, 35.5 % of those samples was found with in standard and rest 64.5 % of collected samples were found below standard regarding moisture content. Similarly, 67.72 % samples were found standard and rest 32.28 % samples were found below standard regarding germination.
- About 142 service samples were come for test and registered in NSSTRC laboratory. Out of these samples, 23.2% of service samples were below standard for germination point of view. Likewise 30.4% tested service samples were found high moisture content.
- One hundred copy of book entitled "*Quality Seed Production Protocol for Rice, Maize and Potato"* was published in Nepali language. Similarly, Seventy five copy *Annual Report* was published during first quarter of FY 2080/81 and distributed by NSSTRC
- Nucleus and breeder seed production activities are being carried out in NRRP under technical advice of JICA. Under this activities different demonstration activities were carried out in research station as well as in farmers' field. Several workshop and meetings were organized by JICA to train staff working in rice research and extension.

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1. WORKING CONTEXT

National Seed Science Technology Reseach Centre (NSSTRC) is one of the important discipline under National Agricultural Research Institute (NARI) of Nepal Agricultural Research Council (NARC) located at Khumaltar (1335 amsl; 85°10′ E and 27°39′ N) (Annex 1 and Annex 3). It is featured to lead the research and review on the problems relating to seed quality, seed physiology, seed production, seed health, harvesting, processing, sampling, pre-and post-harvest management. Seed enhancement technology, variety identification, genetic purity evaluation, testing for genuineness of plant variety, development of seed quality assessment procedures, human resource development, and seed quality testing are the research areas of the centre. It embarks on the research works on these disciplines and provides services ensuring the production and supply of quality seed to farmers in a right place and time and helps in achieving a good harvest.

In the present context of depleting land and increasing population, we have to produce adequate food to address the hungry mouths. It is the established fact that use of quality seed maintains required plant population and uniform maturity leading to increasing yield by 15-20 percent. Basic and applied researches on seed science and technologies relating to seed quality, seed biology, seed management, seed quality enhancement, pre-harvest and post- harvest management, seed distribution and support in activities related to seed policies and regulations are the areas dealt during the year as core research activities. Consequently it works in collaboration with different institutions/programs with seed component and involved in dissemination about use and supply of quality seed in the country. Major collaborative institutions are Seed Quality Control Centre (SQCC), Department of Agriculture (DoA), Provincial Seed Quality Control Cetre (PSQCC), Crop Directorate of Development and Agriculture Biodiversity Conservation Center, National Seed Company Limited (NSCL), SEAN, CEAPRED, LiBIRD, Private Seed Companies, Universities, Seed Cooperatives, CBSP groups and farmers.

2. INTRODUCTION

2.1 Introduction and Background

Seed Science and Technology Research Unit was established as first seed testing laboratory in 1962 in Agronomy Division under the Department of Agricultural Development (DoAD). It got accredited to the International seed Testing Association (ISTA) in 1964. In early seventies, seed testing laboratory moved to Agriculture Botany Division (ABD) to work in close with the breeders. Seed Technology and Improvement Program (STIP), Central Seed Science and Technology Division (CSSTD) were the upgraded modalities and given the divisional status for bridging between research, extensions and end users of seed through seed certification, field inspection, seed testing, seed technology research and planning and monitoring of source seed production. On inception of Nepal Agricultural research Council (NARC), Seed Research as a Unit merged again in ABD and is entitled to conduct seed research on practical problems and support in strengthening national seed system in use and distribution of quality seed.

Seed Science and Technology Division (SSTD) as an independent division under NARI had approved by the 41st NARC Council meeting. It had been effective as central division of seed in Khumaltar from 2010/11 fiscal year. Later on in fiscal year 2019/20, 59th NARC Council meeting changed its name as "National Seed Science Technology Research Centre (NSSTRC)" with mandates. It acts as focal center for seed components in NARC assisting the use and production of quality seed through research for agricultural development and works on seed in close association and coordination with stakeholders of seeds under National Seed Board (NSB).

2.2 Objectives

- To carry out the seed technology research on problems associated with quality seed on seed production, harvesting, post-harvest handlings, storage, seed morphology and seed physiology based on seed quality testing protocols.
- To develop and standardize seed testing techniques through research supporting the seed certification system.
- To establish and coordinate the source seed production in NARC farm/stations and its distribution.
- To provide seed testing services to seed producers, seed companies, I/N/GOs with seed component, research entities, farmers etc.
- To work in close collaboration with the different stakeholders (central and provincial) of national and provincial level on seed problems in coordination with seed quality control centre, central seed testing laboratory and provincial seed testing laboratory.

2.3 Mandate

- Promote and prioritize seed sector research and development.
- Develop road map, directives and monitor of seed science related programme at national level.
- Monitoring and evaluation of source seed production and seed quality under NARC stations.

- Preparation of seed science related programme and policies to support national seed system.
- Conduct research on seed quality, seed testing and provide DNA finger printing service.
- Capacity building of manpower involved in seed sector research and development.
- Coordinate, liaise and collaborate with national and international organizations under the directives of NARC.

2.4 Thematic thrust areas for research

Seed is the most essential and viable input in agriculture. Quality seed leads to increase in production and productivity by 15 to 20 %. Its quality is affected by biotic and abiotic factors at various stages during production, harvesting, post-harvest handlings and storage. Based on agricultural research priorities and practical problems demanded by time, space (location specific) and clients, following basic and adaptive research areas on seed technology with practical implication have been identified.

2.4.1 Seed Production Technology

Seed production follows a definite sequence of steps and needs constant surveillances and immediate actions. Introduction of new varieties like hybrid, inbred, forage varieties; diverse cropping systems, cultivation of a range of crop species with different biology, climate change and incidence of diseases/pests and their threats are major factors that may create problems in seed production. Seed crop physiology, crop husbandry, the biology of seed maturation, role of minerals and micronutrients are the important aspects in seed production which requires intensive research for harvest of quality seed. Following points should be considered to adopt the quality seed production:

- Appropriate site selection
- Suitable varieties/genotypes
- Optimum isolation distance
- Optimum fertilizer dose
- Regular monitoring and field inspection
- Rouging
- Harvesting
- Processing
- Seed certification / Truthful labeling
- Storage

2.4.2 Seed Testing Technology and Seed Physiology

Seed testing for moisture %, germination% and purity% is carried following the methods standardize by ISTA. Testing determines the planting value of seed. Timely filed inspection and lab testing procedures are required for seed certification and truthful labeling. However, discrepancies in test results do occur in seed testing. In these circumstances, the center undertakes research to develop the appropriate testing technology in availing the assessment of quality seed and supports to develop the seed standards.

2.4.3 Seed Morphology and Taxonomy

Genetic purity is one of the quality attributes of seed. It is maintained through isolation, field inspection and physical purity and pre and post-harvest control plot tests at laboratory. It is necessary to undertake the practical researches and develop the distinguishing and identifying characters of each named varieties to avoid the genetic contamination in the standing up field and seed. The center, therefore undertakes the genuineness cultivar testing through agro-morphological characterization, biochemical and molecular testing.

2.4.4 Seed Post Harvest, Handling and Storage Technology

Seed is a living material which deteriorates time over and finally dies. Seed processing, drying, seed moisture%, seed treatment, seed storage containers, storage condition and mechanism of seed dissemination have great effect on seed viability and longevity. The center facilitates in carrying research on these areas and it has also an experience of working in collaboration with the national and international seed technology institutions.

2.4.5 Seed Variety Identification Using DNA Finger Printing Technology

DNA finger printing is a new advancement tool in molecular techniques and its application helps breeders and seed analysts in crop research, conservation of biodiversity and seed varietal identification. The centre is providing DNA finger printing using SSR marker in cereals, legumes and vegetable crops for variety release and registration process.

2.4.6 General Seed Testing

Following quality testing services are provided to seed producers, groups, seed companies and researchers etc.

- Moisture test
- Physical purity test
- Germination test
- 1000 grain weight test
- Proficiency seed sample test.

2.4.7 Special Seed Testing

Special seed testing services are provided in the laboratory. For special seed testing following testing services are provided.

- Tetrazolium salt test
- Vigor test
- Viable test
- Cold testing
- Ageing test
- Biochemical test
- DNA fingerprinting

2.5 Major Activities

- Biochemical test for varietal identification of vegetable species for genuineness of cultivars.

- Descriptors of pre-release varieties were developed based on agro-morphological traits.
- Establishment of seed production technology as per seed production environment.
- DNA fingerprinting using SSR marker for identifying genetic diversity among promising genotypes of different crops.

2.6 Major Achievements

- DNA fingerprinting of *Garima* variety of rice was done and documented.
- Suitable hermetic storage structures (Super grain bag, PICS bag and Safe grain bag) identified for grain storage.
- Zeolite beads identified as suitable drying storage tool for vegetables and high value crops.
- Seed germination percentage and viability increased if maize seed and roasted wheat is kept in ratio is 5-6:1 in air tight container or plastic bag.
- Seed pre-treatment techniques for rice, finger millet, *Sesbania* etc. established to break the seed dormancy/hard seed.
- Genetic and physiology of seed dormancy in improved rice varieties identified using SSR markers.

2.7 Infrastructure and facilities

The centre has its own two floor office building but top floor is using by NARI, Khumaltar, Lalitpur (annex 3). This centre has seed testing/research laboratory, molecular laboratory and field for other research activities. It is equipped with the seed quality testing facilities and molecular marker testing at DNA level. It provides seed testing services of all kinds of agricultural, horticultural and forage crop species to farmers, seed producers, seed companies, researchers and provides analyzed reports following the rules for testing seeds by ISTA, 2011 and guidelines and norms developed by national seed regulatory body under NSB. Analytical purity test, moisture test, germination test are the general testing services whereas accelerated ageing test of wheat, cold test of maize, tetrazolium test, biochemical test for varietal identification (phenol and potassium iodide-iodine tests) and pre and post field plot tests are the special tests providing by the centre. The centre has strengthened the molecular testing facilities for carrying out the genuineness test of the crop varieties using DNA molecular markers and some time these facilities are also used in studying the genetic diversity of agricultural crops specific to landraces diversity. These facilities are listed in annex 4.1 and 4.2.

The centre also provides technical backstopping to SQCC in developing seed testing procedures, seed standards, field standards and minimum quality standards and assists in planning of source seed demand and supply. The centre generates database on seed and seed related other matters and coordinate the NARC seed component among the seed stakeholders.

2.8 Organizational structure and human resource

Following figure 1 explains the organizational structure of NSSTRC. It explains the working modality figure 2 and human resources strength (HRs) to help in achieving the

objectives and strategies of the centre. The centre has ten staffs namely; one senior scientist (S-4), two scientists (S-2), one technician (T-5), one administrative officer, (A-6), one account officer (A-6), three lower technicians (T-1) and one light driver. Similarly, two skill manpower are working in seed testing laboratory and molecular laboratory. They are hired by NSSTRC. Details of human resource is given in annex 5.

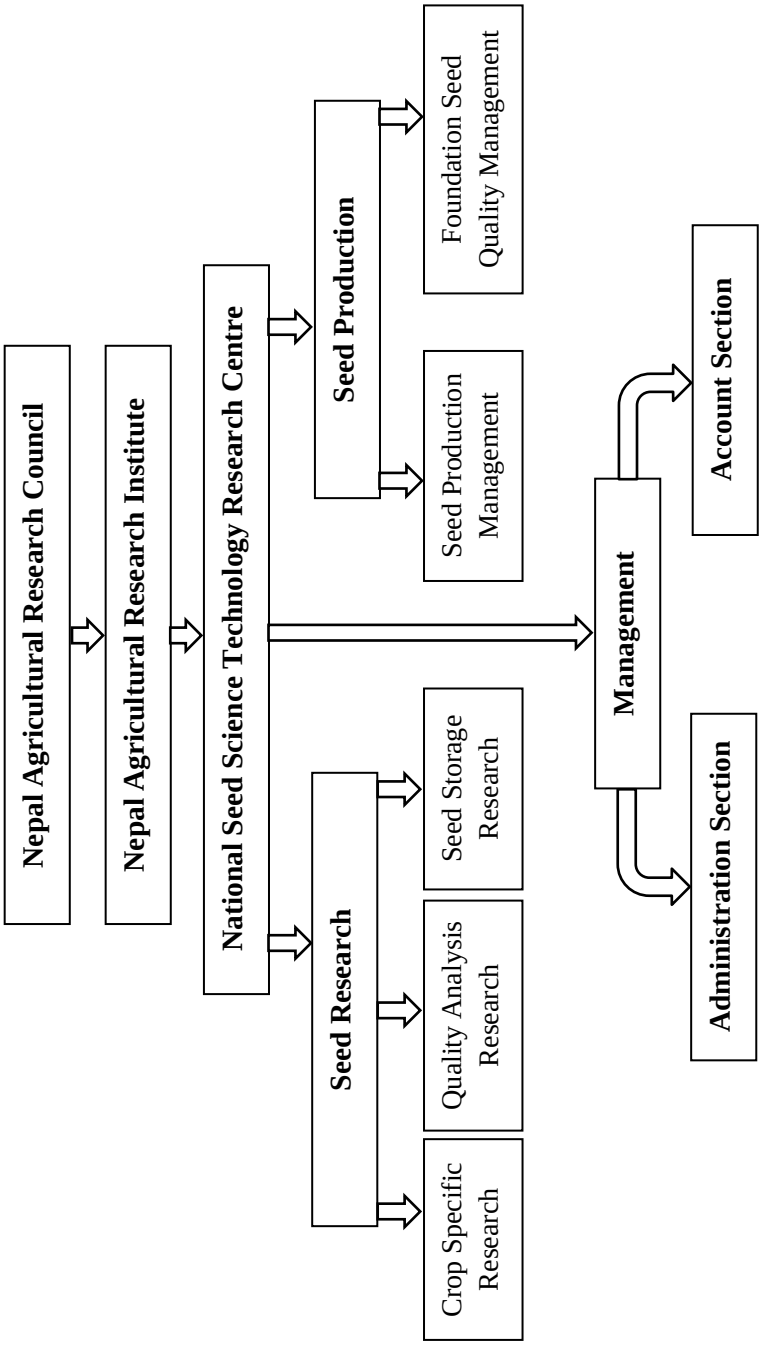


Figure 1: Organogram of NSSTRC

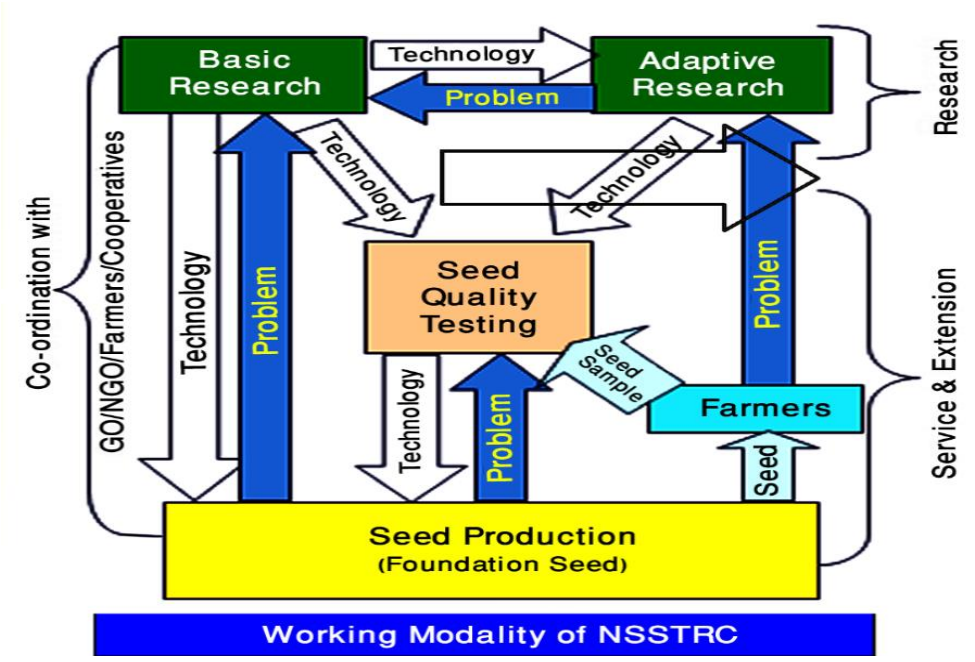


Figure 2: Working modality of NSSTRC

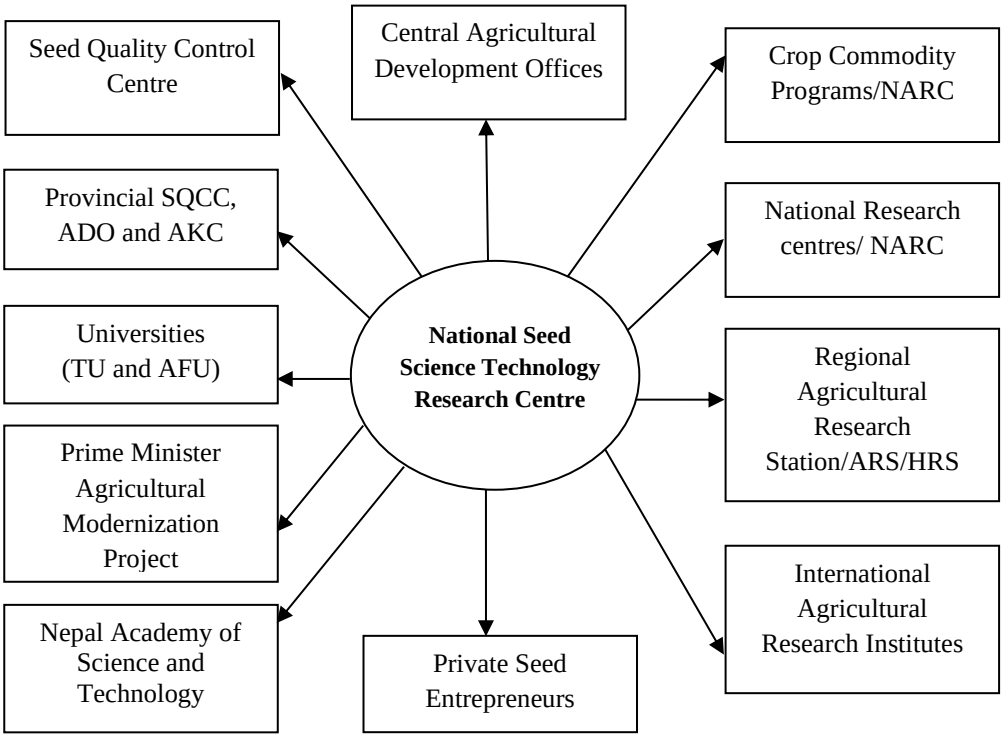


Figure 3: Linkage and coordination, NSSTRC

3. RESEARCH HIGHLIGHTS

The summary of progress report of fiscal year 2080/81 of different projects under NSSTRC, Khumaltar, Lalitpur are presented in Annex 6. The details of individual projects is explained as below. The meterological data and information of Khumaltar, Lalitpur were presented in Annex 2 during last fiscal year.

3.1 Agro-morphological Profiling of Pre-release Varieties of Agronomical crops

3.1.1 Agro-morphological profiles of promising genotypes of rice

Introduction:

Rice (*Oryza sativa* L.) is one of the most important food crop among the cereals in Nepal. It occupies an area of 1,477,378 ha with the production of 5,130,625 mt and productivity of 3.5 t/ha and contribution of 1.6% to the agricultural GDP in FY 2079/80 (MOALD 2023).there are many newly developed rice varieties/genotypes that are suitable to different agro-ecological zones. The newly developed varieties must be distinct, uniform and stable (DUS) which are mainly identified with respect to their morpho-physiological attributes. However, with the use of high yielding varieties/genotypes and new technologies, it has become a great threat to secure the traditional varieties and landraces which may have immense potential for different important traits.

Repeated use of the same breeding lines with similar genetic base in variety development program not only narrow down the genetic base but also invite new problems associated with biotic and abiotic stresses. Therefore, variety development should consider the qualitative and quantitative characterization of pre-release promising genotypes of rice crops. Qualitative characters are considered as morphological markers in the identification of landraces and improved varieties of rice because they are less influenced by the environmental changes. The rice pure lines which possess exclusive variability and unique features need to be conserved and utilized in future rice breeding program to develop new rice varieties for issues like intellectual property rights. So, the objective of this research is to develop descriptors of the promising rice genotypes for mid-hill condition that helps the seed producers, crop inspectors, crop inspectors and respective commodity breeders to maintain genetic purity and to support the variety release and registration process.

Materials and method:

Eight promising rice genotypes viz. NR-11271-B-B-6, NR-11301-B-B-15-4, NR11518-B-B-15, NR-11105-B-B-27, NR-11301-B-B-1, NR-10676-B-5-3, and Khumal-4 (check) from National Plant Breeding and Genetic Resource Centre (NPBGRC), Khumaltar were tested for agro-morphological characterization during summer season 2080-81. The experiment was laid out in RCBD with three replication at Khumaltar. The individual plot size was $4m^2$ with the spacing of 20 cm x 15 cm. Seedlings were raised in dry bed nursery using 50 kg seed/ha. Transplanting was done in puddled field on 18^{th} Asar 2080 with the recommended fertilizer dose of 100:30:30 NPK kg/ha. Half dose of N and full dose of P and K was applied as basal dose and the remaining N was top dressed in two splits, first at the time of maximum tillering and second at booting stage. Intercultural operations were carried out at different crop growth stages as and when required. All the required data were

recorded from the net harvested area of 2.4 m^2 from each plot. The qualitative and quantitative traits were recorded according to UPOV guidelines.

The quantitative data were analyzed using RStudio version 4.3.1. Analysis of variance (ANOVA) for RCBD was used to calculate treatment means, standard errors and significant differences between treatments means (RStudio Team 2023). Statistical testing of treatment mean separation for significant data was done using Fisher-LSD test at $p<0.05$.

Results and discussion:

Variation in qualitative traits among the rice genotypes

There was variation in the qualitative traits among the seven tested rice genotypes for the DUS characteristics in the field condition. However, most of the observed traits (21 out of 29) were found to be similar among all the seven genotypes (Table 1). For example, similarity in color of basal leaf sheath (light green); leaf distribution of anthocyanin coloration (uniform); shape of leaf ligule (cleft); secondary branches in panicle (present), grain aroma well exerted panicle (absent) was observed in all rice genotypes and so on. Variation was observed only in eight other qualitative traits of the rice genotypes tested. The leaf attitude of blade (early) was semi erect in three rice genotypes (NR-11105-B-B-27, NR-10676-B-5-3, NR11518-B-B-15) while the remaining was erect type. Male sterility was absent in the genotypes NR-11271-B-B-6 and Khumal-4 while the other five genotypes showed partial male sterility. Further, the stem anthocyanin coloration of nodes was present only in NR-11301-B-B-15-4 while absent in others. The genotypes greatly varied in stem thickness ranging from low (Khumal-4) to medium (NR-11105-B-B-27) to strong (NR-11301-B-B-1, NR-11271-B-B-6, NR-10676-B-5-3, NR11518-B-B-15, NR-11301-B-B-15-4). The genotype NR-11271-B-B-6 showed weak/poor spikelet hair pubescence of lemma while other genotypes had medium. Similarly, leaf senescence time was late in the check variety Khumal compared to other six genotypes that showed intermediate leaf senescence. The decorticated grain color was observed to be slightly brown in the genotypes NR-11301-B-B-1, NR-11105-B-B-27, NR-11271-B-B-6 while the other four genotypes showed white color. The details of the variable traits among the genotypes are listed in Table 1.

Table 1: Qualitative variation among the rice genotypes

Traits/Genotypes	NR-11105-B-B-27	NR-11301-B-B-1	NR-11271-B-B-6	NR10676-B-5-3	NR11518-B-B-15	NR-11301-B-B-15-4	Khumal-4 (check)
Basal leaf sheath color	Light green	Light green	Light green	Light green	Light green	Light green	Light green
Leaf intensity of green color	Green	Light green	Green	Light green	Green	Light green	Green
Leaf distribution of anthocyanin coloration	Uniform	Uniform	Uniform	Uniform	Uniform	Uniform	Uniform
Leaf sheath intensity of anthocyanin in coloration	Strong	Strong	Strong	Strong	Strong	Strong	Strong
Leaf blade pubescene of surface	Strong	Strong	Strong	Strong	Strong	Strong	Strong
Leaf anthocyanin coloration of collar	Green	Green	Green	Green	Green	Green	Green
Leaf shape of ligule	Cleft	Cleft	Cleft	Cleft	Cleft	Cleft	Cleft
Leaf color of ligule	Straw	Straw	Straw	Straw	Straw	Straw	Straw
Flag leaf attitude of blade (Early)	Semi Erect	Erect	Erect	Semi erect	Semi Erect	Erect	Erect
Flag leaf attitude of blade (Late)	Semi erect	Semi erect	Semi erect	Semi erect	Semi erect	Semi erect	Semi erect
Culm habit	Semi erect	Semi erect	Semi erect	Semi erect	Semi erect	Semi erect	Semi erect
Male sterility	Partial	Partial	Absent	Partial	Partial	Partial	Absent
Lemma anthocyanin coloration	Straw	Straw	Straw	Straw	Straw	Straw	Straw
Spikelet color of stigma	White	White	White	White	White	White	White
Stem thickness	Medium	Strong	Strong	Strong	Strong	Strong	Low
Stem anthocyanin coloration of nodes	Absent	Absent	Absent	Absent	Absent	Present	Absent
Panicle length of main axis	Slightly drooping	Slightly drooping	Slightly drooping	Slightly drooping	Slightly drooping	Slightly drooping	Slightly drooping
curvature of panicle	Drooping	Drooping	Drooping	Drooping	Drooping	Drooping	Drooping
Stem intensity of anthocyanin coloration of nodes	Light green	Light green	Light green	Light green	Light green	Light green	Light green
Presence of secondary branches in panicle	Present	Present	Present	Present	Present	Present	Present
Panicle color	Light green	Light green	Light green	Light green	Light green	Light green	Light green
Spikelet hair pubescence of lemma	Medium	Medium	Weak	Medium	Medium	Medium	Medium

Traits/Genotypes	NR-11105-B-B-27	NR-11301-B-B-1	NR-11271-B-B-6	NR10676-B-5-3	NR11518-B-B-15	NR-11301-B-B-15-4	Khumal-4 (check)
Panicle awns	Present	Present	Present	Present	Present	Present	Present
Panicle exsertion	Well exserted	Well exserted	Well exserted	Well exserted	Well exserted	Well exserted	Well exserted
Panicle attitude in relation to stem	Semi upright	Semi upright	Semi upright	Semi upright	Semi upright	Semi upright	Semi upright
Time of leaf senescence	Intermediate	Intermediate	Intermediate	Intermediate	Intermediate	Intermediate	Late
Decorticated grain shape in lateral view	Semi round	Semi round	Semi round	Semi round	Semi round	Semi round	Semi round
Decorticated grain color	Slightly brown	Slightly brown	Slightly brown	White	White	White	White
Decorticated grain aroma	Absent	Absent	Absent	Absent	Absent	Absent	Absent

Variation in quantitative traits among the rice genotypes

Significant variations were observed in many of the quantitative traits among the rice genotypes (Table 2). The maturity days was significantly late in the genotypes NR-11301-B-B-1 and NR-10676-B-5-3 by 4 days compared to NR-11105-B-B-27 (161 days). The genotype NR-11271-B-B-6 showed significantly longest leaf blade length (46.4 cm) compared to other genotypes that ranged from 39.5 cm to 33.4 cm. The filled grains/panicle was significantly highest in NR-11105-B-B-27 (165.6) and the lowest in NR-11301-B-B-1 (87.8) while the remaining were in between.

The rice genotype NR-10676-B-5-3 was significantly late in heading and maturity (165 days) and tallest in plant height (160.9 cm), highest in tiller number/plant (16.5) and highest in fresh biomass yield (36.5 t/ha) compared to the other genotypes. However, the grain yield, leaf blade width, glume length, grain length, grain width and peduncle length showed non-significant differences among the rice genotypes. The average of grain yield was 6.8 t/ha with the highest in the genotype NR-11105-B-B-27 (8.7 t/ha) and lowest in NR-11271-B-B-6 (5.5 t/ha) and NR-11518-B-B-15 (5.5 t/ha). Further, the genotype NR-11105-B-B-27 was observed to have highest grain yield (8.7 t/ha), significantly early maturating (161 days), shortest height (140.9 cm), highest number of filled grains/panicle (165.6), lowest unfilled grains/panicle (18.2) and highest thousand grain weight (24.6 gm) which make it more suitable and acceptable for release compared to all other tested genotypes.

Table 2 Quantitative variation among the rice genotypes

Genotypes	HD	MD	LBL (cm)	LBW (cm)	GlL (mm)	GL (mm)	GW (mm)	PeL (cm)	PL (cm)	PH (cm)	Filled G/panicle	Unfilled G/panicle	Tiller no/plant	TGW (gm)	FBY (t/ha)	GY (t/ha)
NR-11105-B-B-27	116^{e}	161^{c}	33.4^{b}	1.1	2.5	8.8	2.7	7.3	25.1^{abc}	140.9^{b}	165.6^{a}	18.2^{d}	12.0^{b}	24.6^{a}	23.2^{b}	8.7^{a}
NR-11301-B-B-1	117^{d}	165^{a}	35.3^{b}	1.5	2.1	8.1	2.2	8.7	24.8^{bc}	161.5^{a}	87.8^{c}	38.3^{bc}	12.6^{b}	21.2^{b}	21.5^{b}	6.4^{cd}
NR-11271-B-B-6	120^{b}	163b	46.6^{a}	1.4	1.9	8.1	2.3	8.3	24.5^{bc}	169.1^{a}	110.7^{bc}	81.3^{a}	11.6^{b}	21.2^{b}	15.8^{b}	5.5^{d}
NR10676-B-5-3	122^{a}	165^{a}	36.5^{b}	1.3	1.9	8.2	2.1	7.0	26.4^{a}	160.9^{a}	134.7^{abc}	47.8^{b}	16.5^{a}	19.8^{b}	36.5^{a}	8.1^{ab}
NR-11518-B-B-15	118^{cd}	163^{b}	38.6^{b}	1.0	2.2	8.0	2.5	6.2	23.6^{c}	160.4^{a}	140.3^{ab}	30.1^{cd}	9.9^{b}	17.5^{c}	23.9^{b}	5.5^{d}
NR-11301-B-B-15-4	118^{cd}	163^{b}	39.5^{ab}	1.3	2.3	8.6	2.6	9.3	25.3^{ab}	159.7^{a}	125.2^{abc}	46.2^{bc}	11.4^{b}	21.0^{b}	21.0^{b}	6.6^{cd}
Khumal-4 (check)	119^{bc}	163^{b}	37.1^{b}	1.4	2.0	8.0	2.1	7.4	24.9b^{c}	159.5^{a}	129.7^{abc}	21.0^{d}	12.0^{b}	21.1^{b}	19.9^{b}	7.1^{bc}
Grand mean	**119**	**163**	**38.1**	**1.3**	**2.1**	**8.2**	**2.4**	**7.7**	**24.9**	**158.8**	**127.7**	**40.4**	**12.3**	**20.9**	**23.1**	**6.8**
P value	***	***	*	ns	ns	ns	ns	ns	*	*	*	***	*	***	*	ns
LSD $_{0.05}$	1.47	0.006	7.50	-	-	-	-	-	1.50	14.52	47.80	16.59	3.41	2.23	9.37	-
CV (%)	0.70	0.002	11.15	19.62	18.61	6.32	19.71	21.73	3.42	5.18	21.21	23.27	15.75	6.06	22.98	22.17

Note: *HD=Heading Days, MD=Maturity Days,* LBL=*Leaf blade length, LBW= Leaf blade width, GlL= Glume Length, GL=Grain Length, GW=Grain Width, PeL=Peduncle Length, PL=Panicle Length, PH=Plant Height, G =Grain, TGW=Thousand Grain Weight, FBY=Fresh Biomass Yield, GY=Grain Yield*

Conclusion:
There was noticeable differences in the qualitative traits of the tested rice genotypes and many of them similar to the check variety Khumal-4. The genotype NR-11105-B-B-27 was observed to have highest grain yield (8.7 t/ha), significantly early maturating (161 days), shortest height (140.9 cm), highest number of filled grains/panicle (165.6), lowest unfilled grains/panicle (18.2) and highest thousand grain weight (24.6 gm) which make it more suitable and acceptable for release compared to all other tested genotypes.

3.1.2 Agro-morphological profiles of promising genotypes of soyabean

Introduction:
Agro-morphological characterization of promising genotypes of soybean as a series of work had been carried out and the descriptors of the soybean genotypes to support identification, release, seed production and inspection activities under seed certification program. It is a continuous project activity with the objective of determining the agro-morphological variability in qualitative and quantitative traits (DUS) for preparing the descriptors of genotypes of soybean for mid-hill conditions to the support the national variety release process.

Materials and method:
Eight different genotypes of soybean were tested for the agro-morphological characterization (DUS) at Khumaltar, Lalitpur. The genotypes were Chaingmow 6063, CN-60, GC-82234-22C, G-4508, CM-9133, LS-77-16-16, Coll#3 and Black soybean (local check) provided from Natonal Plant Breeding and Genetic Resource Centre (NPBGRC), Khumaltar. The genotypes were randomized and tested in three replication with RCBD design. Soybean genotypes were sown at the spacing of 50 cm x 10 cm on 2080/02/18 with the individual plot size of 6 m^2 (2 m x 3 m). The recommended dose of fertilizer (30:60:30 NPK kg/ha) was applied at the time of sowing. All the required qualitative and quantitative traits were recorded according to UPOV guidelines.

The quantitative data were analyzed using RStudio version 4.3.1. Analysis of variance (ANOVA) for RCBD was used to calculate treatment means, standard errors and significant differences between treatments means (RStudio Team 2023). Statistical testing of treatment mean separation for significant data was done using Fisher-LSD test at $p<0.05$.

Results and discussion:

Variation in qualitative traits among the soybean genotypes

There was variation in nineteen different qualitative traits among the soybean genotypes tested at Khumaltar condition (Table 3). All the eight soybean genotypes showed intermediate plant growth, strong hypocotyl anthocyanin coloration, semi-erect hair type and normal pubescence density.

Table 3: Qualitative variation among the soybean genotypes

Traits/ Genotypes	Chaingmow 6063	CN-60	GC-82234-22C	G-4508	CM-9133	LS-77-16-16	Coll#3	Black soybean
Hypocotyl anthocyanin coloration	Strong	Strong	Strong	Strong	Strong	Strong	Strong	Strong
Hypocotyl intensity of anthocyanin coloration	Light green	Light green	Light green	Light green	Light green	Light green	Light green	Light green
Plant growth type	Indeterminate	Indeterminate	Indeterminate	Indeterminate	Indeterminate	Indeterminate	Indeterminate	Indeterminate
Plant growth habit	Semi erect	Erect	Semi-erect	Semi-erect	Semi-erect	Semi-erect	Semi-erect	Semi-erect
Plant color of hair of main stem	Tawny	Tawny	Grey	Tawny	Tawny	Tawny	Tawny	Tawny
Hair density	Very dense	Dense	Dense	Medium	Dense	Very dense	Very dense	Very dense
Hair type	Semi erect	Semi erect	Semi erect	Semi erect	Semi erect	Semi erect	Semi erect	Semi erect
Leaf blistering	Medium	Weak	Weak	Very strong	Medium	Medium	Absent	Weak
Leaf shape of lateral leaflet	Pointed ovate	Pointed ovate	Lenocote	Triangular	Pointed ovate	Triangular	Pointed ovate	Triangular
Leaf size of lateral leaflet	Medium	Medium	Small	Medium	Medium	Small	Medium	Medium
Leaf intensity of green color	Dark green	Green	Dark green	Green	Green	Light green	Green	Light green
Petiole presence	Present	Present	Present	Present	Present	Present	Present	Present
Flower color	White	White	Purple	Purple	White	Purple	Purple	White
Pubescence color	Brown-tawny	Brown-tawny	Grey	Brown-tawny	Brown-tawny	Brown-tawny	Brown-tawny	Brown-tawny
Pubescence desity	Normal	Normal	Normal	Normal	Normal	Normal	Normal	Normal
Pubescence habit	Semi-erect	Semi-erect	Semi-erect	Erect	Semi-erect	Erect	Erect	Erect
Mature pod color	Dark brown	Brown	Brown	Dark brown	Light brown	Light brown	Brown	Light brown
Nodulation	Low	Medium	Low	Low	Medium	Low	Low	Low
Pod intensity of brown color	Dark	Light	Dark brown	Dark	Light	Light	Medium	Medium
Seed size	Medium	Medium	Medium	Large	Small	Small	Medium	Small
Seed shape	Spherical	Elongated	Elongated	Spherical	Spherical	Spherical	Elongated	Spherical
Seed ground color of testa	Yellow	Yellow	Yellow	Yellow	Yellow	Yellow	Brown	Black
Seed hilium color	Yellow	Yellow	Yellow	Black	Yellow	Black	Black	Black
Seed coat color	Yellow	Yellow	Yellow	Yellow	Yellow	Yellow	Yellow	Black
Seed coat surface lusture	Yellow	Yellow	Yellow	Yellow	Yellow	Yellow	Black	Yellow

Plant growth habit was semi-erect in all soybean genotypes except for CN-60. The hair density was recorded from medium (G-4508) to very dense (Chiangmow 6063, LS-77-16-16 and Coll#3 and Black soybean). The genotypes Chaingmow 6063, CN-60 and CM-9133 had white colored flower similar to the local check (black soybean) while the remaining genotypes with purple colored flower. The nodulation at harvest was observed to be medium (CN-60 and CM-9133) and low (Chaingmow 6063, GC-82234-22C, G-4508, LS-77-16-16, Coll#3, Black soybean). Further, the largest seed size was recorded in the soybean genotype G-4508 while the smallest in CM-9133, LS-77-16-16 and Black soybean and medium seed in Chaingmow 6063, CN-60, GC-82234-22C and Coll#3 which might affect the grain yield. Moreover, all the genotypes had yellow seed coat color except the Black soybean with black seed coat from which it got the name. The details of the variation in qualitative traits are shown in Table 3.

Variation in quantitative traits among the soybean genotypes

Significant differences were recorded only in emergence days, flowering days, maturity days, number of odes on main stem, leaf width, seed length, seed width, pod length, plant height, thousand grain weight (TGW) and grain yield among the soybean genotypes (Table 1.4). Most of the genotypes were significantly superior in quantitative traits than the local check. The genotype GC-82234-22c was significantly early maturing (110 days) while the genotype Coll#3 flowered (64days) and matured (118 days) significantly late. All the tested soybean genotypes were significantly taller (72.1 cm for LS-77-16-16 to 115.6 cm for Coll#3) than the local check black soybean which is two times smaller in plant height. Seed length (8.2 mm) and width (7.5 mm); and TGW (195 gm) was significantly higher in the local check Black soybean but with significantly lowest grain yield (4.4 t/ha) compared to other genotypes tested. This lower grain yield might be due to the significantly smaller pod length (3.3cm), shorter plant height (35.2 cm) in Black soybean. Further, the genotype Coll#3 despite being significantly late maturing by 8 days was significantly tallest (115.6 cm) with more number of pods/plant (74.7) and recorded significantly highest grain yield (2.5t/ha) compared to the other genotypes tested. The details of the quantitative traits are shown in Table 4.

Table 4: Quantitative variation among the soybean genotypes

Genotypes	ED	FD	MD	Leaflet/ plant	NMS	LL (cm)	LW (cm)	SL (mm)	SW (mm)	Pods/plant	Seeds/pod	PodL (cm)	PodW (cm)	PH (cm)	TGW (g)	FBY (t/ha)	GY (t/ha)
Chaingmow 6063	14^{b}	60^{c}	112	25.3	12.0^{ab}	14.7	5.7^{ab}	7.5^{b}	6.1^{b}	37.0	3.0	3.7b^{c}	1.3	80.1^{b}	159.5^{b}	7.4	1.7^{ab}
CN-60	12^{c}	59^{d}	115	26.0	13.7^{a}	14.7	6.0^{a}	7.4^{b}	6.2^{b}	27.3	2.7	3.0^{c}	1.0	82.3^{b}	138.6^{bcd}	8.1	1.8^{ab}
GC-82234-22c	14^{b}	62^{b}	110	32.1	12.7^{a}	14.0	4.0^{c}	7.5^{b}	6.2^{b}	58.0	2.3	3.7^{bc}	1.0	89.3^{ab}	133.3^{bd}	7.8	1.8^{ab}
G-4508	14^{b}	56^{e}	114	23.9	8.7^{c}	14.3	6.0^{a}	7.6^{b}	6.4^{b}	35.3	2.3	4.7^{a}	1.0	89.4^{ab}	137.7^{bc}	8.8	1.8^{ab}
CM-9133	12^{c}	60^{c}	111	21.5	11.3^{abc}	14.0	5.7^{ab}	7.4^{b}	6.2^{b}	33.0	2.7	3.3^{c}	1.0	90.1^{ab}	153.4^{bc}	8.3	1.6^{bc}
LS-77-16-16	12^{c}	54^{f}	112	24.7	9.0^{bc}	14.3	5.0^{abc}	7.6^{b}	6.1^{b}	42.7	2.7	4.3^{ab}	1.0	72.1^{b}	123.9^{cd}	5.4	1.4^{bc}
Coll#3	11^{d}	64^{a}	118	30.4	14.3^{a}	15.7	6.0^{a}	7.2^{b}	6.4^{b}	74.7	2.0	3.0^{c}	1.0	115.6^{a}	115.9^{d}	9.3	2.5^{a}
Black soybean	16^{a}	56^{e}	116	18.1	8.3^{c}	12.0	4.7^{bc}	8.2^{a}	7.5^{a}	38.7	2.0	3.3^{c}	1.0	35.2^{c}	195.0^{a}	2.4	0.4^{c}
Grand Mean	**13.12**	**59**	**113**	**25.2**	**11.3**	**14.2**	**5.4**	**7.5**	**6.4**	**43.3**	**2.5**	**3.6**	**1.0**	**81.8**	**144.7**	**7.2**	**1.6**
P value	***	***	ns	ns	**	Ns	*	*	***	ns	ns	**	ns	**	**	ns	*
LSD $_{0.05}$	0.01	0.02	-	-	3.01	-	1.18	0.47	0.49	-	-	0.77	-	26.64	29.88	-	1.02
CV (%)	0.02	0.02	3.0	27.19	2.13	11.16	12.65	3.64	4.40	49.0	18.9	12.33	19.26	18.72	11.87	43.24	36.37

Note: *ED=50% Emergence days, FD=Flowering days, MD=Maturity Days, NMS=No of nodes on main stem LL=Leaf Length, LW=Leaf Width, SL=Seed Length, SW=Seed Width, PodL=Pod length, PodW=Pod Width, PH=Plant Height, TGW=Thousand Grain Weight, FBY=Fresh Biomass Yield, GY=Grain Yield*

Conclusion:
In nutshell, all the tested soybean genotypes for DUS performed significantly better than the local check (Black soybean). the genotype Coll#3 despite being significantly late maturing (118 days) was significantly tallest (115.6 cm) with more number of pods/plant (74.7) and recorded significantly highest grain yield (2.5 t/ha) compared to the other genotypes tested. There was noticeable variation in qualitative and quantitative traits among the soybean genotypes tested for DUS characteristics.

3.1.3 Agro-morphological profiles of promising genotypes of wheat

Introduction:
Breeding program of NPBGRC, Khumaltar has identified many promising lines of wheat for mid-hill conditions and every year a number of pre-release varieties are tested under farmer's field trials (FFT) and evaluated for different agronomic traits. Agro-morphological characterization of pre-release genotypes is a pre-requisite for variety release and registration process where a candidate variety must be distinct from the other reference varieties at one to many traits level. So, the objective of this trial is to determine the agro-morphological variability in qualitative and quantitative traits (DUS) for preparing the descriptors of wheat genotypes for mid-hill conditions to the support the national variety release process.

Materials and method:
A total of twelve different genotypes of wheat WK-3223, WK-3321, WK-3523, WK-3550, WK-3092, WK-3118, WK-3320, WK-3015, K-3020, WK-3534, WK-1204 and Chyakhura (check) were tested in Khumaltar for DUS purpose in 2080-81. All the twelve treatments were randomized and tested in the field in RCBD with three replications. Wheat sowing was done on 2079/08/15 with the seed rate of 120 kg/ha. The plot size was 3.75 m^2 (3 m x 1.25 m) with the net harvested area of 2.25 m^2 (3m x 0.75 m) for each treatment. Rows were spaced 25 cm apart with continuous sowing. Recommended dose of fertilizer was applied @ 120:60:40 NPK kg/ha. Half dose of n and full dose of P_2O_5 and K_2O were applied as basal at the time of sowing. The remaining half dose of N was divided into two splits i.e. at tillering and booting stage. All the intercultural operation were done as and when required. All the required data were recorded from the net harvested area of 2.25 m^2 from each plot. The qualitative and quantitative traits were recorded according to UPOV guidelines.

The quantitative data were analyzed using RStudio version 4.3.1. Analysis of variance (ANOVA) for RCBD was used to calculate treatment means, standard errors and significant differences between treatments means (RStudio Team 2023). Statistical testing of treatment mean separation for significant data was done using Fisher-LSD test at $p<0.05$.

Results and discussion:

Variation in qualitative traits among wheat genotypes

There was large variation in twenty-eight different qualitative traits among the wheat genotypes tested at Khumaltar condition (Table 1.5). A lot of variation were observed within twenty-five qualitative traits among the genotypes. The plant growth habit of wheat

genotypes WK-3223, WK-3321, WK-3092, WK-3118, WK-3015, WK-3534, WK-1204 and Chyakhura was erect. While postrate growth habit was observed in the genotypes WK-3550, WK-3320, and WK-3020; and semi-erect growth in WK-3523. The foliage color varied from dark green (WK-3321, WK-3550, WK-3092, WK-3118, and WK-3534) to green (WK-3321, WK-3320, WK-3015 and WK-1204) to light green (WK-3223 and Chyakhura). The waxiness of sheath ranged from medium (WK-3523, WK-3015, WK-3020, WK-1204 and Chyakhura) to strong (WK-3118 and WK- 3553) to very strong (WK-3223, WK-3321, WK-3550, WK-3092 and WK-3320). The grain color also differed among the genotypes where most of them had light amber grain color while WK-3223 and WK-3015 had white grain color; and WK-3118 had dark amber color. Most of the genotypes WK-3223, WK-3321, WK-3092, WK-3118, WK-3320, WK-3020, WK-3534, and WK-1204) showed ovate grain shape similar to Chyakhura while WK-3523, and WK-3015 had oblong grain shape. The peduncle waxiness of sheath was very strong in all the tested genotypes. The details are presented in Table 5.

Table 5: Qualitative variation among the wheat genotypes

Traits/Genotypes	WK-3223	WK-3321	WK-3523	WK-3550	WK-3092	WK-3118	WK-3320	WK-3015	WK-3020	WK-3534	WK-1204	Chyakhura
Plant growth habit	Erect	Erect	Semi erect	Postrate	Erect	Erect	Postrate	Erect	Postrate	Erect	Erect	Erect
Foliage color	Light green	Dark green	Green	Dark green	Dark green	Dark green	Green	Green	Light green	Dark green	Green	Light green
Waxiness of sheath	Very strong	Very strong	Medium	Very strong	Very strong	Strong	Very strong	Medium	Medium	Strong	Medium	Medium
Lower glume beak shape	Moderately curved	Moderately curved	Moderately curved	Straight	Moderately curved	Moderately curved	Straight	Moderately curved	Moderately curved	Straight	Moderately curved	Moderately curved
Lower glume shoulder shape	Rounded	Straight	Oblique	Straight	Sloping	Sloping	Rounded	Sloping	Rounded	Straight	Straight	Straight
Lower glume shoulder width	Medium	Medium	Narrow	Medium	Very narrow	Very narrow	Medium	Absent	Medium	Medium	Medium	Medium
Apical rachis segment	Low	Medium	Dense	Low	Medium	Low	Medium	Low	Low	Dense	Low	Low
Ear glaucosity	Very strong	Medium	Strong	Very strong	Very strong	Strong	Strong	Strong	Strong	Strong	Very strong	Very strong
Frequency of plants with recurved flag leaves	Medium	Medium	Low	Medium	Low	Low	Medium	Medium	Medium	Low	Low	High
Flag leaf attitude (Late obs)	Drooping	Semi erect	Drooping	Semi erect	Semi erect	Semi erect	Drooping	Semi erect	Semi erect	Semi erect	Semi erect	Drooping
Flag leaf glaucosity of sheath	Medium	Medium	Medium	Medium	Strong	Strong	Strong	Medium	Medium	Very strong	Very strong	Medium
Flag leaf hairon auricles	Medium	Meduim	Meduim	Medium	Low	Medium	Medium	Medium	Low	Medium	Medium	Low
Culm glaucosity of neck	Very strong	Very strong	Strong	Very strong	Strong	Very strong	Very strong	Very strong	Very strong	Strong	Very strong	Very strong
Ear shape in profile	Tapering	Tapering	Parallel sided	Tapering	Tapering	Parallel sided	Parallel sided	Tapering	Tapering	Tapering	Parallel sided	Tapering
Ear density	Dense	Very dense	Very dense	Very dense	Very dense	Very dense	Dense	Dense	Very dense	Very dense	Dense	Medium
Scurs	Long	Long	Short	Long	Long	Short	Short	Short	Long	Long	Short	Long
Awn attitude	Spreading	Spreading	Spreading	Spreading	Spreading	Spreading	Spreading	Spreading	Spreading	Spreading	Spreading	Spreading
Spike attitude	Bent	Straight	Bent	Bent	Bent	Bent	Bent	Bent	Bent	Straight	Straight	Bent
Ear color	Light brown	Brown	Brown	Brown	Brown	Light brown	Brown	Light brown	Light brown	Light brown	Brown	Brown
Grain color	White	Light amber	Light amber	Light amber	Light amber	Dark amber	Lightamber	White	Light amber	Light amber	Light amber	Light amber
Grain mark	Present	Present	Present	Present	Absent	Present	Absent	Present	Present	Present	Present	Present
Grain shape	Ovate	Ovate	Oblong	Oblong	Ovate	Ovate	Ovate	Oblong	Ovate	Ovate	Ovate	Ovate
Germ size width	Medium	Medium	Medium	Medium	Medium	Narrow	Medium	Medium	Narrow	Narrow	Narrow	Medium
Brush size	Medium	Small	Small	Medium	Small	Small	Medium	Small	Small	Small	Small	Small
Brush length	Medium	Short	Medium	Medium	Short	Short	Medium	Medium	Short	Short	Short	Medium
Peduncle waxiness of sheath	Very strong	Very strong	Very strong	Very strong	Very strong	Very strong	Very strong	Very strong	Very strong	Very strong	Very strong	Very strong
Lower glume extent of internal hair	Weak	Weak	Weak	Weak	Weak	Weak	Weak	Weak	Weak	Weak	Weak	Weak

Variation in quantitative traits among the wheat genotypes

The quantitative traits like seed/spikelet, spikelet/spike, grain weight/spike, spike length, peduncle length and flag leaf, awn length, number of seed at apex and TGW showed significant differences among the wheat genotypes (Table 6). Spike length (11.2 cm), spikelet/spike (21.3) and flag leaf length (24.5 cm) was significantly higher in the genotype WK-3118, while the genotypes WK-3118, WK-3321, WK-3523, WK-3534 and WK-1204 showed significantly higher seed/spikelet (3.7 to 4). The peduncle length was significantly higher in Chyakhura (22.7 cm) and WK-3223 (20 cm) compared to other genotypes. The genotype WK-3550 showed significantly highest TGW (58.2 gm) followed by WK-3092 (53.1gm), WK-3223 (52.8gm) and WK-3523 (52.2 gm) and significantly lowest in WK-3020 (40 gm). However, the grain yield and fresh biomass yield were found non-significant among the wheat genotypes with an average of 4.5 t/ha and 20.6 t/ha, respectively. The highest gain yield was recorded in WK-3223 (5.8 t/ha) and lowest in WK-3020 (3.4 t/ha), respectively. The genotype WK-1204 showed significantly late flowering (126 days) and maturity (166 days) while WK-3321 flowered (133 days) and matured (154 days) significantly early compared to the other tested genotypes.

Table 6: Quantitative variation among the wheat genotypes

Genotype	FD	MD	FLL (cm)	FLW (cm)	AL (cm)	PeL (cm)	SA	Spikelet/ spike	SSB	Seed/ spikelet	Seed/s pike	WGS (gm)	SL (cm)	PH (cm)	TGW (gm)	GY (t/ha)	FBY (t/ha)
WK-3223	119^{b}	159^{e}	23.2^{ab}	1.80^{ab}	6.78^{a}	20.0^{ab}	2.0^{b}	17.3^{de}	2.7^{bcd}	2.7^{b}	37.7	2.1^{bcde}	9.98^{ab}	106.2	52.8^{b}	5.8	22.6
WK-3321	113^{d}	154^{f}	19.0^{cd}	1.54^{d}	5.30^{e}	13.3^{ef}	3.0^{a}	16.3^{e}	2.0^{cd}	4.0^{a}	49.3	2.7^{a}	9.88^{b}	103.5	48.4^{cd}	4.6	19.5
WK-3523	119^{b}	161^{d}	18.0^{d}	1.71^{abcd}	6.23^{abcd}	11.4^{f}	2.0^{b}	16.3^{e}	1.7^{d}	4.0^{a}	44.7	2.46^{abc}	9.83^{b}	94.7	52.2^{b}	4.8	21.9
WK-3550	116^{c}	159^{e}	20.8^{abcd}	1.76^{abc}	6.81^{a}	17.3^{bcd}	1.7^{b}	17.7^{cde}	3.0^{b}	3.0^{b}	36.3	2.3^{abc}	9.74^{b}	107.9	58.2^{a}	4.2	20.7
WK-3092	116^{c}	159^{e}	20.7^{abcd}	1.69^{bcd}	6.36^{abcd}	16.7^{bcde}	2.0^{b}	17.7^{cde}	3.0b^{c}	3.0^{b}	40.7	2.2^{bcd}	9.45^{bc}	104.0	53.1^{b}	4.1	17.8
WK-3118	116^{c}	159^{e}	24.5^{a}	1.72^{abcd}	6.00^{cde}	18.1^{bc}	2.3^{ab}	19.7^{b}	4.3^{a}	3.7^{a}	46.7	2.1^{bcde}	8.93^{bcd}	102.7	45.2^{def}	4.4	20.2
WK-3320	119^{b}	163^{c}	17.9^{d}	1.62^{bcd}	6.01^{bcde}	16.8^{bcde}	2.0^{b}	18.0^{cd}	2.3^{cd}	3.0^{b}	44.0	2.07^{cde}	8.11^{d}	108.0	44.0^{ef}	4.6	20.6
WK-3015	119^{b}	161^{d}	22.2^{abc}	1.64^{bcd}	6.14^{abcd}	15.2^{cde}	1.7^{b}	21.3^{a}	2.7^{bcd}	3.0^{b}	40.7	1.9^{de}	11.2^{a}	103.2	42.5^{fg}	4.5	22.2
WK-3020	119^{b}	159^{e}	22.4^{abc}	1.57^{cd}	6.75^{abc}	15.6^{cde}	1.7^{b}	19.0^{bc}	1.7^{d}	3.0^{b}	41.7	1.7^{e}	9.35^{bc}	108.3	40.0^{g}	3.4	17.3
WK-3534	116^{c}	163^{c}	18.6^{cd}	1.60^{bcd}	5.81^{de}	17.2^{bcd}	2.3^{ab}	17.0^{de}	2.0^{cd}	3.7^{a}	46.7	2.5^{ab}	9.43^{bc}	100.6	51.5^{bc}	4.5	20.5
WK-1204	125^{a}	166^{a}	20.3^{bcd}	1.92^{a}	5.33^{e}	14.1^{def}	2.3^{ab}	17.7^{cde}	3.7^{ab}	3.7^{a}	41.7	2.05^{cde}	8.38^{cd}	94.1	47.2^{de}	4.4	21.9
Chyakhura	123^{a}	164^{b}	21.8^{abcd}	1.78^{abc}	5.84^{de}	22.7a	2.0^{b}	16.7^{de}	2.7^{bcd}	3.0^{b}	39.0	1.7^{e}	9.7^{b}	109.5	41.8^{fg}	5.1	22.6
Grand Mean	**118**	**161**	**20.8**	**1.7**	**6.1**	**16.5**	**2.1**	**17.9**	**2.6**	**3.3**	**42.4**	**2.2**	**9.5**	**103.6**	**48.1**	**4.5**	**20.6**
P value	***	***	*	*	**	***	*	***	***	***	ns	**	**	ns	***	ns	ns
LSD $_{0.05}$	2.45	0.017	4.03	0.21	0.77	3.77	0.70	1.53	1.06	0.57	-	0.45	1.24	-	3.41	-	-
CV (%)	1.2	0.01	11.4	7.2	7.5	13.5	19.9	5.0	23.9	10.3	12.0	12.3	7.7	6.3	4.2	19.7	12.4

Note: *FD=50% Flowering days, MD=80% Maturity Days, FLL=Flag Leaf Length, FLW= Flag Leaf Width, AL=Awn Length, PeL=Peduncle Length, SA=No of seed at apex, SSB =Sterile spikelet at base, WGS =Wt. of Grain/spike SL=Spike Length, PH=Plant Height, TGW=Thousand Grain Weight, GY =Grain Yield, FBY=Fresh Biomass Yield*

Conclusion:

There was substantial variation in qualitative and quantitative traits among the wheat genotypes tested for DUS. The grain yield and fresh biomass yield were found non-significant among the wheat genotypes with an average of 4.5 t/ha and 20.6 t/ha, respectively. However, the highest gain yield was recorded in WK-3223 (5.8 t/ha) and lowest in WK-3020 (3.4 t/ha), respectively.

3.2 DNA profiling of promising genotypes and released varieties of crops

3.2.1 DNA fingerprinting of promising genotypes of rice

Introduction:

Rice (*Oryza sativa*) is a staple food crop in Nepal, playing a crucial role in the country's economy and food security. With diverse agro-ecological zones, Nepal supports a wide variety of rice cultivars, each adapted to specific climatic conditions. However, challenges such as climate change, pests, and diseases threaten rice production. DNA fingerprinting has emerged as a vital tool for assessing genetic diversity, identifying specific traits, and enhancing breeding programs. This report aims to analyze the genetic diversity among different released rice varieties and pre-release promising rice genotypes in Nepal using DNA fingerprinting techniques.

Materials and methods:

A total of 29 rice samples (Table 7) were used for microsatellite analysis. Sample seeds were collected from National Rice Research Program (NRRP), Hardinath, Dhanusha and National Plant Breeding and Genetics Research Center, Khumaltar, Nepal.

Genomic DNA from fresh young leaves of all studied genotypes was isolated and purified using the modified version of Cetyl-Trimethyl-Ammonium bromide (CTAB) based protocol described by Murray and Thompson (1980). Polymerase Chain Reaction (PCR) and microsatellite markers (SSRs) were employed to amplify specific regions of DNA. The amplified products were analyzed using agarose gel electrophoresis to determine polymorphism and genetic variation.

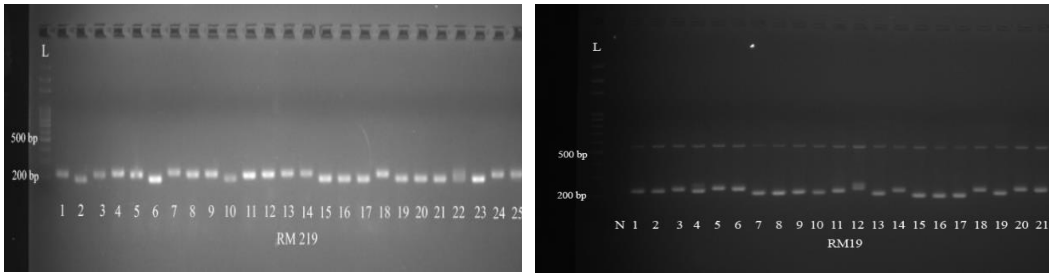
Table 7: List of rice genotypes used in the study

Genotype code	Name of the genotype	Genotype code	Name of the genotype	Genotype code	Name of the genotype
1	Radha 4	**11**	Makawanpur 1	**21**	Ganga sagar 2
2	Radha 12	**12**	Sukkha 3	**22**	Hardinath Hybrid 1 -10 (F1)
3	Radha 14	**13**	Chaite 5	**23**	NR 11105-B-B-27
4	Hardinath 1	**14**	Samba masuli	**24**	NR 11301-B-B-1
5	Hardinath 3	**15**	Kala namak	**25**	NR 11271-B-B-6
6	Hardinath 5	**16**	Hocho Kala namak	**26**	NR 10676-B-5-3
7	Hardinath 6	**17**	Lalka basmati	**27**	NR 11518-B-B-15
8	Sabitri	**18**	Bahuguni 1	**28**	NR 11301-B-B-15-4
9	Ram dhan	**19**	Bahuguni 2	**29**	Khumal-4
10	Swarna sub 1	**20**	Ganga sagar 1		

Results and discussion:

The results of this study highlight the significant genetic diversity present among rice varieties in Nepal, which is crucial for developing resilient breeding strategies. The high level of polymorphism observed through SSR analysis reflects the rich genetic heritage of

rice genotypes. In the present study, 14 SSR primers distributed from chromosome 7 to 12 were used to estimate genetic diversity among 29 genotypes. All 29 rice genotypes were successfully amplified with the 12 microsatellite primer pairs whereas 2 primer pairs did not amplify (Tables 8 and 9). Ten out of fourteen SSR primer pairs generated polymorphic bands (Table 2.3). Further, a total of 312 alleles were detected among all genotypes. The number of alleles per locus varied from 7.25 to 17.33. The polymorphism information content (PIC) values for SSR ranged from 0.13 to 0.58 with mean value of 0.43. The highest PIC value was observed with primer RM-19 (Fig. 4 and Table 8). Information obtained from genotyping of varieties helped to analyze the genetic diversity within and among closely related crop varieties which has the potential for crop improvement and to meet the diverse goals like producing cultivars with increased yield of rice. The detail demonstration of the diversity analysis of rice genotypes using SSR markers are presented in Table 8 and Table 9.



(a) RM 219 (b) RM 19

Fig. 4 Amplification profiles of various rice genotypes at the locus RM 219 (a), and RM 19 (b); L, Molecular wt. marker (100 bp ladder)

Table 8: Analysis of the DNA fingerprinting/genetic diversity among various rice genotypes

S.N.	Primer code	Molecular wt. range (bp)	Total no. of alleles	No. of polymorphic alleles	Alleles per locus	Polymorphism information content (PIC)
1	RM 219	150-250	29	2	14.5	0.5
2	RM 316	180-220	29	3	9.66	0.47
3	RM 8303	Mono	-	-	-	-
4	RM1337	NA	-	-	-	-
5	RM304	100-200	29	3	9.66	0.13
6	RM8300	180-220	29	2	14.5	0.42
7	RM152	100-200	52	3	17.33	0.3
8	RM23679	100-200	28	3	9.33	0.56
9	RM433	Mono	-	-	-	-
10	RM23805	NA	-	-	-	-
11	RM17	150-250	29	2	14.5	0.45
12	RM19	200-300	29	4	7.25	0.58
13	RM248	100-200	29	3	9.66	0.4
14	RM346	100-200	29	2	14.5	0.5
	Average	-	-	-	12.08	0.43
	Total	-	312	27	-	-

Note: NA = Not Amplified, Mono = Monomorphic, bp = base pair

Table 9: Diversity parameters among the rice varieties

Particulars	**Number**
Total sample analyzed	29
Total SSR markers tested	14
Total SSR markers amplified	12
Total polymorphic marker	10
Total monomorphic marker	2
% of polymorphic loci (marker)	71.4%
Total no. of alleles	312
Average alleles per locus (marker)	12.08
Total no. of polymorphic alleles	27
Allele per polymorphic loci	2.7

Conclusion:

Our study by using SSR markers revealed a high level of genetic diversity among the rice accessions. SSR markers that generated higher polymorphism such as RM 19, RM 23679, RM 346 and RM 219 can be used to distinguish further rice genotypes. The distinct genetic profiles obtained through this study can serve as a foundation for future breeding programs aimed at enhancing desirable traits in rice.

3.2.2 DNA fingerprinting of promising genotypes of wheat

Introduction:

DNA fingerprinting, also known as DNA profiling, is a molecular technique that enables the identification and characterization of genetic variation within and among species. In the context of agriculture, particularly in Nepal, this technology has become increasingly important for improving crop varieties and ensuring food security. With wheat (*Triticum aestivum*) being a staple food crop in Nepal, accounting for a significant portion of the country's agricultural production, understanding its genetic diversity is crucial for sustainable agricultural development. Nepal's diverse agro-ecological zones allow for a wide range of wheat cultivars to thrive, each adapted to specific environmental conditions. However, the pressure of climate change, population growth, and the need for higher yields present significant challenges. The use of DNA fingerprinting can help identify genetic traits associated with drought resistance, disease tolerance, and improved nutritional quality, enabling breeders to develop new varieties that meet these challenges.

Microsatellite markers (SSRs) are particularly useful in assessing genetic diversity in wheat due to their high polymorphism and ease of use. In Nepal, utilizing these markers can facilitate the identification of local landraces and their unique traits, which are vital for the country's agricultural resilience and food sovereignty. This report aims to analyze the application of DNA fingerprinting in understanding the genetic diversity of wheat cultivars (released and pre-release) in Nepal.

Materials and methods:

A total of 60 wheat samples were used for microsatellite analysis. The sample seeds were provided by National Rice Research Program, NRRP, Hardinath and National Plant

Breeding and Genetics Research Center, Khumaltar, Nepal. The details of wheat genotypes tested are presented in Table 10.

Table 10: List of wheat genotypes used in the study

Genotype code	Name of the genotype	Genotype code	Name of the genotype	Genotype code	Name of the genotype
1	CVT MHH-BL 5168	**21**	CVT BWYT-NL 1756	**41**	WK 3223
2	CVT MHH-NL 1597	**22**	CVT BWYT-NL 1766	**42**	WK 3319
3	CVT MHH-NL 1696	**23**	WVD VIJAY	**43**	WK 3320
4	CVT MHH-NL 1699	**24**	WVD ZINCGAHUN-1	**44**	WK 3321
5	CVT MHH-NL 1703	**25**	WVD NL 1179	**45**	WK 3324
6	CVT MHH-BL 5234	**26**	WVD NL 1345	**46**	WK 3391
7	CVT TTL-NL 1612	**27**	WVD NL 1446	**47**	WK 3523
8	CVT TTL-NL 1626	**28**	WVD NL 1450	**48**	WK 3534
9	CVT TTL-NL 1635	**29**	WVD NL 1488	**49**	WK 3550
10	CVT TTL-NL 1636	**30**	WVD BL 4818	**50**	Bheriganga
11	CVT TTL-BL 5283	**31**	WK 1204	**51**	Chyakhura
12	CVT TTL-NL 1710	**32**	2430	**52**	Himganga
13	CVT TTL-NL 1715	**33**	WK 2432	**53**	Kautila
14	CVT TTL-NL 1724	**34**	WK 2820	**54**	Khumal Shakti
15	CVT TTL-NL 1730	**35**	WK 3020	**55**	Mudule-1
16	CVT TTL-NL 1733	**36**	WK 3092	**56**	Munal
17	CVT BWYT-NL 1656	**37**	WK 3118	**57**	Surma
18	CVT BWYT-NL 1659	**38**	WK 3164	**58**	Tila
19	CVT BWYT-NL 1752	**39**	WK 3165	**59**	KD-1
20	CVT BWYT-NL 1754	**40**	WK 3166	**60**	KD-2

The total genomic DNA from the leaf samples was extracted following the modified version of Cetyl-Trimethyl-Ammonium bromide (CTAB) based protocol described by Murray and Thompson (1980). A panel of 15 SSR markers was selected based on previous studies to ensure broad coverage of the wheat genome. Genotyping was conducted using PCR amplification of genomic DNA with specific primers, followed by the separation of the amplified fragments in agarose gel.

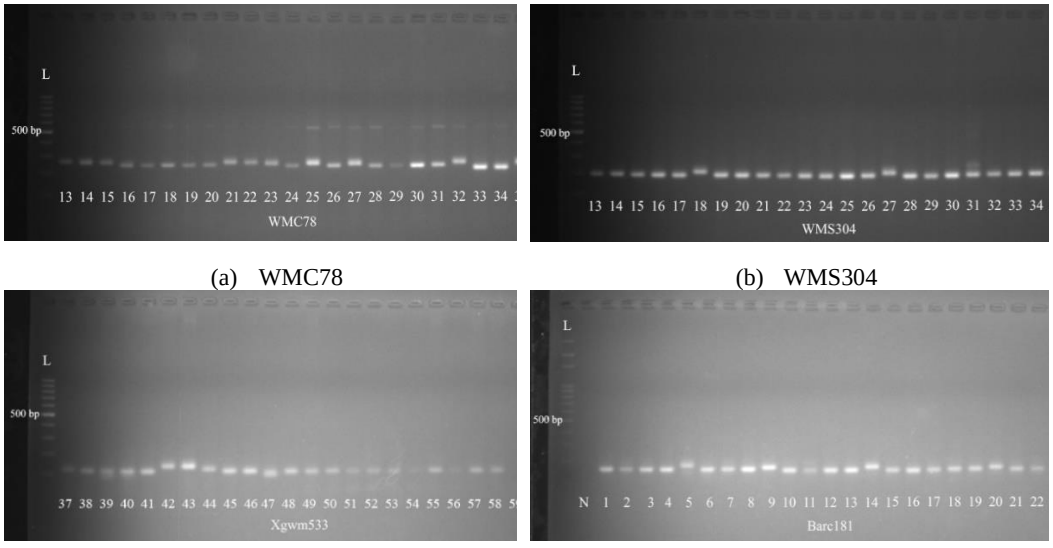
Amplification reactions were performed in a thermal cycler and was programmed with condition of: initial denaturation at 94^0C for 4 min; 35 cycles of 1 min at 94^0C, annealing at 54-60^0C for 1 min, 1 min at 72^0C; and a final extension step at 72^0C for 7 min. In the thermal cycler, annealing temperature was set up appropriate for each primer pairs to ensure successful amplification. SSR-PCR products were analyzed on 2.5% agarose gel, visualized by staining with SYBR safe DNA gel stain under short-wave UV light. 100 bp DNA ladder was used in the electrophoresis. The polymorphic information content (PIC), which estimates the allelic diversity, was calculated using the formula: $PIC=1-\Sigma(P_i)^2$, where, 'P_i' is the frequency of the i^{th} allele calculated for each microsatellite locus.

Results and discussion:

Nine out of fifteen microsatellite primer pairs showed successful amplification for 60 wheat genotypes among which only five were polymorphic. Two markers did not amplify whereas four markers generated unclear bands which were unscorable. Banding patterns generated by the labelled primer pairs in various wheat genotypes are shown in Fig. 5. The number of alleles per locus varied from 19.33 to 30. A total of 295 alleles were detected, with an average of 27.5 alleles per locus. The polymorphic information content (PIC)

values ranged from 0.1 to 0.6, indicating moderate levels of genetic diversity. The highest PIC value was observed with primer WMC-78.

DNA fingerprinting through SSR markers is a powerful tool for assessing genetic diversity in wheat. The results of this study support its application in breeding programs aimed at improving yield, and adaptability to changing environmental conditions. Additionally, this study provides insights into the genetic relationships among cultivars, aiding in the conservation of genetic resources. Future research would be conducted to focus on the identification of additional markers and the integration of genomic technologies to further enhance wheat breeding strategies.



(a) WMC78 (b) WMS304

(c) Xgwm533 (d) Barc181

Fig. 5 Amplification profiles of various wheat cultivars at the locus WMC78 (a), WMS304 (b), Xgwm533 (c), and Barc181 (d); L, Molecular wt. marker (100 bp ladder)

Conclusion:

All the five SSR markers, namely WMC78, WMC177, WMS304, Barc181, and Xgwm533 that generated polymorphism could be used to analyze genetic diversity of further wheat varieties. Since the study generated moderate levels of genetic diversity among the studied wheat genotypes, future research would be conducted to focus on the identification of additional markers and the integration of genomic technologies to further enhance wheat breeding strategies.

3.2.3 DNA fingerprinting of promising genotypes of winter oilseed (rapeseed, mustard and sarson)

Introduction:

Oilseeds are crucial for the agricultural economy of Nepal, providing oil for cooking, industrial uses, and export potential. Understanding genetic diversity is crucial for breeding programs and the sustainable management of oilseed crops. This study focuses on the

application of DNA fingerprinting techniques to analyze and characterize various oilseed varieties grown in Nepal, emphasizing the importance of genetic diversity, conservation, and crop improvement.

A set of microsatellite markers were chosen based on previous literature. However, concerns regarding their variability within the studied populations were identified.

Materials and methods:

The plant material used in this study consists of 11 mustard, 7 sarson, and 17 rapeseed genotypes (Table 11). The seed samples were collected from Oil seed Research Program (ORP), Nawalpur.

Table 11: List of oilseed genotypes used in the study

Genotype code	Name of the genotype	Genotype code	Name of the genotype	Genotype code	Name of the genotype
1	Pusa Bold (F)	**13**	Unnati (B)	**25**	Binoy (B)
2	Pusa Bold (B)	**14**	Pragati (F)	**26**	Ulta Sarson (F)
3	Krishna (F)	**15**	Pragati (B)	**27**	Ulta Sarson (B)
4	Krishna (B)	**16**	Nawalpur Tori 4 (F)	**28**	Ragini
5	Pusa Jagannath	**17**	Nawalpur Tori 4 (B)	**29**	Bari-13
6	Divya	**18**	Morang Tori-2 (F)	**30**	Synthetic 9
7	Pusa Agrani	**19**	Morang Tori-2 (B)	**31**	ICT 2002-16
8	ICJ 01-69	**20**	Preeti (F)	**32**	ICT 2002-11
9	ICJ 01-40	**21**	Preeti (B)	**33**	ACC#5738
10	Morang Rayo 1 (F)	**22**	Bikash (F)	**34**	ACC#9109
11	Morang Rayo 1 (B)	**23**	Bikash (B)	**35**	ACC#9118
12	Unnati (F)	**24**	Binoy (F)		

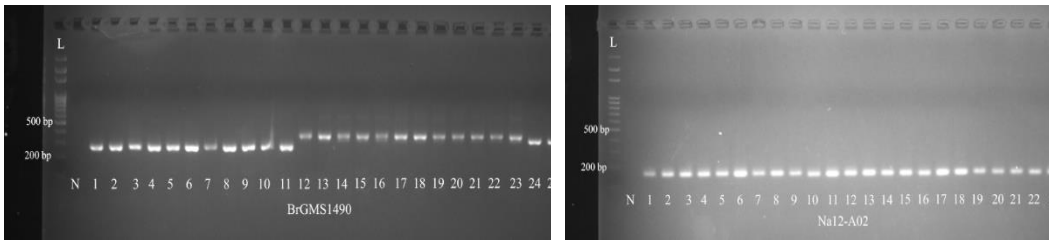
Note: *B = Breeder seed, F= Foundation seed*

SSR marker genotyping

Total genomic DNA from the leaf samples was extracted following Cetyl-Trimethyl-Ammonium bromide (CTAB) based protocol described by Murray and Thompson (1980) with modification. The PCR was programmed with condition of: initial denaturation at 94^0C for 4 min; 35 cycles of 1 min at 94^0C, annealing at 54-60^0C for 1 min, 2 min at 72^0C; and a final extension step at 72^0C for 7 min. In the thermal cycler, annealing temperature was set up appropriate for each primer pairs to ensure successful amplification. SSR-PCR products were analyzed on 2.5% agarose gel, visualized by staining with SYBR safe DNA gel stain under short-wave UV light. 100 bp DNA ladder was used in the electrophoresis. The presence of each informative band was measured, while its absence was scored as zero. The polymorphic information content was calculated using the formula: $PIC=1-\Sigma(P_i)^2$, where, 'P_i' is the frequency of the i^{th} allele calculated for each microsatellite locus.

Results and discussion:

A total of 35 oilseed genotypes were analyzed using 15 SSR markers. Nine out of fifteen SSR markers generated scorable bands among which only one (BrGMS1490) was polymorphic with the PIC value of 0.56 with 35 total alleles (Fig. 6).



(a) BrGMS1490 (b) Na12-A02

Fig. 6 Banding patterns created for the varieties of oilseed using labelled SSR-primers BrGMS1490 (a) and Na12-A02 (b).

The establishment of a DNA fingerprinting database will serve as a valuable resource for breeders and researchers, facilitating informed decisions in conservation and improvement strategies. However, this study identified significant challenges in assessing genetic diversity among oilseed varieties in Nepal due to low polymorphism. Most varieties exhibited similar banding patterns, indicating limited genetic variation. Amphidiploids species exhibit less polymorphism than diploid species. Polymorphism reported for *Brassica napus* is less than 45% (Kresovich *et al*., 1995). In amphidiploids like *Brassica napus*, due to meager self-incompatibility, there is always a low level of out-crossing which leads to low percentage of polymorphism (Weerakoon *et al.,* 2010). The findings suggest that both marker choice and genotype selection could have contributed to the observed results.

Conclusion:

While the study aimed to identify genetic diversity among oilseed varieties, the results indicate a concerning lack of polymorphism. The findings underscore the importance of further studies expanding the marker panel for maintaining genetic diversity among oilseed crops in Nepal. Continued research and development in this area will enhance the resilience of oilseed production systems and contribute to food security.

3.3 Seed Quality Evaluation of Major Food Crops from Different NARC Stations

Introduction:

Nepalese farmers are still raised a question to researchers and extension workers about the seed quality which they purchased from agrovets, seed cooperatives/companies and government agencies regarding seed germination and viability. The principal aim of the proposed project is to increase the production and productivity of major food crops (oilseed and grain-legumes) by evaluating source seed quality of public and private agencies. Research methodology includes identification of source seed suppliers from public and private service providers as well as smallholder/entrepreneur of major oilseed and grain-legume crops by making field visit in main market centers of different provinces of Nepal. Forty different source seed samples of each commodity will be collected from service providers and entrepreneur/smallholder farmers' of each provinces and its quality will be tested in NSSTRC laboratory according to crop season. Awareness program will be carried out to the farmers' groups/cooperatives by making interaction program during field visit. Quality seed help to increase production and productivity of the crop and which ultimately

contribute in food security status of the farmers and country as well. Similarly, digitalisation of source seed production status helps to maintain seed balance sheet and make ease in seed distribution.

Attainable yields of all crops reported by the Ministry of Agriculture Development (MOAD) are much higher than the yield of food crops in farmers' field (MoAD. 2014). This is also an interface between scientist and farmers for enhancing their productivity and profitability. In general, source seeds are produced and supplied by different public and private service providers. Nepalese farmers are still raised a question to researchers and extension workers about the seed quality which they purchased from agro-vets, seed cooperatives/companies and government agencies regarding seed germination and viability (Poudel and Dhami, 2016). In F.Y. 2078/79 different source samples of rice, wheat, maize and lentil were collected from Bagmati, Gandaki and Lumbini Province. Preliminary result showed that, about 15%, 5% and 30% source seed samples were found below standard in terms of germination, purity and moisture content respectively. About 21.67% service sample having low germination and 30.23% samples having high moisture content observed during testing in NSSTRC laboratory (NSSTRC, 2021). Thus, knowing seed quality is important from farmers and researcher point of view for ensuring higher crop production and productivity. The principal aim of the proposed project is to help in reducing rural poverty and increase food security in rural areas of Nepal by increasing the production and productivity of major food crops by evaluating source seed quality of public and private agencies.

RESEARCH METHODOLOGY:

Research methodology such as identification of source seed suppliers from public and private service providers as well as smallholder/entrepreneur of major oilseeds and grain legumes by making field visit in main market centers of different provinces of Nepal. Altogether 280 different source seed sample of cereals, oilseed and grain legumes crop was collected from different NARC stations. Those collected seed samples quality were tested in NSSTRC laboratory according to crop season. Data which was gathered from the laboratory was tabulated and analyzed.

i. Sample collection of source seed of cereals, oilseeds and grain-legumes crop (4):

Altogether 378 seed samples of major cereals, oilseed and grain-legumes crops were collected from different NARC stations and source centers. These samples were collected from source center under NARC of different province. Mojority of cereals, grain legumes source seed samples were collected from respective commodity program and DoAR too. While for oilseed samples National Oilseed Research Program, Nawalpur, Sarlahi was a major source center and we collected samples from there. Sample were collected by technician from NSSTRC by visiting the concern source seed centers. Whereas some samples were collected from market to check their quality and other seed testing parameters.

ii. Source seed quality testing in NSSTRC laboratory (4):

The existing source seed quality of entrepreneur/smallholder farmers were accessed by collecting 378 different samples of cereal, grain legume and oilseed crops which they used

according to crop season of each province. Collected samples seed moisture, germination percentage, purity percentage, seed vigour and seed viability were tested in NSSTRC laboratory. Out of 378 collected seed samples from source centers, 35.5 % of those samples was found with in standard and rest 64.5 % of collected samples were found below standard regarding moisture content (Annex 12.2). Similarly, 67.72 % samples were found standard and rest 32.28 % samples were found below standard regarding germination. Seed moisture content was found high in NARC stations. These issues also need to be addressed properly. The details of collected samples test results are presented in Annex 12.2.

3.4 Participatory Technology Development, Verification and Dissemination Project

Introduction:

NARC has been developing the new reliable and practical technologies for the farmers to be benefitted from agriculture sector and ultimately uplift their lively hood. However, access of those technologies is limited due to confound effect of difficult topography affecting the technology dissemination process. It is therefore farmers are still adopting the traditional practice and are farming for subsistence. On the other hand, the adoption of new technologies is also less in certain situation due to the marginal farm resources and poor economy of farmers.

Quality seed is one of the important aspects in agriculture which along with other inputs can increase the agricultural production. But unfortunately, farmer's to farmer seed system predominates and these seeds are of poor quality and the farmers are found not to practice the seed selection and proper post-harvest practices. In Nepal, farmers' store their seed in traditional way and not maintained proper moisture in the grain. This creates problem in seed quality and seed was affected by insects-pest and other fungal disease due to moisture content is higher in the seed. Likewise these kinds of seed having low germination as a result this could affect in crop production and productivity. There is lack of awareness and knowledge on use of quality seeds and its relation in agricultural production. Farmers are using pesticides to protect seed from insect pest due to which environmental hazards and losses of human health occurs. Farmers' have lack of knowledge about the systematic seed production, handlings and proper storage techniques specially small holder farmers of mid hills and high hills

The national average productivity of major cereals of rice 3.8 mt/ha and maize 2.9 mt/ha,) is very low in Nepal (MoALD, 2077). Among these maize and rice hybrids are developed by NARC and their productivity is over to national productivity but the problem is that these technologies are recommended only for terai region not for mid hill environment. Hybrid seed is not available within the country and farmers are fully dependent on multinational company hybrids.

Hill farmers are spending lot of money every year to buy the multinational companies hybrid seed of maize, rice and vegetables. Hybrid seed production technology is not verified at different places of mid hills. Privet seed companies/cooperatives have not knowledge about hybrid seed production technologies. Government and seed vision 2013-2025 focused the seed production program within the country through Public Privet Partnership (PPP) model but the linkage and coordination is lacking. Community based seed production program

are not fully aware about the seed production technologies in OPV and least in hybrid seed production techniques. Hybrid seed production in private sector has just started by few companies. The cost of seed production is very high and less mechanization in seed production block.

Hybrid seed production in maize is highly technical and location specific. The verification of hybrid seed technology for backstopping the privet seed companies is regular process. For study of different male female ratio to produce quality hybrid maize seed production technology using PPP model in different agro-ecological region is an urgent need. Commodity program developed the hybrids for terai. Large plot demonstration of Nepali hybrid maize along with multinational company hybrids is equally important for their domain expansion in river basin area and foot hills.

Some quantity of Nepalese maize hybrid seed must be available for the comparison with Indian hybrid maize. Rice and maize commodity programs mostly concentrated their effort in low land/terai area but some areas of river basins and foothills are potential for hybrid technologies. Seed companies, cooperatives of mid hills are equally interested about hybrid seed production and marketing. Although there is no any institutions to help them technically. Farmers groups Public Private Partnership approach is needed for encouraging private sector in seed business especially in hybrid varieties (maize, rice, tomato). The mid hill area is very diverse and altitude ranges from 600 meter to around 1700 meter above the sea level (masl) where the environment is similar as *Terai* and inner *Terai* and the major crop varieties recommended for *Terai* and inner *Terai* are adopted in this environment. Commercial quality hybrid seed production could be the milestone to absorb labor force within the country and to increase income of small holder farmers. Commercialization of hybrids is possible, if there is strong collaboration between public and privet institutions which ensures to establish seed marketing system in Nepal. That will eventually help thousands of smallholder farmers, feed industries to augment their food and feed security and economic wellbeing of Nepalese people. To dessiminate neplease hybrid technology in outreach sites was a major objective of this project. Similarly, accessment of farmers' save seed quality was also carried out by collecting seed samples from farmers' household. In this project, four different activities were carried out in fiscal year 2080/81. The details are summarized below.

3.4.1 Demonstration of maize hybrid seed production technology (1)

Demonstration of Neplease hybrid maize (Rampur Hybrid 10) seed production technology was carried out in office premises. The demonstration was carried out in 0.4 ropani area under researcher's manage condition. Male and female lines of Rampur Hybrid 10 seed were planted in the field. Firstly, one male lines were planted in field and after 72 hours, three lines of female seed were planted. All the agronomical practices were carried out in the demonstration block. Detaselling of female lines were carried out at the time of flowering. Finally, cobs from female lines were harvested from the demonstration block. While cobs from male lines were left in the field. About 60 kg of F1 seed (hybrid maize) were harvested from the demonstration block. All the farmers and stakeholders who visited NSSTRC were learned by demonstration block located in office premises.

3.4.2 Large plot demonstration of Nepali hybrid maize (1)

About 40 kg of Rampur Hybrid 10 of maize were distributed to progressive farmers of Kuntabesi of Kavrepalanchowk district. This seed were planted in farmers' field in farmers' manage condition. The crop cut data were taken from the farmers' field. Average grain yield 7.85 mt/ha were recorded from the field in case of Rampur Hybrid 10 of maize (Figure). Adjacent farmers planted CP series of maize hybrid namely CP 808. Technician from NSSTRC taken the crop cut data and average grain yield were found 8.5 mt/ha (Fig. 7). Thus, Nepali hybrid maize namely Rampur Hybrid 10 was found almost similar in terms of yield and which were resistant to drought as compared to CP 808.

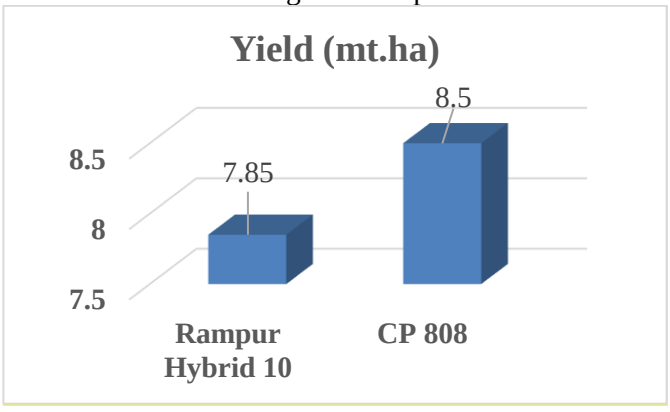


Figure 7: Average grain yield of hybrid maize in demonstration block at Kuntabesi of Kavrepalanchowk

3.4.3 Large plot demonstration of Nepali hybrid rice (2)

Similarly, about 25 kg Neplease hybrid rice (Hardinath Hybrid 1) was distributed to progressive farmers of Kuntabesi of Kavrepalanchowk district. Nursery bed is established to transplant seedlings after harvesting spring maize. The overall results of these demonstrations block showed that, Hardinath hybrid 1 produced 6.5 mt/ha grain yield while famous hybrid namely Shankar produced 7.2 mt/ha (Fig. 8). Farmers' response was quite encouraging regarding Hardinath Hybrid 1 of rice and it is early than Sankar hybrid.

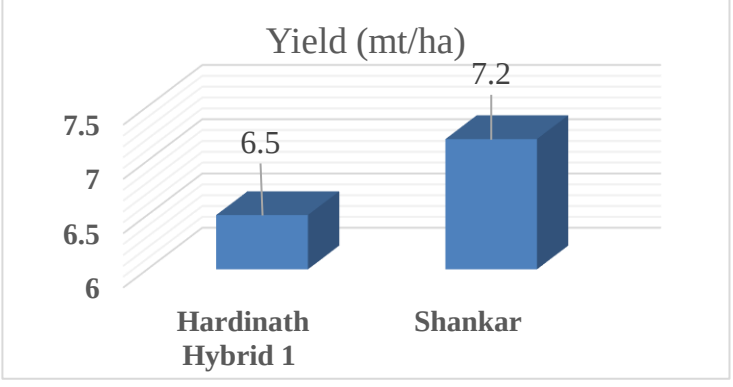


Figure 8: Average grain yield of hybrid rice in demonstration block at Kuntabesi of Kavrepalanchowk

3.4.4 Collection of seed samples (rice, wheat and maize) (4)

About 71 samples were collected from farmers' household. Farmers still follow traditional method to store seed and grain in the field level. They stored source seed locally in plastic bags. Post harvest handling of seed and grain is also one of the challenges for the farmers. Out of collected seed samples from farmers' household, 40.84% of those samples was found with in standard and rest 59.16% of collected samples were found below standard regarding moisture content (Annex 12.2). Similarly, 56.34% samples were found standard and rest 43.66% samples were found below standard regarding germination.

Around 400 PICS bags and super grain bags were distributed during training program. Using of PICS bag were demonstrated during training program among the participants. Feedback of PICS bag were collected during field monitoring. About 90% of farmers' said that, PICS bags helped to protect seed from insect pest attack in storage. This technology need to be replicate in other areas too.

3.5 Strengthening Seed Production, Supply and Quality Control System Project

Introduction:

Japan International Cooperation Agency (JICA) has implemented the project entitled "strengthening seed production, supply, and Quality Control System" in Koshi Province of Nepal from March 2022. This is five year project which ended in January, 2027.

This project is bilateral agreement of Government of Nepal and JICA. Project is led by Ministry of Agricultural and Livestock Development (MoALD) with different partners. The major project partners are NARC, SQCC and DoAD/MoLAC-Koshi Province. NARC has role in research and production of nucleus seed and breeder seed with maintaining seed quality with respect to selected rice varieties. All the technical supports are provided from JICA. SQCC have regulatory role while farm center have role on foundation seed, improve seed production. Similarly, Department of Agricultural Development and Provincial Agricultural Ministry has role in dissemination of project outputs in project districts. Jhapa, Morang, Sunsari and Udayapur is the project district of JICA which works on rice seed production, supply and quality control system.

Research works under this project is conducted in National Rice Research Program (NRRP), Hardinath, Dhanusa of Madesh Province and National Seed Science Technology Research Center (NSSTRC) have given mandate on monitoring seed production research and demonstration block along with Focal Center. Dr, Pallavi Kumari Singh (Chief of NSSTRC) is working as Project Manager and Mr. Arjun Prakash Poudel (Scientist, S-2) assigned as focal person of this Project in NARC side.

Observation:

Monitoring team visited JICA contact office located in 3rd Floor of Agribusiness Promotion, Support Training Center in Jhumka, Sunsari. Team Leader Dr. Yoshida welcoming monitoring team of National Seed Science Technology Research Center (NSSTRC) and explaining activities under Strengthening seed production, supply, and Quality Control System Project in Koshi Province. Similarly, Mr. Bhanubhakta Mainali also explain the methods and techniques of rice source seed production and demonstration

blocks too. Discussion was made with JICA team and NSSTRC scientist about ongoing and upcoming activities of project during that visit.

Monitoring team of National Seed Science Technology Research Center (NSSTRC) visited Chandradangi Farm of Jhapa. Mr. Birendra Parajuli, Chief of Chandradangi Farm welcoming monitoring team and explained the ongoing activities. The different method of rice source seed production was observed. In Chandradangi Farm, method demonstration of JICA project and farm was demonstrated separately, where we can see differences in tiller number and standing crop too. Transplanting in line along with spacing in every six lines were observed in demonstration block under JICA project. Whereas Chandradangi farm produced source seed in random transplanting method where we can see less tiller number as compared to demonstration led by JICA. Swarna Sub 1 of rice variety was in active vegetative stage in both demonstration block.

Similarly, monitoring team observed the source seed production in farmers' field of Shivasatakshi Rural Municipality. Kanchan Agro-biodiversity Protection Development Committee involved in source seed production of rice. All the fertilizer dose was applied as per the farmers' practice and separate demonstration block managed by project and managed by farmers' can be seen in that area. Clear difference in tiller number per hills can be seen in that area. Response of farmers' is found encouraging too. Around 3 *Kattha* of land were covered by demonstration block and Swarna Sub 1 of rice variety were transplanted in demonstration block. Crop is in active vegetative stage.

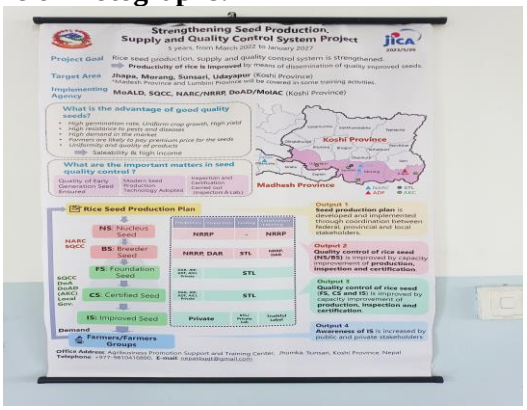
Works need to be undertaken:

- Off type were seen in demonstration block of Kanchan Agro-biodiversity Protection Development Committee farmers' field so, roughing should be done.
- Due to zero budgeting, intercultural operation like roughing and weeding of rice demonstration block were affected which is a serious issues in Chandradangi Farm of Jhapa.
- Top dressing of urea is needed for rice demonstration block.
- About 60 ha of area are covered by Chandradangi Farm, Jhapa which produce 100 tonnes of source seed of food crops is under zero budgeting from governmental side in this fiscal year. This kind of policies taken by government need to be changed.

Over all finding:

- Demonstration block of source seed production of Swarna Sub 1 of rice was found at active tillering stage and is excellent condition in farmers' field.
- Different meetings and workshop were organized in last fiscal year to develop technical capability of staff working in rice research.
- Nucleus seed production was demonstrated in NRRP, Hardinath in line showing method.
- The harvested nucleus seed were used for next season to maintain uniformity and this process will last for next three years.
- NRRP also planning to start demonstration block for Hardinath 1 variety.

Field Photographs:



Project funded by JICA in brief

Mr. Bhanubhakta Mainali explaining about project at Jhumka, Sunsari

Dr. Yoshida explaining the project activities at Jhumka, Sunsari

Group photo of monitoring team with JICA team at Jhumka, Sunsari

Random Transplanting at Chandradangi farm of Jhapa

Regular Transplanting at Chandradangi farm of Jhapa

Details of project in flex at Chandradangi farm of Jhapa

Chief of Chandradangi farm Jhapa with NSSTRC Chief and Scientists

Details of project in flex at farmers' field at Jhapa

Farmers' in his demonstration block at Shivasatakshi Municipality of Jhapa

Figure 9: Glimpses of Field visit at Koshi Province

4. TECHNOLOGY TRANSFER AND SERVICES

4.1 Services

NSSTRC has been working in close association with national commodity programmes, private seed companies, agricultural cooperatives, seed production projects /programs and provides the seed testing and information services to respective seed stakeholders. Followings were the seed quality attributes tested in Central seed laboratory following ISTA 2011 rules and guidelines as well as norms developed by NSB. Seed analysis reports were provided to respective seed producers, seed companies, researchers and farming groups. A total of 591 seed samples i.e., 142 service samples and 449 research samples (Annex 12.1 and 12.2) were analysed in seed laboratory. Out of collected 449 research samples, 63.7% of samples were found below standard regarding seed moisture content while 34% samples were found below standard regarding germination point of view. For 142 service samples, 23.2% of service samples were below standard for germination point of view. Likewise 30.4% tested service samples were found high moisture content. Similarly in molecular laboratory, 29 genotypes of rice using 10 SSR marker, 60 genotypes of wheat using 15 SSR markers and 35 genotypes of oilseed using 15 SSR markers were analysed in molecular laboratory. Thus, 124 genotypes of different crops were analysed in NSSTRC molecular laboratory in F. Y. 2080/81. Seed testing services focused on:

- Analytical Purity Analysis, moisture content test and germination test (Routine Seed Test)
- Tetrazolium Salt Test, Vigor Test, Ageing Test, Cold Test, Field plot and biochemical and molecular marker test (special testing)
- Proficiency seed sample testing

4.2 Publications

One hundred copy of book entitled "*Quality Seed Production Protocol for Rice, Maize and Potato"* was published in Nepali language. Similarly, Seventy five copy *Annual Report* was published during first quarter of FY 2080/81 and distributed by NSSTRC (Annex 8).

4.3 Training and visits

About 237 person visited laboratory of NSSTRC in FY 2080/81 (Annex 9) while 18 students work as an intern in NSSTRC laboratory and field (Annex 10). Different Enterpreneur farmers, Scientists, Professors, Technicians, Students etc. were visited office to make interaction with staff about technical information and facilities of NSSTRC with regard to the seed quality testing and molecular services. Students, agriculture extension staffs of DoA, also visited the NSSTRC laboratory. Different students from national and international institutions were worked as an interns at NSSTRC, Khumaltar, Lalitpur during FY 2080/81 and they successfully completed their internship (Annex 10). Similarly, different training and workshop were organized by NSSTRC in Gandaki, Madesh and Bagmati Province. Around 180 participants were participated in training and workshop organized by NSSTRC (Annex 7). On the spot training was also provided to the farmers'

groups and seed producers of cooperatives in OR sites and NARC Technology Village through out the country during field visit.

5. BUDGETAND EXPENDITURE

In FY 2080/81, NSSTRC operational and capital budget was NRs 1,66,44,000 (operational- NRs.1,60,59,000 and capital budget- NRs.5,85,000). In FY 2080/81, NRs. 3,94,684.30 budget was deficit in staff expenses and additional budget were requested to NARC under this budget head. Thus, out of total budget NRs. 1,65,30,262.66 were used (Annex 13). The financial progress was observed 99.31% of total budget of NSSTRC. During FY 2080/81, total revenue of NRs. 1,26,058 was collected through seed testing services and sales of research crop production and auction (Annex 4.3 and Annex 14). Total beruju was NRs. 84,225 during FY 2080/81 which was already sent for clearing process (Annex 15).

6. KEY PROBLEMS

Human resource is the main problem followed by limited laboratory space is still the key problem in the centre. Lack of scientific manpower to run the molecular lab and seed lab is the main constraint in this centre. The centre has been successful in facilitating and strengthening the services and research resources with support of collaborative seed projects. Due to the limitation of space inside the building all activities could not have been brought into full operations. For the limitation of the space, NSSTRC would suggest to allocate two story whole building and premises for NSSTRC as 'Seed Bhawan'.

7. WAY FORWARD

A good amount of research in the field of NSSTRC has been carried out and significant contributions made on seed regulatory frameworks formulation and implementation in past and recent year by the centre. The field is wide as it includes a cadre of disciplines of seed biology to its marketing, management and uses. But in the present context following research areas on quality seeds for improving the production per unit area are felt to prioritize and carry out the studies:

- Basic studies on seed biology, morphology, and physiology of different agricultural crop species.
- Resiliency of seeds to climate change
- On-farm seed management and improvement of farmers saved seeds which dominates the national seed system
- Use of biotechnology and molecular techniques in support of seed technology and genetic studies of local crop diversity
- Collaborative research with different seed stakeholders
- Harmonizing the seed quality and their use
- Seed production research in hybrid maize and rice

8. REFERENCE CITED

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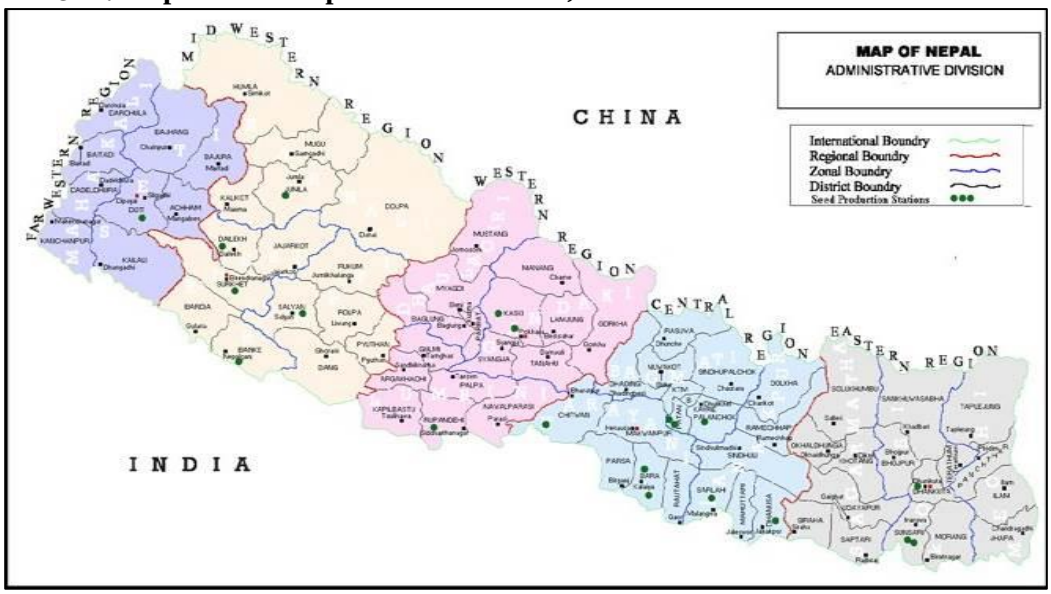
9. ANNEXES

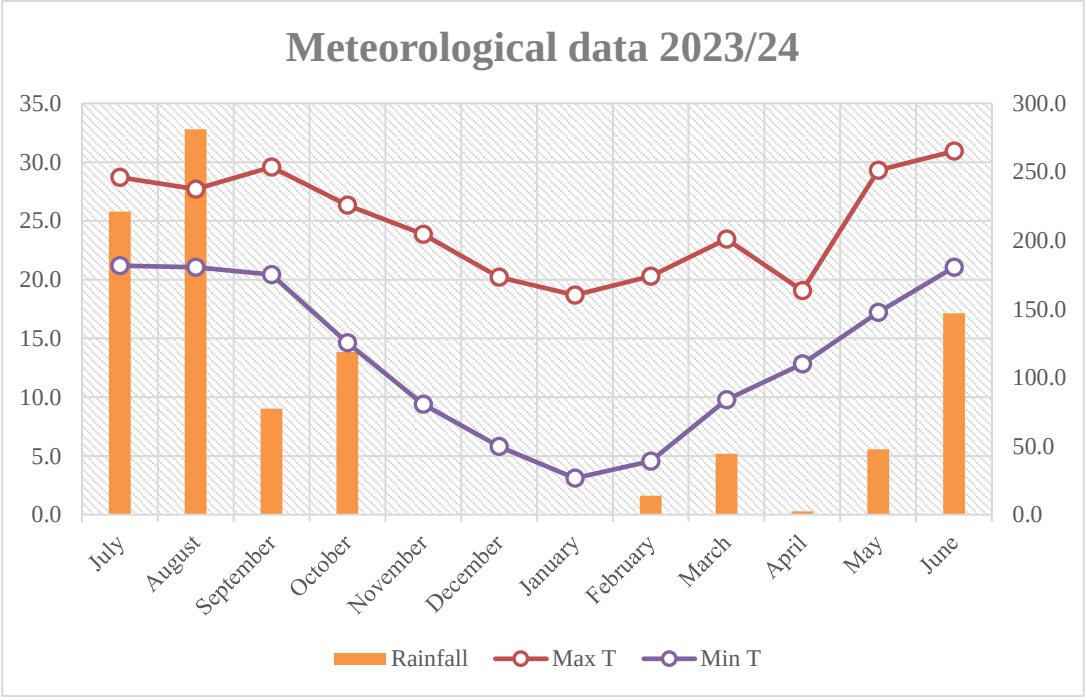
Annex 1. Map of the seed production stations, NARC



Metrological information

During fiscal year 2080/81, Khumaltar received 953.2 mm annual rainfall in 105 rainy days with annual average of maximum and minimum temperature 24.9 ºC and 13.4 ºC respectively. Details are given in table below.

Annex 2. Monthly agro-meteorological data, Khumaltar, 2080/81 (2023/24)

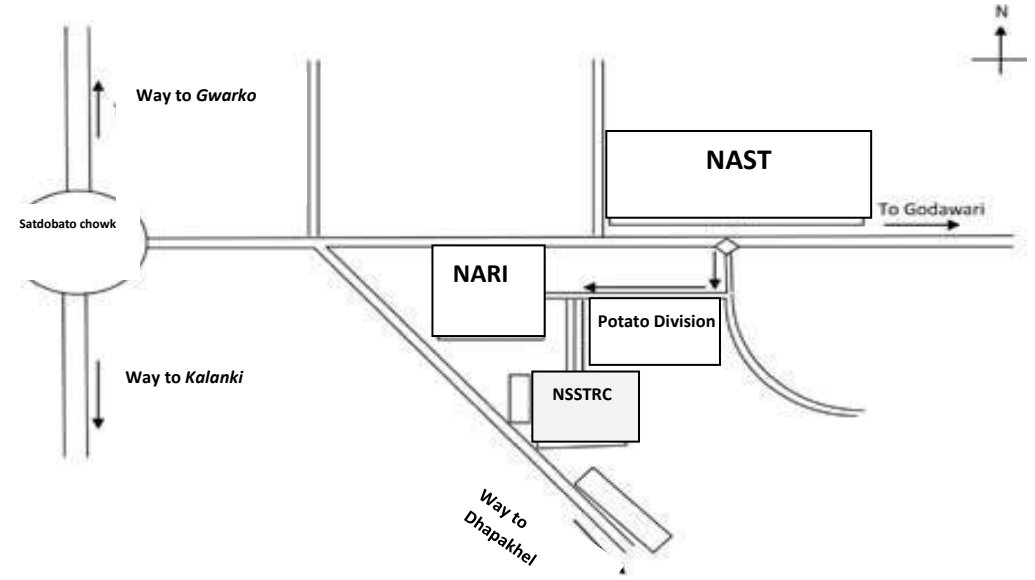


Maximum, minimum temperature and total monthly rainfall, Khumaltar, 2080/81 (2023/24)

Monthly agro-meteorological data of Khumaltar, Lalitpur, 2080/81 (2023/24)

Month/Year	Mean Temperature (°C)		Total rainfall (mm)	Rainy days (days)
	Maximum	Minimum		
Jul-23	28.7	21.2	221.1	25
Aug-23	27.7	21.1	281.1	18
Sep-23	29.6	20.4	77.4	14
Oct-23	26.3	14.6	118.7	7
Nov-23	23.9	9.4	0.0	0
Dec-23	20.2	5.8	0.0	0
Jan-24	18.7	3.1	0.0	0
Feb-24	20.3	4.6	13.9	2
Mar-24	23.5	9.8	44.3	10
Apr-24	19.1	12.8	2.3	1
May-24	29.9	17.2	47.6	15
Jun-24	30.9	21.1	146.8	13
Mean/Total	**24.9**	**13.4**	**953.2**	**105**

Annex 3. Map of the office/station



Annex 4.1. List of equipments/machines in seed testing laboratory facilities, 2080/81 (2023/24)

S.N.	Major instruments	Testing facilities
1	Air conditioner *(Chunlan)*	Maintaining temperature inside working room
2	Altimeter *(Multi-function digital altimeter, Model no. ZD-2028/ 6 in 1)*	Recording altitude of location during seed sampling
3	Balance *(Electric balance, Digital counting balance/ Weighing scale, Denver instrument-counting balance, 4-digit balance-Kern ABJ, 3-digit balance, Electronic balance of 100 kg capacity,E-sun 200 kg capacity)*	Working sample preparation and seed weighing
4	Camera canon DSLR	Capturing photos of lab and field activities
5	Canon 3010 *(3 in 1 printer)*	Printing reports and protocols
6	Check point of O_2/Co_2 recharge adapter	Measuring O_2 and CO_2 of sample
7	Chlorophyll meter	Recording chlorophyll content of leaf
8	Computerized seed counter	Seed counting
9	Corn Thresher	Threshing corn
10	CCTV camera set	Observing office activities and security
11	Dan sensor O_2 and CO_2 gas analyzer	Gas analysis
12	Desiccators *(Big size, medium size and small size)*	Sample storage for short period
13	Desktop Computer sets *(Goldkist, Lenovo, Acer)*	Data recording and technical works
14	Dickey John *(Grain Analyser Computerised Moisture Meter)*	Recording Moisture content of sample
15	Digital vernier caliper DL.S1 Lutron	Quantitative trait reading
16	Divider *(Boerner Seed Divider, Soil Seed Divider, Gamet Seed Divider)*	Working sample preparation
17	E.Q.F Disintegrator high speed mill *(24000 RPM)*	Seed milling
18	Eye piece-digital camera (*Coslab-MDCE-5C)*	Microscopic photography
19	Gas Air Quality Meter *(6 in 1)*	Gas analysis meter
20	GPS- *GARMIN (e-Trex GPS)*	Measurement of altitudes
21	Grain density meter *(Phoenix instrument)*	Weighing sample
22	Hand scoop SS large	Withdrawing samples
23	Hanna EC meter *(meters for EC/ TDS/OC/OF)*	Conductivity test
24	High Speed Grinder	Grinding sample
25	Laboratory aspirator	Purity analysis
26	Laptops *(Acer, Lenovo, Dell)*	Data recording and report writing
27	LED Smart TV	Observing lab activities
28	Microscope *(Leitz-HM-LUX-3, Wild M3Z-Heerbrugs Switzerland, Olympus SZ51, Leitz-Laborluz K)*	Seed identification and seed micro-organism infection
29	Mini Tiller	Ploughing the research field

S.N.	Major instruments	Testing facilities
30	Mid-Term Germinator (Seed storage), Bally case & Cooler, USA	Coldstorage for guard sample
31	Oven *(Memmert, Baking Oven)*	Moisture testing and drying beads
32	Paddy Thresher Machine *(Manual)*	Threshing rice
33	pH meter *(Portable)*	Recording pH of sample
34	Photocopy machine	Photocopy and scanner
35	Plant growth chamber	Germination test
36	Portable leaf area meter	Recording leaf area
37	Portable Sieve Set	Sieving
38	Projector *(Optima)*	Presentation of files
39	Refrigerator	Storing chemicals and reagents
40	Sample Trier set	Sampling unit
41	Samsung Tab A 8.0	Recording data
42	Sealing Machine *(Vacuum sealer & Impulse sealer)*	Relative to post- harvest study
43	Seed ageing chamber *(India)*	Vigor test
44	Seed analyzer with scanner	Seed analysis
45	Seed blower Dacota type	Blowing samples
46	Seed coating machine	Sample coating
47	Seed Germinator *(Labline, Indosaw, Accumax)*	Germination of sample
48	Seed Grinder Lab mill *(3310 perten S/N 160611)*	Seed grinding
49	Seed Moisture Meter Wile 78 Crusher-7	Moisture test
50	Sieve set (*75mm / 20 sieves set)*	Sampling unit
51	Single ear thresher	Threshing
52	Single panicle/headthresher-1	Threshing
53	Soil Auger *(Screw type-98 mm)*	Soil sampler
54	Soil moisture meter	Soil moisture test
55	Solar Battery	Backup system
56	The pHep Family Hanna Instrument	Seed conductivity test
57	Vacuum seed counter	Seed counting
58	Wile-66	Portable grain moisture test
59	Xerox Canon MF 3010 set *(3 in one)*	Printing and scanning
60	Generator	Power supply

Annex 4.2 Lists of equipments/machines in molecular laboratory facilities, 2080/81 (2023/24)

S.N.	Major Instruments	Testing facilities
1	Air Conditioner *(Panasonic)*	Cooling lab
2	Animax Real Time PCR *(PC system, Power backup solar Hybrid - 3 pieces)*	DNA Finger printing and backup system
3	Autoclave *(Accumax, India)*	Sterilization unit
4	Centrifuge *(REMI, CAT No. R-24, Serial no.-VCDP-5338)*	Homogenizing unit
5	Deep fridge *(Yasuda)*	Preserving the DNAs

S.N.	Major Instruments	Testing facilities
6	Desktop Computer set *(HP Pavilion and Acer)*	Data entry and analysis
7	Electrophoresis *(power supply - Serial no.93086, EV 243, Made in Belgium and Multi sub midi set 10 X 10 cm*)	Supply of power and gel electrophoresis unit
8	Fridge	For storing chemicals and sample
9	Gel documentation *(Alpha Innotech)*	Documenting the banding of DNAs on gel
10	Ice box	Cooling DNA samples
11	Ice flack machine-*SIMAG*	For making Ice Flakes
12	Incubator Machine *(Water bath)-18X18X18)*	Incubation
13	Laminar flow	Health test
14	Liquid Nitrogen Refrri	Storing liquid nitrogen
15	Magnetic stirrer *(SONAR, CAT No. MS-1, Serial no. F0034910311)*	Shaking and mixing unit
16	Micro Oven *(lg)*	Preparing gel
17	Micro-centrifuge *(PPW Med. Instrument)*	Homogenizing unit
18	pH meter *(Chemi line, Digital PH meter with ATC CL-120*)	Determining PH
19	Polymerase Chain Reaction *(PCR - Corbet, Model no. CGL-96, Serial no. C-10081)*	DNA sequence amplification unit
20	Refrigerated micro centrifuge *(Model T 50)*	Homogenizing unit
21	Spectrophotometer *(JENWAY, single cell holder)*	Quantification of DNAs
22	Vaccine carrier *(1.6 liter w/4 Ice packs Aov)*	Cooling
23	Vortex mixer *(Touch type and Tallboys USA-digital)*	Shaking the solns
24	Water bath *(SONAR)*	Warming the PCR Recipes
25	Water Distillation Unit	Making distilled water

Annex 4.3 Lists of items auctioned in FY 2080/81 (2023/24)

S.N.	Major Instruments	Quantity
1	Magnifying Glass with stand	१ वटा
2	Stavol	२ वटा
3	Digital Camera (CANON)	१ वटा
4	Digital Camera with 2 GB Memory Card	१ वटा
5	UPS - DYNAMIC, K1200VA	१ वटा
6	स्ट्याण्ड फ्यान	२ वटा
7	फ्रिज, पुरानो	१ वटा
8	युरोगार्ड - पुरानो	१ वटा
9	Digital conductivity Meter - No.-215 R	१ वटा
10	Magnifuge (Here-ous) SEPATCH	१ वटा

S.N.	Major Instruments	Quantity
11	PAN Ballance	१ वटा
12	Triple Beam Balance (OHAUS)	१ वटा
13	Seed Divider (Metal)	१ वटा
14	Gamet Seed Divider (Precision Divider), S.N. - 1A74941	१ वटा
15	Digital Moisture Meter (FCI-INDO-SAW)	१ वटा
16	Universal Moisture Meter, No. SE-1096	१ वटा
17	Dole Moistuer Tester	१ वटा
18	OVEN (Heraeus)	१ वटा
19	Distillation Unit	१ वटा
20	Humidity fire (Humidyfire) - Temperature cont.)	१ वटा
21	Water Bath	१ वटा
22	Single Chamber Germinator Machine	१ वटा
23	Desktop Computer set - P-IV with LCD Monitor	१ वटा
24	Desktop computer (Mercantile Personel computer with printer-2, Epson Laser)	१ वटा
25	Laptop (Notebook) - SONY Vio	१ वटा
26	टेलिफोन सेट	१ वटा
27	क्यालकुलेटर (Citizen and caltrix)	२ वटा
28	क्यालकुलेटर (Casio)	३ वटा
29	थर्मस (Electric)	१ वटा
30	Electric Kittle थर्मस (Automatic - 6 Ltr)	१ वटा
31	मोवाईल फोन सेट (Alcatel)	१ वटा
32	Huawai G-play Mini mobile set	१ वटा
33	Electric Grinder	१ वटा
34	Grinder Mixture (Rico, India)	१ वटा
35	ग्यास चुलो	१ वटा
36	Water Bath	१ वटा
37	UPS (Inverter) SUKAM	१ वटा
38	UPS-Emerson Libert (600 VA)	१ वटा
39	UPS-Emerson Libert (600 VA)	१ वटा
40	लेमिनेशन मेशिन (IMPEX GOlD)	१ वटा
41	चेक राइटर	१ वटा
42	Stand Fan (USHA)	१ वटा
43	कार्पेट (फ्रेन्स)	६५ वटा
44	भ्याकुम क्लिनर (वेको)	१ वटा
45	Sony Digital Camera 16.1 MP	१ वटा
46	Digital Camera - Canon - (Powershot A2300)	१ वटा
47	Helgon Electric Heater	२ वटा
48	Sprayer - Brass Metal	२ वटा
49	Forth PABX System (ES-832 CID) (Intercome Telephone System)	१ वटा
50	Forth Key Telephone Set (KT-10) (Connection in the Intercome Telephone System)	१ वटा

S.N.	Major Instruments	Quantity
51	पानी तान्ने मोटर (Crompton) - 1 HP	१ वटा
52	Scanner (Canon)	१ वटा
53	Canon Multifunction with Duplex	१ वटा
54	UPS – TDKee	१ वटा
55	Desktop Computer Set	१ वटा
56	Desktop Computer Set (LENOVO) H3320 core-i3	१ वटा
57	Desktop Computer Set (Acer-Branded Genuine)	१ वटा
58	Laptop Computer (Dell core i5, 500 GB HDD)	१ वटा
59	Laptop Computer (Aspire-4752), Notebook (Acer)	१ वटा
60	Laptop Computer (Lenevo-GS570)	१ वटा
61	Laptop Computer (Dell CE-2155, INSPIRON-3520	१ वटा
62	Lenovo Laptop Computer - G 40-80 model	१ वटा
63	UPS – Attari	१ वटा
64	Voltguard (Stabilizer) - 1 KVA	१ वटा
65	Voltguard (Stabilizer) - 3 KVA	१ वटा
66	Volt Controller (Powertech stavol, 3 KVA)	१ वटा
67	FAX Machine (Canon) JX 210 P	१ वटा
68	Digital Pan Balance (5 kgs)	१ वटा
69	GERMINATOR - Double Chamber (ACCOMAX), India	१ वटा
70	Liquid Nitrozen Refrri (20.5 Ltrs. Size)	१ वटा
71	Liquid Nitrozen Refrri (1.5 WB/Conister)	१ वटा
72	Autoclave - 14 x 22, Accumax, India	१ वटा
73	ICE - Crosser Machine	१ वटा
74	Seed Grinder (Manual simple & General)	१ वटा
75	Seed Germinater Machine (14 Trays)	१ वटा
76	ल्याव कुर्सी काठको	८ वटा
77	नोटीश बोर्ड (काठको)	२ वटा
78	स्टीलको स्केलटन -याक पुरानो तथा बिभिन्न साईजको	३ वटा
79	Computer Revolving Chair	२ वटा
80	Revolving Chair	७ वटा
81	Revolving Chair (Hiback)	१ वटा
82	Revolving Office Chair	१ वटा
83	Computer Chair (Highdolic)	१ वटा
84	Large Revolving Chair	१ वटा
85	Medium Revolving Chair	३ वटा

Annex 5. Human resource, 2080 /81 (2023/24)

S. No.	Name	Position	Qualification	Specialization/ Working area
1	Dr. Pallavi Kumari Singh	Senior Scientist, S_4	PhD	Plant breeding and genetics
2	Arjun Prakash Poudel	Scientist, S_2	M Sc. Ag.	Agronomy
3	Dr. Sarita Manandhar	Scientist, S_2	PhD	Agronomy
4	Bisesh Rijal	Technician, T_5	B Sc. Ag.	Agronomy
5	Indira Devi Uprety	Administrative Officer, A_6	B.A.	Sociology
6	Supretee Manandhar Karmacharya	Account Officer A_6	B.B.S.	Account
7	Goma Bajgain	Technical Assistant (5th Level)	Literate	Lab. Assistant
8	Bishnu Maharjan	Technical Assistant	Literate	Lab. Assistant
9	Lahani Tharuni	Technical Assistant	Literate	Lab. Assistant
10	Madan Man Dangol	Light Vehicle Driver	Literate	Driver
11	Ms. Neelam Shrestha	Lab Assistant	B. Sc. (Biotech)	Molecular lab.
12	Mr. Sanish Maharjan	Lab Assistant	B.B.S.	Seed lab. and Computer

Annex 6. Summary progresses of research projects, 2080/81 (2023/24)

S. No.	Project/Activities	Budget in NRs. '000'	Progress	Remarks
1	**Agro-morphological profiles of pre-release varieties of agronomical crops**	**668**		
1.1	Agro-morphological profiles of promising genotypes of rice (3)	167	Descriptors of promising rice genotypes viz; NR-11271-B-B-6, NR-11301-B-B-15-4, NR11518-B-B-15, NR-11105-B-B-27, NR-11301-B-B-1, NR-10676-B-5-3 and Khumal-4 (check) prepared.	
1.2	Agro-morphological profiles of promising genotypes of wheat (4)	336	Descriptors of ten promising wheat genotypes viz; WK-3223, WK-3321, WK-3523, WK-3550, WK-3092, WK-3118, WK-3320, WK-3015, K-3020, WK-3534, WK-1204 and Chyakhura (check) prepared.	
1.3	Agro-morphological profiles of promising genotypes of soyabean (2)	165	Descriptors of eight promising genotypes viz; Chaingmow 6063, CN-60, GC-82234-22C, G-4508, CM-9133, LS-77-16-16, Coll#3 and Black soybean (local check) were prepared	
2	**DNA profiling of promosing genotypes and released varieties of crops**	**1178**		
2.1	DNA fingerprinting promising genotypes of rice (4)	589.5	Molecular Characterization of 29 genotypes of Rice using 10 SSR markers	
2.2	DNA fingerprinting promising genotypes of wheat(3)	294.75	Genetic diversity analysis of 60 genotypes of wheat using 15 SSR markers	
2.3	DNA fingerprinting promising genotypes of winter oilseed (Rapeseed, Mustard and Sarson) (4)	293.75	Genetic diversity analysis of 35 genotypes of oilseed using 15 SSR markers	
3	**Participatory Technology Development, Verification and Dissemination Project**	**815**		
3.1	Demonstration of hybrid maize seed production technology (1)	204.5	Demonstration of hybrid seed production technology of Rampur Hybrid 10 (RH 10) of maize crop in NSSTRC Completed and 55 kg F1 seed produced on-station demonstration block	
3.2	Large plot demonstration of Nepali hybrid maize (1)	204.5	Large plot demonstration of Nepali hybrid maize (Rampur Hybrid 10) is completed and crop cut data under evaluation at Kuntabesi of Kavrepalanchowk district	

S. No.	Project/Activities	Budget in NRs. '000'	Progress	Remarks
3.3	Large plot demonstration of Nepali hybrid rice (2)	204.5	Large plot demonstration of Nepali hybrid rice (Hardinath Hybrid 1 and 3) is in active vegetative stage at Neupanetar of Sindhupalchowk and Kuntabesi of Kavrepalanchowk district	
3.4	Collection of seed samples (rice, maize and wheat) (4)	201.5	71 sample were collected from farmers' field at Banke and Dhanusa and Rupendehi of Lumbini Province and tested at NSSTRC Laboratory	
4	**Farm management and research support project (FMPP)**	**3291**		
4.1	Office support maintenance and beautification (4)	673	Office support and beautification related activities completed	
4.2	Office level proposal seminar (2)	23	Under chairmanship of Chief of NSSTRC, Office level proposal seminar completed	
4.3	Participate in annual planning and review workshop organized at province level (4)	290	Participated in planning and review meeting at khumaltar and meetings in NRRP Hardinath, Dhanusa, Madesh Province orgainzed by JICA and other stakeholder meeting of Bagmati Province	
4.4	Office and farm security (4)	1011	Office and farm security related works completed	
4.5	Monitoring of source seed production under NARC stations/farms and other seed production in super zone under PMAMP, seed companies etc. (4)	558	Monitoriing of source seed production block of wheat at DoAR, Parwanipur, NWRP, Bhairahawa, Rupendehi, DoAR Parwanipur, Bara and Khajura, Nepalgunj, HCRP Kabre, Dolakha, ARS Pakhribas, NSRP, NRRP, DoAR, Parwanipur and ARS Belachapi	
4.6	Farmers' Training on Quality Seed Production and Storage (1)	98	Completed one day training on Bhangaha of Mahottari and Sabaila of Dhanusa district of Madesh Province	
4.7	Capacity Development of Community Seed Bank Staff, Seed Producer Farmers' Group/Cooperative members about Quality Seed Production (2)	188	Training conducted at Community Seed Bank of Purkot Tanahun and CSB Arba Kaski of Gandaki Province	
4.8	Quality Seed Production Protocal for Rice, Maize and Potato (4)	450	Writeshop for Seed Production protocol completed and draft reviewed by experts is ready to print and send it to press	

S. No.	Project/Activities	Budget in NRs. '000'	Progress	Remarks
4.9	Annual Report Publication (1)	0	Annual Report Published and distributed	
5	**Seed Quality Evaluation of Major Food Crops from Different Stakeholders of Nepal**	**1228**		
5.1	Sample collection of source seed of cereals, oilseeds and grain-legumes crops (4)	978	Altogether 378 Research Samples were collected from different NARC stations and source center	
5.2	Source seed quality testing in NSSTRC laboratory (4)	250	All the collected 378 samples were tested in seed testing in laboratory and analysed	
6	**Strengthening Seed Production, Supply and Quality Control System Project**	**255**		
6.1	Moinotoring of Nucleus Seed Production Blocks in Project District (4)	255	Field monitoring at NRRP Hardinath and Koshi Province, discussion was made with JICA Team and participated in workshop organized by NRRP, Hardinath about Project Activities and Project achievements	

Annex 7. २०८०/८१ (२०२३/२४) मा संचालित तालिम तथा गोष्ठी

क्र.स.	तालिम / गोष्ठी	अवधि	लक्षित समूह	स्थान	सहभागी संख्या
१	गुणस्तरीय बीउ उत्पादन तथा भण्डारण बिषयक १ दिने कृषक तालिम	१ दिन	बीउ उत्पादक कृषक सहकारी	भंगहा नगरपालिका, महोत्तरी, मधेस प्रदेश	४४
२	गुणस्तरीय बीउ उत्पादन तथा भण्डारण बिषयक १ दिने कृषक तालिम (सबैला नगरपालिका, धनुषा)	१ दिन	बीउ उत्पादक कृषक सहकारी	सबैला नगरपालिका, धनुषा, मधेस प्रदेश	४०
३	समुदायिक बीउ बैंक संचालक, बीउ उत्पादन सहकारी/समूह हरुलाई गुणस्तरीय बीउ उत्पादन सम्बन्धि प्राबिधिक तालिम	१ दिन	समुदायिक बीउ बैंक संचालक, बीउ उत्पादन सहकारी/समूह	पुर्कोट, तनहु, गण्डकी प्रदेश	३६
४	धान, मकै र आलुको गुणस्तरीय बीउ उत्पादन सम्बन्धि प्रोटोकल - Writeshop (बन्दीपुर, तनहुँ)	७ दिन	सम्बन्धित बिषयबिज्ञहरु	राष्ट्रिय बाखा अनुसन्धान केन्द्र, बन्दीपुर, तनहुँ, गण्डकी प्रदेश	१८
५	कार्यालय स्तरीय परियोजना समीक्षा गोष्ठी, रा. बी. वि. प्र. अ. केन्द्र, खुमलटार, ललितपुर	१ दिन	केन्द्र प्रमुख, परियोजना लिडर, लेखा अधिकृत, प्रशासकिय अधिकृत, आदी	राष्ट्रिय बीउ बिज्ञान प्रबिधि अनुसन्धान केन्द्र, खुमलटार, ललितपुर, बाग्मती प्रदेश	८
६	समुदायिक बीउ बैंक संचालक, बीउ उत्पादक सहकारी/ समूहहरुलाई गुणस्तरीय बीउ उत्पादन सम्बन्धि प्राबिधिक तालिम (आर्वा, कास्की)	१ दिन	समुदायिक बीउ बैंक संचालक, बीउ उत्पादन सहकारी/समूह	आर्वा, कास्की, गण्डकी प्रदेश	३४
जम्मा					**१८०**

Annex 8. Publications in F.Y. 2080/81 (2023/24)

S. No.	Name of publications	Type *	Language	Authors/ Editors	No. of copies
1	Annual Report (2079/80)	Book	English	AP Poudel S Manamdhar and PK Singh	75
2	धान, मकै र आलु बालीको गुणस्तरीय बीउ उत्पादन प्रोटोकोल	Book	Nepali	PK Singh and AP Poudel	100

**Books, leaflet, brochure, manuals, pamphlets, audio visual etc*

Annex 9. Visit of the office by farmers, extension officials /technicians, entrepreneurs, cooperatives, farmer groups, NGO/CBO officials, Institutions etc. in F.Y. 2080/81 (2023/24)

S. No.	Leader's name	Students/ Farmers' number	Name of Institution/ Farm/ Universities	Purpose of visit
1	Representative	24	Himalayan College of Agriculture Science and Technology (HICAST), Kathmandu	Lab visit for practical knowledge
2	Shiva Kumar Mandal	26	Pramila Krishi Farm	Laboratory visit
3	Rajani Keshari	3	Department of Architecture, Tribhuwan University	Laboratory structure observation
4	Representative	16	RNS Krishi and Livestock Farm	Laboratory visit for practical knowledge
5	Representative	27	HICAST, Kathmandu	Laboratory visit, Practical session
6	Sunita Poudel	9	Institute of Agriculture & Animal Science, Tribhuwan University, Kirtipur	Laboratory visit
7	Balak Devkota	8	Sano Thimi College	Laboratory visit
8	Bijeta Yadav	34	Lahan Technical School	Laboratory visit, Practical session
9	Shiva Acharya	2	Tribhuwan University	Laboratory visit
10	Representative	16	Moti Secondary School	Laboratory visit
11	Representative	18	HICAST, Kathmandu	Laboratory visit, Practical session
12	Representative	29	Valley Krishi Campus	Laboratory visit, Practical session
13	Representative	25	HICAST, Kathmandu	Laboratory visit, Practical session
Total		**237**		

Annex 10. Work experience programme (WEP), internship and volunteers etc., in F.Y. 2080/81 (2023/24)

S. No.	Name of students	Qualification	Name of College/ University	Internship Duration
1	Sudip B.K.	B.Sc. Ag	Dolphin (PG) Institute Deharadun	3 months
2	Ekraj Dangar	B.Sc. Ag	Dolphin (PG) Institute Deharadun	3 months
3	Kabita Bhatta	B.Sc. Ag	Dolphin (PG) Institute Deharadun	3 months
4	Riya Shrestha	B.Sc. Ag	Dolphin (PG) Institute Deharadun	3 months
5	Prinam Joshi	B.Sc. Ag	Dolphin (PG) Institute Deharadun	3 months
6	Purnima Ranabhat	B.Sc. Ag	Dolphin (PG) Institute Deharadun	3 months
7	Niruta Karki	B.Sc. Ag	College of Natural Resource Management, Rolpa	3 months
8	Bipasana Chand	B.Sc. Ag	Gauradaha Campus, Jhapa	3 months

S. No.	Name of students	Qualification	Name of College/ University	Internship Duration
9	Bibhu Dahal	B.Sc. Ag	Gauradaha Campus, Jhapa	3 months
10	Dipa Kumari Chaudhary	I.Sc. Ag	Lahan Technical Institute, Lahan, Siraha	3 month
11	Sarada Chaudhary	I.Sc. Ag	Lahan Technical Institute, Lahan, Siraha	3 month
12	Sunita Kumari	I.Sc. Ag	Shree Janta Madhyamik School, Salyan	4 month
13	Rupa Pulami Magar	Pre- Diploma	Shree Janta Madhyamik School, Salyan	6 month
14	Bikash Kushwaha	B.Sc. Ag	S. Sukhjinder Singh Institute of Science and Technology, Punjab	3 month
15	Abisha Yadav	B.Sc. Ag	S. Sukhjinder Singh Institute of Science and Technology, Punjab	3 month
16	Bina Kumari Sah	B.Sc. Ag	G.P. Koirala College	3 month
17	Bibek Nepal	I.Sc. Ag	Dhading Polytechnic School, Dhading	3 month
18	Ashok Dallakoti	I.Sc. Ag	Dhading Polytechnic School, Dhading	3 month

Annex 11. Details of staff meetings/SRMT meeting and coordination meetings etc., in F. Y. 2080/81 (2023/24)

S. No.	Type of meetings	Target	Achievement	Remarks
1	Monthly Staff Meeting	12	12	
2	SRMT (Station Research and Management Team) Meeting	6	6	
3	Procurement Committee Meeting	4	4	
4	Coordination Meeting (Provincial Agricultural Ministries, Rural Municipalities, Municipalities, Ward level meetings, Meeting with I/NGOs etc.	4	4	
5	Others	4	4	
Total		**30**	**30**	

Annex 12.1 Service provided (routine sample), FY 2080/81 (2023/24)

S. No.	E.N.	Lab No.	Name and Address of Sender	Kind	Variety	Type	PURITY TEST (%)				GERMINATION TEST (%)					MOISTURE TEST (%)
							Pure Seed	Other Crop seed	Weed Seed	Innert matter	Germn	Abnor.	Fresh	Hard	Dead	
1	128	**0128**	श्री नालढुंगा कृषि तथा बीउ उत्पादन सहकारी संस्था लि.	Fingermillet	Okhle 1	IS	99.5	0	0	0.5	83	3	12	0	2	13.3
2	129	**0129**	श्री नालढुंगा कृषि तथा बीउ उत्पादन सहकारी संस्था लि.	Fingermillet	Kabre 1	IS	99.7	0	0	0.3	92	4	2	0	2	12.7
3	130	**0130**	श्री नालढुंगा कृषि तथा बीउ उत्पादन सहकारी संस्था लि.	Fingermillet	Kabre 2	IS	99.7	0	0	0.3	90	7	1	0	2	12.7
4	131	**0131**	श्री नालढुंगा कृषि तथा बीउ उत्पादन सहकारी संस्था लि.	Fingermillet	Sailung 1	IS	99.6	0	0	0.4	79	13	2	0	6	14.2
5	3	**0003**	National Maize Research Program (NMRP)	Maize	Rampur Hybrid 10	Hybrid	99.8	0.0	0.0	0.2	98	0	0	0	2	12.4
6	4	**0004**	National Maize Research Program (NMRP)	Maize	Rampur Hybrid 12	Hybrid	99.6	0.0	0.0	0.4	99	0	0	0	1	12.3
7	5	**0005**	National Maize Research Program (NMRP)	Maize	Rampur Hybrid 14	Hybrid	99.6	Trace	0.0	0.4	98	1	0	0	1	11.7
8	6	**0006**	National Maize Research Program (NMRP)	Maize	Rampur Hybrid 16	Hybrid	99.6	Trace	0.0	0.4	98	1	0	0	1	11.7
9	7	**0007**	National Maize Research Program (NMRP)	Maize	CAH 1511	Hybrid	99.9	0.0	0	0.1	98	1	0	0	1	11.4
10	8	**0008**	National Maize Research Program (NMRP)	Maize	RML 18	Inbred	99.9	0.0	0.0	0.1	89	5	0	0	6	12.3
11	9	**0009**	National Maize Research Program (NMRP)	Maize	RML 150	Inbred	99.9	0.0	0.0	0.1	98	0	0	0	2	12.1
12	10	**0010**	National Maize Research Program (NMRP)	Maize	RML 145	Inbred	99.9	0.0	0	0.1	96	1	0	0	3	10.8
13	11	**0011**	National Maize Research Program (NMRP)	Maize	RML 146	Inbred	99.6	0	0	0.4	90	4	0	0	6	12.1
14	12	**0012**	National Maize Research Program (NMRP)	Maize	RML 95	Inbred	99.9	0	0	0.1	95	2	0	0	3	12.1
15	13	**0013**	National Maize Research Program (NMRP)	Maize	RML 96	Inbred	99.9	0.0	0	0.1	96	1	0	0	3	11.9
16	14	**0014**	National Maize Research Program (NMRP)	Maize	CAL 14137	Inbred	99.9	0	0	0.1	97	0	0	0	3	10.7

S. No.	E.N.	Lab No.	Name and Address of Sender	Kind	Variety	Type	PURITY TEST (%)				GERMINATION TEST (%)					MOISTURE TEST (%)
							Pure Seed	Other Crop seed	Weed Seed	Innert matter	Germn	Abnor.	Fresh	Hard	Dead	
17	83	**0083**	National Maize Research Program (NMRP)	Maize	Rampur Composite	BS	99.3	0	0	0.7	97	1	0	0	2	10.8
18	84	**0084**	National Maize Research Program (NMRP)	Maize	Rampur Composite	Source	99.4	0	0	0.6	96	2	0	0	2	0
19	85	**0085**	National Maize Research Program (NMRP)	Maize	Arun 4	BS	99.5	0	0	0.5	98	0	0	0	2	11.1
20	86	**0086**	National Maize Research Program (NMRP)	Maize	Arun 4	Source	99.5	0	0	0.5	99	0	0	0	1	0
21	87	**0087**	National Maize Research Program (NMRP)	Maize	Deuti	BS	100	0	0	Trace	98	1	0	0	1	13.4
22	88	**0088**	National Maize Research Program (NMRP)	Maize	Deuti	Source	99.9	0	0	0.1	98	1	0	0	1	0
23	93	**0093**	गौर भन्सार कार्यालय	Maize	Not mentioned		0	0	0	0	93	7	0	0	0	0
24	94	**0094**	National Plant Breeding and Genetic Research Cener	Maize	Manakamana 4	BS	100	0	0	Trace	98	1	0	0	1	11.4
25	95	**0095**	National Plant Breeding and Genetic Research Cener	Maize	Manakamana 4	FS	100	0	0	Trace	97	1	0	0	2	11.4
26	96	**0096**	देवीथान कृषि सहकारी संस्था	Maize	Rampur Composite	FS	99.9	Trace	0	0.1	96	2	0	0	2	11.4
27	97	**0097**	श्री नालढुंगा कृषि तथा बीउ उत्पादन सहकारी संस्था लि.	Maize	Rampur Composite	IS	99.9	0	Trace	0.1	94	2	0	0	4	12.5
28	98	**0098**	श्री नालढुंगा कृषि तथा बीउ उत्पादन सहकारी संस्था लि.	Maize	Ganesh	IS	100	0	0	Trace	98	1	0	0	1	13.3
29	99	**0099**	श्री नालढुंगा कृषि तथा बीउ उत्पादन सहकारी संस्था लि.	Maize	Deuti	IS	100	0	0	Trace	99	1	0	0	0	14.3
30	100	**0100**	श्री नालढुंगा कृषि तथा बीउ उत्पादन सहकारी संस्था लि.	Maize	Arun 2	IS	99.9	0	0	0.1	98	1	0	0	1	13.3
31	134	**0134**	National Maize Research Program	Maize	Poshilo Makai	BS	99.1	0	0	0.9	91	3	0	0	6	9.9
32	138	**0138**	National Maize Research Program (NMRP)	Maize	Poshilo Makai 2	BS	97.2	0	0	2.8	86	6	0	0	8	9.8
33	51	**0051**	National Fodder and Pasture Research Program	Oats	Netra	FS	0	0	0	0	98	1	0	0	1	0

S. No.	E.N.	Lab No.	Name and Address of Sender	Kind	Variety	Type	PURITY TEST (%)				GERMINATION TEST (%)					MOISTURE TEST (%)
							Pure Seed	Other Crop seed	Weed Seed	Innert matter	Germn	Abnor.	Fresh	Hard	Dead	
34	52	**0052**	National Fodder and Pasture Research Program	Oats	Nandani	FS	0	0	0	0	93	1	0	0	6	0
35	53	**0053**	National Fodder and Pasture Research Program	Oats	Amritdhara	FS	0	0	0	0	91	1	0	0	8	0
36	54	**0054**	National Fodder and Pasture Research Program	Oats	Kamdhenu	FS	0	0	0	0	80	2	0	0	18	0
37	55	**0055**	National Fodder and Pasture Research Program	Oats	Parbati	FS	0	0	0	0	97	1	1	0	1	0
38	56	**0056**	National Fodder and Pasture Research Program	Oats	Ganesh	FS	0	0	0	0	82	4	0	0	14	0
39	58	**0058**	National Fodder and Pasture Research Program	Oats	Nandani	FS	0	0	0	0	98	1	0	0	1	0
40	59	**0059**	National Fodder and Pasture Research Program	Oats	Parbati	FS	0	0	0	0	97	2	0	0	1	0
41	60	**0060**	National Fodder and Pasture Research Program	Oats	Amritdhara	FS	0	0	0	0	98	0	0	0	2	0
42	61	**0061**	National Fodder and Pasture Research Program	Oats	Ganesh	FS	0	0	0	0	96	1	0	0	3	0
43	62	**0062**	National Fodder and Pasture Research Program	Oats	Kamdhenu	FS	0	0	0	0	94	0	0	0	6	0
44	63	**0063**	National Fodder and Pasture Research Program	Oats	Netra	FS	0	0	0	0	98	1	0	0	1	0
45	66	**0066**	National Fodder and Pasture Research Program	Oats	Netra	FS	0	0	0	0	95	1	0	0	4	0
46	67	**0067**	National Fodder and Pasture Research Program	Oats	Nandani	FS	0	0	0	0	92	3	0	0	5	0
47	68	**0068**	National Fodder and Pasture Research Program	Oats	Amritdhara	FS	0	0	0	0	95	2	0	0	3	0
48	69	**0069**	National Fodder and Pasture Research Program	Oats	Kamdhenu	FS	0	0	0	0	89	1	0	0	10	0
49	70	**0070**	Nepal Seed Production Center (NSPC)	Potato	TPS 7/67	TPS	0	0	0	0	92	0	4	0	4	0
50	71	**0071**	Nepal Seed Production Center (NSPC)	Potato	TPS 7/67	TPS	0	0	0	0	85	0	12	0	3	0
51	72	**0072**	Nepal Seed Production Center (NSPC)	Potato	TPS 7/67	TPS	0	0	0	0	92	0	2	0	6	0
52	73	**0073**	Nepal Seed Production Center (NSPC)	Potato	TPS 7/67	TPS	0	0	0	0	87	0	9	0	4	0

S. No.	E.N.	Lab No.	Name and Address of Sender	Kind	Variety	Type	PURITY TEST (%)				GERMINATION TEST (%)					MOISTURE TEST (%)
							Pure Seed	Other Crop seed	Weed Seed	Innert matter	Germn	Abnor.	Fresh	Hard	Dead	
53	74	**0074**	Nepal Seed Production Center (NSPC)	Potato	TPS 7/67	TPS	0	0	0	0	89	0	5	0	6	0
54	81	**0081**	कलिन्चोक टि.पी.एस मूल तथा उन्नत बिउ उत्पादन उद्योग	Potato	TPS 7/67	TPS	0	0	0	0	68	0	30	0	2	0
55	82	**0082**	कलिन्चोक टि.पी.एस मूल तथा उन्नत बिउ उत्पादन उद्योग	Potato	TPS 7/67	TPS	0	0	0	0	72	0	23	0	5	0
56	135	**0135**	Seed Quality Control Centre (SQCC)	Rape seed	Manakamana	-	0	0	0	0	92	2	1	0	5	0
57	136	**0136**	Seed Quality Control Centre (SQCC)	Rape seed	Khumal Chaudapaat	-	0	0	0	0	91	2	0	0	7	0
58	137	**0137**	Seed Quality Control Centre (SQCC)	Rape seed	Khumal Rato	-	0	0	0	0	65	12	7	0	16	0
59	1	**0001**	National Maize Research Program (NMRP)	Rice	Ram Dhan	FS	95.8	0.0	0.0	4.2	43	4	40	0	13	15.7
60	2	**0002**	National Maize Research Program (NMRP)	Rice	Sabitri	FS	95.9	0.0	0.0	4.1	58	4	27	0	11	14.7
61	101	**0101**	National Agronomy Research Center, Khumaltar	Rice	Khumal 4	BS	95.6	0	0	4.4	85	8	1	0	6	12
62	102	**0102**	National Agronomy Research Center, Khumaltar	Rice	Khumal 10	BS	97.1	0	0	2.9	91	6	1	0	2	11.5
63	103	**0103**	National Agronomy Research Center, Khumaltar	Rice	Khumal 11	BS	99.1	0	0	0.9	86	6	1	0	7	11.2
64	104	**0104**	National Agronomy Research Center, Khumaltar	Rice	Khumal 12	BS	99.2	0	0	0.8	93	3	1	0	3	11.4
65	105	**0105**	National Agronomy Research Center, Khumaltar	Rice	Khumal 13	BS	97.9	0	0	2.1	87	4	0	0	9	11.8
66	106	**0106**	National Agronomy Research Center, Khumaltar	Rice	Khumal 16	BS	99.3	0	0	0.7	87	7	0	0	6	12.5
67	107	**0107**	Seed Quality Control Centre (SQCC)	Rice	Khumal 4	-	0	0	0	0	97	2	0	0	1	11.2
68	108	**0108**	Seed Quality Control Centre (SQCC)	Rice	Khumal 10	-	0	0	0	0	98	1	0	0	1	11
69	109	**0109**	Seed Quality Control Centre (SQCC)	Rice	Khumal 11	-	0	0	0	0	95	2	0	0	3	10.8
70	110	**0110**	National Plant Breeding and Genetic Research Cener	Rice	Khumal 4	BS	99.7	0	0	0.3	97	2	0	0	1	10.6
71	111	**0111**	National Plant Breeding and Genetic Research Cener	Rice	Khumal 10	BS	99.5	0	0	0.5	99	1	0	0	0	10.8

S. No.	E.N.	Lab No.	Name and Address of Sender	Kind	Variety	Type	PURITY TEST (%)				GERMINATION TEST (%)					MOISTURE TEST (%)
							Pure Seed	Other Crop seed	Weed Seed	Innert matter	Germn	Abnor.	Fresh	Hard	Dead	
72	112	**0112**	National Plant Breeding and Genetic Research Cener	Rice	Khumal 11	BS	99.4	0	0	0.6	93	5	0	0	2	11.7
73	113	**0113**	National Plant Breeding and Genetic Research Cener	Rice	Khumal 12	BS	99.1	0	0	0.9	93	5	0	0	2	9.8
74	114	**0114**	National Plant Breeding and Genetic Research Cener	Rice	Khumal 13	BS	99.6	0	0	0.4	94	4	0	0	2	11.1
75	115	**0115**	National Plant Breeding and Genetic Research Cener	Rice	Khumal 14	BS	99	0	0	1	99	1	0	0	0	10.5
76	116	**0116**	National Plant Breeding and Genetic Research Cener	Rice	Chandannath 3	BS	99.3	0	0	0.7	94	4	0	0	2	11
77	117	**0117**	National Plant Breeding and Genetic Research Cener	Rice	Khumal Basmati 16	BS	99.2	0	0	0.8	96	2	0	0	2	11.4
78	118	**0118**	National Plant Breeding and Genetic Research Cener	Rice	Chainung 242	BS	99.9	0	0	0.1	93	5	0	0	2	10.5
79	119	**0119**	National Plant Breeding and Genetic Research Cener	Rice	Khumal 14	FS	99.3	0	0	0.7	92	6	0	0	2	14.1
80	120	**0120**	National Plant Breeding and Genetic Research Cener	Rice	Khumal Basmati 16	FS	98.2	0	0	1.8	90	7	0	0	3	13.1
81	121	**0121**	National Plant Breeding and Genetic Research Cener	Rice	Khumal 12	FS	99.4	0	0	0.6	96	3	0	0	1	12.6
82	122	**0122**	National Plant Breeding and Genetic Research Cener	Rice	Khumal 12	FS	99.3	0	0	0.7	87	11	0	0	2	14.5
83	123	**0123**	Everest Seed Company	Rice	Khumal 4	IS	99.5	0	0	0.5	80	15	1	0	4	10.8
84	124	**0124**	Everest Seed Company	Rice	Khumal 10	IS	99.4	0	0	0.6	84	12	1	0	3	11.1
85	125	**0125**	Everest Seed Company	Rice	Khumal 11	IS	99.7	0.1	0	0.2	96	3	0	0	1	10.8
86	126	**0126**	Everest Seed Company	Rice	Chainung 242	IS	99.7	0	0	0.3	95	2	0	0	3	10.2
87	132	**0132**	श्री नालढुंगा कृषि तथा बीउ उत्पादन सहकारी संस्था लि.	Rice	Khumal 12	IS	99.1	0	0	0.9	92	6	1	0	1	11.3
88	133	**0133**	श्री नालढुंगा कृषि तथा बीउ उत्पादन सहकारी संस्था लि.	Rice	Khumal 10	IS	98.3	0	0	1.7	61	32	3	0	4	12.4
89	139	**0139**	International Rice Research Institute (IRRI)	Rice	Hardinath 5	FS	98.9	0	0	1.1	79	3	7	0	11	9.2

S. No.	E.N.	Lab No.	Name and Address of Sender	Kind	Variety	Type	PURITY TEST (%)				GERMINATION TEST (%)					MOISTURE TEST (%)
							Pure Seed	Other Crop seed	Weed Seed	Innert matter	Germn	Abnor.	Fresh	Hard	Dead	
90	140	**0140**	International Rice Research Institute (IRRI)	Rice	Hardinath 6	FS	99.5	0	0	0.5	70	5	5	0	20	9.2
91	57	**0057**	National Fodder and Pasture Research Program	Rye grass	Rye grass	FS	0	0	0	0	3	0	47	0	50	0
92	64	**0064**	National Fodder and Pasture Research Program	Rye grass	Rye grass	FS	0	0	0	0	19	0	32	0	49	0
93	141	**0141**	Khatri Agrovet	Rye grass	Dhunchhe	IS	88	0	0.2	11.8	43	1	7	0	49	11.5
94	142	**0142**	Khatri Agrovet	Rye grass	Dhunchhe	IS	76.6	0	Trace	23.3	49	1	0	0	50	10.6
95	127	**0127**	विकाश भेटेरीनरी फार्म	Teosinte	Not mentioned	IS	99.4	0	0	0.6	83	0	0	17	0	13.6
96	65	**0065**	National Fodder and Pasture Research Program	Vetch	Vetch	FS	0	0	0	0	96	0	0	0	4	0
97	15	**0015**	National Agronomy Research Center, Khumaltar	Wheat	WK 1204	FS	0.0	0	0.0	0.0	74	4	0	0	22	8.9
98	16	**0016**	National Agronomy Research Center, Khumaltar	Wheat	Swargadwari	FS	0.0	0.0	0	0.0	76	15	0	0	9	9.1
99	17	**0017**	National Agronomy Research Center, Khumaltar	Wheat	Bheriganga	FS	0.0	0.0	0	0.0	76	7	0	0	17	8.7
100	18	**0018**	National Agronomy Research Center, Khumaltar	Wheat	Khumal Shakti	FS	0.0	0.0	0.0	0.0	92	3	0	0	5	9.9
101	19	**0019**	National Agronomy Research Center, Khumaltar	Wheat	Munal	FS	0	0	0	0	89	3	0	0	8	9.5
102	20	**0020**	National Agronomy Research Center, Khumaltar	Wheat	Munal	FS	0	0	0	0	67	6	0	0	27	8.4
103	21	**0021**	National Plant Breeding and Genetic Research Cener	Wheat	Mudule 1	Source	99.1	0	0	0.9	93	5	0	0	2	0
104	22	**0022**	National Plant Breeding and Genetic Research Cener	Wheat	Surma	Source	99.8	0	0	0.2	96	2	0	0	2	0
105	23	**0023**	National Plant Breeding and Genetic Research Cener	Wheat	Kautila	Source	99.5	0	0	0.5	70	4	0	0	26	0
106	24	**0024**	National Plant Breeding and Genetic Research Cener	Wheat	Bheriganga	Source	99	0	0	1	61	8	0	0	31	0
107	25	**0025**	National Plant Breeding and Genetic Research Cener	Wheat	Himganga	Source	99.6	0	0	0.4	72	5	0	0	23	0
108	26	**0026**	National Plant Breeding and Genetic Research Cener	Wheat	Khumal Shakti	Source	99.7	0	0	0.3	93	5	0	0	2	0

S. No.	E.N.	Lab No.	Name and Address of Sender	Kind	Variety	Type	PURITY TEST (%)				GERMINATION TEST (%)					MOISTURE TEST (%)
							Pure Seed	Other Crop seed	Weed Seed	Innert matter	Germn	Abnor.	Fresh	Hard	Dead	
109	27	**0027**	National Plant Breeding and Genetic Research Cener	Wheat	WK 2430	Source	99.8	0	0	0.2	93	3	0	0	4	0
110	28	**0028**	National Plant Breeding and Genetic Research Cener	Wheat	WK 2432	Source	98.6	0	0	1.4	71	3	0	0	26	0
111	29	**0029**	National Plant Breeding and Genetic Research Cener	Wheat	WK 3164	Source	99.9	0	0	0.1	70	7	0	0	23	0
112	30	**0030**	National Plant Breeding and Genetic Research Cener	Wheat	WK 3165	Source	99.7	0	0	0.3	51	6	0	0	43	0
113	31	**0031**	National Plant Breeding and Genetic Research Cener	Wheat	Khumal Shakti	Source	97.8	0	0	1.2	55	3	0	0	42	0
114	32	**0032**	National Plant Breeding and Genetic Research Cener	Wheat	Himganga	Source	98.1	0	0	1.9	63	6	0	0	31	0
115	33	**0033**	National Plant Breeding and Genetic Research Cener	Wheat	Bheriganga	Source	99.7	0	0	0.3	80	7	0	0	13	0
116	34	**0034**	National Plant Breeding and Genetic Research Cener	Wheat	Tila	Source	99.6	0	0	0.4	91	3	0	0	6	0
117	35	**0035**	National Plant Breeding and Genetic Research Cener	Wheat	WK 1204	Source	99.9	0	0	0.1	92	5	0	0	3	0
118	36	**0036**	National Plant Breeding and Genetic Research Cener	Wheat	Chyakhura	Source	99.6	0	0	0.4	89	4	0	0	7	0
119	37	**0037**	National Plant Breeding and Genetic Research Cener	Wheat	Munal	Source	100	0	0	Trace	91	4	0	0	5	0
120	38	**0038**	National Plant Breeding and Genetic Research Cener	Wheat	Surma	Source	99.9	0	0	0.1	92	2	0	0	6	0
121	39	**0039**	National Plant Breeding and Genetic Research Cener	Wheat	Bheriganga	Source	99.8	0	0	0.2	82	3	0	0	15	0
122	40	**0040**	National Plant Breeding and Genetic Research Cener	Wheat	Himganga	Source	99.6	0	0	0.4	87	10	0	0	3	0
123	41	**0041**	National Plant Breeding and Genetic Research Cener	Wheat	Khumal Shakti	Source	99.4	0	0	0.6	90	8	0	0	2	0
124	42	**0042**	National Plant Breeding and Genetic Research Cener	Wheat	WK 2430	Source	99.8	0	0	0.2	89	9	0	0	2	0
125	43	**0043**	National Plant Breeding and Genetic Research Cener	Wheat	WK 2432	Source	100	0	0	Trace	85	9	0	0	6	0
126	44	**0044**	National Plant Breeding and Genetic Research Cener	Wheat	WK 3164	Source	99.5	0	0	0.5	95	3	0	0	2	0
127	45	**0045**	National Plant Breeding and Genetic Research Cener	Wheat	WK 3165	Source	99.7	0	0	0.3	94	2	0	0	4	0

S. No.	E.N.	Lab No.	Name and Address of Sender	Kind	Variety	Type	PURITY TEST (%)				GERMINATION TEST (%)					MOISTURE TEST (%)
							Pure Seed	Other Crop seed	Weed Seed	Innert matter	Germn	Abnor.	Fresh	Hard	Dead	
128	46	**0046**	National Plant Breeding and Genetic Research Cener	Wheat	WK 3166	Source	99.9	0	0	0.1	88	6	0	0	6	0
129	47	**0047**	National Plant Breeding and Genetic Research Cener	Wheat	WK 3324	Source	99.9	0	0	0.1	88	6	0	0	6	0
130	48	**0048**	National Plant Breeding and Genetic Research Cener	Wheat	WK 3165	Source	99.8	0	0	0.2	91	6	0	0	3	0
131	49	**0049**	National Plant Breeding and Genetic Research Cener	Wheat	WK 3550	Source	99.6	0	0	0.4	87	6	0	0	7	0
132	50	**0050**	National Plant Breeding and Genetic Research Cener	Wheat	WK 2432	Source	99.1	0	0	0.9	90	5	0	0	5	0
133	75	**0075**	श्री नालढुंगा कृषि तथा बीउ उत्पादन सहकारी संस्था लि.	Wheat	WK 1204	FS	0	0	0	0	69	11	0	0	20	0
134	76	**0076**	श्री नालढुंगा कृषि तथा बीउ उत्पादन सहकारी संस्था लि.	Wheat	Khumal Shakti	FS	0	0	0	0	42	10	0	0	48	0
135	77	**0077**	श्री नालढुंगा कृषि तथा बीउ उत्पादन सहकारी संस्था लि.	Wheat	Swargadwari	FS	0	0	0	0	82	10	0	0	8	0
136	78	**0078**	श्री नालढुंगा कृषि तथा बीउ उत्पादन सहकारी संस्था लि.	Wheat	Dhaulagiri	FS	0	0	0	0	87	6	0	0	7	0
137	79	**0079**	श्री नालढुंगा कृषि तथा बीउ उत्पादन सहकारी संस्था लि.	Wheat	Bheriganga	FS	0	0	0	0	81	7	0	0	12	0
138	80	**0080**	Everest Seed Company	Wheat	WK 1204	IS	0	0	0	0	87	5	0	0	8	0
139	89	**0089**	Seed Quality Control Centre (SQCC)	Wheat	Khumal Shakti	-	0	0	0	0	88	3	0	0	9	0
140	90	**0090**	Seed Quality Control Centre (SQCC)	Wheat	Munal	-	0	0	0	0	92	3	0	0	5	0
141	91	**0091**	Seed Quality Control Centre (SQCC)	Wheat	WK 1204	-	0	0	0	0	68	5	1	0	26	0
142	92	**0092**	गौर भन्सार कार्यालय	Wheat	Not mentioned		0	0	0	0	91	7	0	0	2	0

Annex 12.2. Services provided (research sample), FY 2080/81 (2023/24)

S.No	E.N.	Lab No.	Name and Address of Sender		Kind	Variety	Class	Germn	Abnor.	Fresh	Hard	Dead	Pure Seed	Other Crop seed	Weed Seed	Innert matter	MOISTURE TEST (%)	100 SEED WEIGHT (gm)	Remarks
1	394	R394	Gupta Agrovet Center, Kapilvastu	Agrovet	Amaranths	Black amaranths	IS	51	7	42	0	0	100	0	0	0	10.2	0.1	
2	123	R123	Horticulture Research Station, Kimugaun, Dailekh	Station	Bean	Trishuli	FS	98	2	0	0	0	100.0	0.0	0.0	0.0	8.8	34.6	
3	124	R124	Horticulture Research Station, Kimugaun, Dailekh	Station	Bean	Chaumase	FS	98	1	0	0	1	100.0	0.0	0.0	0.0	9.2	26.4	
4	272	R272	Farmers' collection, Bardiya	Farmers	Bean	Bakula	IS	82	2	1	0	15	100.0	0.0	0.0	Trace	9.9	15.5	
5	273	R273	Farmers' collection, Bardiya	Farmers	Bean	Bakula	IS	78	0	11	0	11	100.0	0.0	0.0	Trace	9.5	14.9	
6	287	R287	Shining Star Vet Centre, Nepalgunj, Khajura Road	Agrovet	Bean	Chaumase	IS	97	1	0	0	2	100.0	0.0	0.0	0.0	8.6	21.6	
7	304	R304	Shining Star Vet Centre, Nepalgunj, Khajura Road	Agrovet	Bean	Chaumase	IS	98	1	0	0	1	100.0	0.0	0.0	0.0	9.1	20.9	
8	305	R305	Shining Star Vet Centre, Nepalgunj, Khajura Road	Agrovet	Bean	Chaumase	IS	97	3	0	0	0	100.0	0.0	0.0	0.0	8.9	21.4	
9	309	R309	Adhikari Agrovet Center, Koholpur, Banke	Agrovet	Bean	Bhattee simi	IS	100	0	0	0	0	100	0	0	0	8.5	20.2	
10	319	R319	Adhikari Agrovet Center, Koholpur, Banke	Agrovet	Bean	Chaumase	IS	87	0	0	0	13	100	0	0	0	8.6	20.5	
11	325	R325	Adhikari Agrovet Center, Koholpur, Banke	Agrovet	Bean	Bakula	IS	90	3	0	0	7	100	0	0	0	8.6	15.2	
12	351	R351	Adhinuk Agrovet and Suppliers, Rapti, Bhalubang	Agrovet	Bean	Long bean	IS	93	4	0	0	3	100	0	0	0	9.1	11.5	
13	363	R363	Buddha Agro International, Buddhachowk, Rupendehi	Agrovet	Bean	Red bean	IS	98	0	0	0	2	100	0	0	0	8.8	12.0	
14	422	R422	Trimurti Agrovet Center, Nepalgunj	Agrovet	Bean	Bakula local	IS	74	3	0	0	23	100	0	0	0	10.5	15.5	
15	423	R423	Trimurti Agrovet Center, Nepalgunj	Agrovet	Bean	Broad bean local	IS	70	0	0	0	30	100	0	0	0	9.9	19.6	
16	424	R424	Trimurti Agrovet Center, Nepalgunj	Agrovet	Bean	Broad bean local	IS	68	2	0	0	30	100	0	0	0	10.3	19.4	
17	430	R430	Trimurti Agrovet Center, Nepalgunj	Agrovet	Bean	4 season	IS	77	7	0	0	16	100	0	0	0	10.1	23.4	
18	431	R431	Trimurti Agrovet Center, Nepalgunj	Agrovet	Bean	4 season	IS	78	7	0	0	15	100	0	0	0	10.5	25.1	
19	447	R447	Tiwari Agro Seed Pvt.Ltd., Nepalgunj	Agrovet	Bean	4 season	IS	88	3	0	0	9	100	0	0	0	10.2	24.2	
20	448	R448	Tiwari Agro Seed Pvt.Ltd., Nepalgunj	Agrovet	Bean	4 season	IS	79	5	0	0	16	100	0	0	0	9.8	27.8	
21	298	R298	Shining Star Vet Centre, Nepalgunj, Khajura Road	Agrovet	Beat root	Chukundar	IS	77	11	0	0	12	100.0	0.0	0.0	0.0	-	-	Not enough seed
22	333	R333	Adhinuk Agrovet and Suppliers, Rapti, Bhalubang	Agrovet	Beat root	Chichinda	IS	80	13	0	0	7	100	0	0	0	11.9	-	Not enough seed
23	411	R411	Trimurti Agrovet Center, Nepalgunj	Agrovet	Beet root	Chukundar	IS	87	0	0	0	13	100	0	0	0	11.6	-	Not enough seed
24	292	R292	Shining Star Vet Centre, Nepalgunj, Khajura Road	Agrovet	Bitter gourd	Green long	IS	89	8	0	0	3	100.0	0.0	0.0	0.0	8.1	18.9	
25	306	R306	Shining Star Vet Centre, Nepalgunj, Khajura Road	Agrovet	Bitter gourd	Pallavi	F1	94	4	0	0	2	100	0	0	0	7.9	18.2	
26	307	R307	Shining Star Vet Centre, Nepalgunj, Khajura Road	Agrovet	Bitter gourd	Palee	F1	96	2	0	0	2	100	0	0	0	7.5	19.5	
27	312	R312	Adhikari Agrovet Center, Koholpur, Banke	Agrovet	Bitter gourd	Jhalari	IS	89	5	0	0	6	100	0	0	0	7.9	25.5	
28	334	R334	Adhinuk Agrovet and Suppliers, Rapti, Bhalubang	Agrovet	Bitter gourd	Jhalari	IS	30	12	0	0	58	100	0	0	0	10.2	26.0	

S.No	E.N.	Lab No.	Name and Address of Sender		Kind	Variety	Class	Germn	Abnor.	Fresh	Hard	Dead	Pure Seed	Other Crop seed	Weed Seed	Innert matter	MOISTURE TEST (%)	100 SEED WEIGHT (gm)	Remarks
29	385	R385	Gupta Agrovet Center, Kapilvastu	Agrovet	Bitter gourd	Nagesh	IS	90	0	0	0	10	100	0	0	0	7.2	24.6	
30	445	R445	Tiwari Agro Seed Pvt.Ltd., Nepalgunj	Agrovet	Bitter gourd	White long	IS	53	11	0	0	36	100	0	0	0	9.5	17.3	
31	446	R446	Tiwari Agro Seed Pvt.Ltd., Nepalgunj	Agrovet	Bitter gourd	White long	IS	52	20	0	0	28	100	0	0	0	9.9	16.8	
32	55	R55	Farmers' collection, Khajura	Farmers	Blackgram	Local	IS	98	1	0	0	1	100.0	0.0	0.0	Trace	9.2	3.9	
33	258	R258	Farmers' collection, Bardiya	Farmers	Blackgram	Blackgram	IS	60	8	5	0	27	100.0	0.0	0.0	Trace	10.2	4.2	
34	259	R259	Farmers' collection, Bardiya	Farmers	Blackgram	Blackgram	IS	82	2	1	0	15	99.9	0.0	0.0	0.1	9.5	3.9	
35	260	R260	Farmers' collection, Bardiya	Farmers	Blackgram	Kalo dal	IS	59	1	0	0	40	100.0	0.0	0.0	Trace	10.2	3.8	
36	398	R398	Trimurti Agrovet Center, Nepalgunj	Agrovet	Blackgram	Urad	IS	98	0	0	0	2	100	0	0	0	8.4	4.1	
37	293	R293	Shining Star Vet Centre, Nepalgunj, Khajura Road	Agrovet	Bottle gourd	N/A	IS	80	20	0	0	0	100.0	0.0	0.0	0.0	-	-	Not enough seed
38	297	R297	Shining Star Vet Centre, Nepalgunj, Khajura Road	Agrovet	Bottle gourd	Gutka	IS	77	11	0	0	12	100.0	0.0	0.0	0.0	-	-	Not enough seed
39	313	R313	Adhikari Agrovet Center, Koholpur, Banke	Agrovet	Bottle gourd	Gutka	IS	85	5	0	0	10	100	0	0	0	-	-	Not enough seed
40	360	R360	Buddha Agro International, Buddhachowk, Rupendehi	Agrovet	Bottle gourd	Sarita	IS	74	9	0	0	17	100	0	0	0	-	-	Not enough seed
41	392	R392	Gupta Agrovet Center, Kapilvastu	Agrovet	Bottle gourd	N/A	IS	80	15	0	0	5	100	0	0	0	-	-	Not enough seed
42	413	R413	Trimurti Agrovet Center, Nepalgunj	Agrovet	Brinjal	Pusha purple long	IS	56	5	27	0	12	100	0	0	0	10.1	0.3	
43	241	R241	Farmers' collection, Dolakha	Farmers	Buckwheat	Phapar	IS	84	3	0	0	13	99.8	0.0	0.0	0.2	12.5	2.3	
44	242	R242	Farmers' collection, Dolakha	Farmers	Buckwheat	Phapar	IS	89	3	0	0	8	99.6	0.0	0.0	0.4	12.3	2.4	
45	300	R300	Shining Star Vet Centre, Nepalgunj, Khajura Road	Agrovet	Cabbage	Golden akar	IS	5	2	0	0	93	100.0	0.0	0.0	0.0	9.2	0.3	
46	345	R345	Adhinuk Agrovet and Suppliers, Rapti, Bhalubang	Agrovet	Cabbage	Gyath gobhi	IS	9	2	0	0	89	100	0	0	0	9.7	0.4	
47	362	R362	Buddha Agro International, Buddhachowk, Rupendehi	Agrovet	Capricum	Yellow sunrise	IS	65	9	0	0	26	100	0	0	0	8.3	0.7	
48	416	R416	Trimurti Agrovet Center, Nepalgunj	Agrovet	Capricum	California wonder	IS	78	5	0	0	17	100	0	0	0	8.6	0.8	
49	369	R369	Buddha Agro International, Buddhachowk, Rupendehi	Agrovet	Carrot	N/A	IS	24	1	0	0	75	100	0	0	0	8.9	0.2	
50	317	R317	Adhikari Agrovet Center, Koholpur, Banke	Agrovet	Cauliflower	Kathmandu local	IS	0	7	0	0	93	100	0	0	0	9.5	0.2	
51	327	R327	Adhikari Agrovet Center, Koholpur, Banke	Agrovet	Cauliflower	Jyapu	IS	25	2	0	0	73	100	0	0	0	8.9	0.3	
52	415	R415	Trimurti Agrovet Center, Nepalgunj	Agrovet	Cauliflower	Kathmandu local	IS	0	2	0	0	98	100	0	0	0	9.5	0.3	
53	53	R53	Farmers' collection, Khajura	Farmers	Chickpea	Local	IS	98	0	0	0	2	100.0	0.0	0.0	Trace	8.5	11.9	
54	54	R54	Farmers' collection, Khajura	Farmers	Chickpea	Local	IS	95	0	1	0	4	99.9	0.0	0.0	0.1	8.3	12.2	
55	302	R302	Shining Star Vet Centre, Nepalgunj, Khajura Road	Agrovet	Chilli	Jwala	IS	42	12	0	0	46	100.0	0.0	0.0	0.0	8	0.5	

S.No	E.N.	Lab No.	Name and Address of Sender		Kind	Variety	Class	Germn	Abnor.	Fresh	Hard	Dead	Pure Seed	Other Crop seed	Weed Seed	Innert matter	MOISTURE TEST (%)	100 SEED WEIGHT (gm)	Remarks
56	315	R315	Adhikari Agrovet Center, Koholpur, Banke	Agrovet	Chilli	Jwala	IS	68	10	0	0	22	100	0	0	0	7.9	0.5	
57	356	R356	Buddha Agro International, Buddhachowk, Rupendehi	Agrovet	Chilli	Arjun	F1	2	1	0	0	97	100	0	0	0	8.3	0.5	
58	257	R257	Farmers' collection, Bardiya	Farmers	Coriandar	N/A	IS	5	1	0	0	94	99.9	0.0	0.0	0.1	10.7	1.1	
59	316	R316	Adhikari Agrovet Center, Koholpur, Banke	Agrovet	Coriandar	Kalami	IS	95	0	0	0	5	100	0	0	0	9.5	1.2	
60	354	R354	Buddha Agro International, Buddhachowk, Rupendehi	Agrovet	Coriandar	Kalami	IS	97	0	0	0	3	100	0	0	0	10	1.0	
61	366	R366	Buddha Agro International, Buddhachowk, Rupendehi	Agrovet	Coriandar	N/A	IS	0	0	0	0	100	100	0	0	0	9.6	0.9	
62	420	R420	Trimurti Agrovet Center, Nepalgunj	Agrovet	Coriandar	N/A	IS	91	0	9	0	0	100	0	0	0	8.2	0.8	
63	421	R421	Trimurti Agrovet Center, Nepalgunj	Agrovet	Coriandar	GSCPL	IS	92	0	0	0	8	100	0	0	0	8.5	0.9	
64	74	R74	Jute Research Program, Itahari	Station	Cowpea	Malepatan	FS	94	2	1	0	3	100.0	0.0	0.0	0.0	8.5	12.2	
65	75	R75	Jute Research Program, Itahari	Station	Cowpea	Sarlahi tane	FS	89	5	0	0	6	100.0	0.0	0.0	0.0	9.1	12.1	
66	76	R76	Jute Research Program, Itahari	Station	Cowpea	Meterlong	FS	91	4	0	0	5	100.0	0.0	0.0	0.0	8.5	12.9	
67	263	R263	Farmers' collection, Bardiya	Farmers	Cowpea	Rato Moori	IS	61	4	0	0	35	99.3	0.0	0.0	0.7	9.8	9.2	
68	264	R264	Farmers' collection, Bardiya	Farmers	Cowpea	Mix	IS	78	6	0	0	16	100.0	0.0	0.0	Trace	8.6	11.5	
69	289	R289	Shining Star Vet Centre, Nepalgunj, Khajura Road	Agrovet	Cowpea	Sarlahi tane	IS	100	0	0	0	0	100.0	0.0	0.0	0.0	7.6	12.3	
70	295	R295	Shining Star Vet Centre, Nepalgunj, Khajura Road	Agrovet	Cowpea	Surya bodi	IS	100	0	0	0	0	100.0	0.0	0.0	0.0	7.8	11.9	
71	296	R296	Shining Star Vet Centre, Nepalgunj, Khajura Road	Agrovet	Cowpea	Prakash	IS	95	2	0	0	3	100.0	0.0	0.0	0.0	8.8	12.5	
72	310	R310	Adhikari Agrovet Center, Koholpur, Banke	Agrovet	Cowpea	Prakash	IS	93	7	0	0	0	100	0	0	0	8.9	12.6	
73	311	R311	Adhikari Agrovet Center, Koholpur, Banke	Agrovet	Cowpea	Surya bodi	IS	81	8	0	0	11	100	0	0	0	8.8	12.0	
74	320	R320	Adhikari Agrovet Center, Koholpur, Banke	Agrovet	Cowpea	Malepatan	IS	76	0	0	0	24	100	0	0	0	8.9	12.3	
75	336	R336	Adhinuk Agrovet and Suppliers, Rapti, Bhalubang	Agrovet	Cowpea	Prakash	IS	78	12	0	0	10	100	0	0	0	9.1	38.2	
76	358	R358	Buddha Agro International, Buddhachowk, Rupendehi	Agrovet	Cowpea	Laxm NS 406	IS	95	2	2	0	1	100	0	0	0	8.5	12.9	
77	371	R371	Buddha Agro International, Buddhachowk, Rupendehi	Agrovet	Cowpea	N/A	IS	90	3	0	0	7	100	0	0	0	8.7	25.1	
78	380	R380	Adhikari Agrovet Center, Koholpur, Banke	Agrovet	Cowpea	Sefali	IS	99	1	0	0	0	100	0	0	0	8.5	25.1	
79	381	R381	Adhikari Agrovet Center, Koholpur, Banke	Agrovet	Cowpea	Prakash	IS	98	1	0	0	1	100	0	0	0	8.6	10.4	
80	396	R396	Trimurti Agrovet Center, Nepalgunj	Agrovet	Cowpea	N/A	IS	93	2	2	0	3	100	0	0	0	8.8	12.3	
81	426	R426	Trimurti Agrovet Center, Nepalgunj	Agrovet	Cowpea	Sarlahi tane	IS	100	0	0	0	0	100	0	0	0	8.8	12.6	
82	427	R427	Trimurti Agrovet Center, Nepalgunj	Agrovet	Cowpea	Prakash	IS	97	1	0	0	2	100	0	0	0	8.8	35.2	
83	437	R437	Tiwari Agro Seed Pvt.Ltd., Nepalgunj	Agrovet	Cowpea	Prakash	IS	97	1	0	0	2	100	0	0	0	8.9	38.1	
84	372	R372	Buddha Agro International, Buddhachowk, Rupendehi	Agrovet	Cress seed	N/A	IS	75	4	0	0	21	100	0	0	0	8.5	0.2	
85	291	R291	Shining Star Vet Centre, Nepalgunj, Khajura Road	Agrovet	Cucumber	BL	IS	71	8	1	0	20	100.0	0.0	0.0	0.0	-	-	Not enough seed
86	350	R350	Adhinuk Agrovet and Suppliers, Rapti, Bhalubang	Agrovet	Cucumber	Bhaktapur local	IS	75	5	2	0	18	100	0	0	0	-	-	Not enough seed
87	365	R365	Buddha Agro International, Buddhachowk, Rupendehi	Agrovet	Cucumber	N/A	IS	80	0	0	0	20	100	0	0	0	-	-	Not enough seed
88	388	R388	Gupta Agrovet Center, Kapilvastu	Agrovet	Cucumber	NS 404	IS	100	0	0	0	0	100	0	0	0	-	-	Not enough seed
89	438	R438	Tiwari Agro Seed Pvt.Ltd., Nepalgunj	Agrovet	Cucumber	Bhaktapur local	IS	95	1	0	0	4	100	0	0	0	-	-	Not enough seed

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90	419	R419	Trimurti Agrovet Center, Nepalgunj	Agrovet	Fennel seed	Anni seed local	IS	52	6	0	0	42	100	0	0	0	9.1	0.3	
91	425	R425	Trimurti Agrovet Center, Nepalgunj	Agrovet	Fenugreek	Methi local	IS	77	10	0	0	13	100	0	0	0	8.5	1.3	
92	230	R230	Hill Crop Research Program, Dolakha	Station	Fingermillet	Sailung 1	FS	40	1	55	0	4	100.0	0.0	0.0	0.0	13.5	0.3	
93	231	R231	Hill Crop Research Program, Dolakha	Station	Fingermillet	Kabre 2	FS	29	2	62	0	7	100.0	0.0	0.0	0.0	13.9	0.3	
94	232	R232	Hill Crop Research Program, Dolakha	Station	Fingermillet	Dalle 1	FS	49	1	47	0	3	100.0	0.0	0.0	0.0	13.1	3.9	
95	233	R233	Hill Crop Research Program, Dolakha	Station	Fingermillet	Okhle 1	FS	30	5	0	0	65	100.0	0.0	0.0	0.0	13	0.3	
96	234	R234	Hill Crop Research Program, Dolakha	Station	Fingermillet	Kabre 1	FS	71	2	0	0	27	100.0	0.0	0.0	0.0	13.1	0.3	
97	243	R243	Farmers' collection, Dolakha	Farmers	Fingermillet	Kabre	IS	59	0	40	0	1	99.9	0.0	0.0	0.1	13.5	0.2	
98	244	R244	Farmers' collection, Dolakha	Farmers	Fingermillet	Kabre	IS	62	2	29	0	7	99.9	0.0	0.0	0.1	13.2	0.3	
99	245	R245	Farmers' collection, Dolakha	Farmers	Fingermillet	Kabre	IS	62	4	29	0	5	99.9	0.0	0.0	0.1	13.2	0.3	
100	249	R249	Farmers' collection, Dolakha	Farmers	Fingermillet	Kabre 1	IS	94	1	0	0	5	99.9	0.0	0.0	0.1	12.2	0.3	
101	250	R250	Farmers' collection, Dolakha	Farmers	Fingermillet	Kabre 2	IS	66	1	27	0	6	100.0	0.0	0.0	Trace	12.7	0.3	
102	301	R301	Shining Star Vet Centre, Nepalgunj, Khajura Road	Agrovet	French bean	Ghyu simi	IS	87	13	0	0	0	100.0	0.0	0.0	0.0	12.1	-	Not enough seed
103	346	R346	Adhinuk Agrovet and Suppliers, Rapti, Bhalubang	Agrovet	Funnel seed	Souf local	IS	47	4	0	0	49	100	0	0	0	8.1	0.2	
104	389	R389	Gupta Agrovet Center, Kapilvastu	Agrovet	Gram	Local	IS	90	4	1	1	4	100	0	0	0	8.5	4.5	
105	436	R436	Tiwari Agro Seed Pvt.Ltd., Nepalgunj	Agrovet	Green gram	Pratigya	IS	97	1	0	0	2	100	0	0	0	9.1	4.2	
106	202	R202	Farmers' collection, Sabaila, Dhanusha	Farmers	Khesari	N/A	IS	94	3	0	0	3	99.2	0.0	0.0	0.8	9.1	5.3	
107	213	R213	Farmers' collection, Sabaila, Dhanusha	Farmers	Khesari	N/A	IS	99	0	0	0	1	98.6	0.0	0.0	1.4	8.8	5.1	
108	373	R373	Adhikari Agrovet Center, Koholpur, Banke	Agrovet	Kidney bean	Rajma	IS	92	2	1	0	5	100	0	0	0	8.9	47.2	
109	290	R290	Shining Star Vet Centre, Nepalgunj, Khajura Road	Agrovet	Ladies finger	N/A	IS	53	7	0	0	40	100.0	0.0	0.0	0.0	-	-	Not enough seed
110	340	R340	Adhinuk Agrovet and Suppliers, Rapti, Bhalubang	Agrovet	Ladies finger	Arka Anamika	IS	80	13	0	0	7	100	0	0	0	-	-	Not enough seed
111	341	R341	Adhinuk Agrovet and Suppliers, Rapti, Bhalubang	Agrovet	Ladies finger	Arka Anamika	IS	75	15	0	0	10	100	0	0	0	-	-	Not enough seed
112	342	R342	Adhinuk Agrovet and Suppliers, Rapti, Bhalubang	Agrovet	Ladies finger	Arka Anamika	IS	77	12	0	0	11	100	0	0	0	-	-	Not enough seed
113	343	R343	Adhinuk Agrovet and Suppliers, Rapti, Bhalubang	Agrovet	Ladies finger	Arka Anamika	IS	79	9	0	0	12	100	0	0	0	-	-	Not enough seed
114	344	R344	Adhinuk Agrovet and Suppliers, Rapti, Bhalubang	Agrovet	Ladies finger	Arka Anamika	IS	81	5	0	0	14	100	0	0	0	-	-	Not enough seed
115	364	R364	Buddha Agro International, Buddhachowk, Rupendehi	Agrovet	Ladies finger	N/A	IS	95	1	0	0	4	100	0	0	0	9.5	5.7	

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116	391	R391	Gupta Agrovet Center, Kapilvastu	Agrovet	Ladies finger	N/A	IS	77	6	0	0	17	100	0	0	0	10.2	5.8	
117	414	R414	Trimurti Agrovet Center, Nepalgunj	Agrovet	Ladies finger	NS 864	IS	0	0	0	0	100	100	0	0	0	10.9	6.4	
118	444	R444	Tiwari Agro Seed Pvt.Ltd., Nepalgunj	Agrovet	Ladies finger	Arka Anamika	IS	32	11	0	0	57	100	0	0	0	9.7	5.9	
119	43	R43	Grain Legumes Research Program, Khajura, Banke	Station	Lentil	Khajura Masuro 1	BS	95	2	0	0	3	100.0	0.0	0.0	0.0	8.6	1.5	
120	44	R44	Grain Legumes Research Program, Khajura, Banke	Station	Lentil	Khajura Masuro 2	BS	99	0	0	0	1	100.0	0.0	0.0	0.0	8.8	1.7	
121	45	R45	Grain Legumes Research Program, Khajura, Banke	Station	Lentil	Khajura Masuro 3	BS	99	0	0	0	1	100.0	0.0	0.0	0.0	8.8	1.5	
122	46	R46	Grain Legumes Research Program, Khajura, Banke	Station	Lentil	Khajura Masuro 4	BS	98	0	0	0	2	100.0	0.0	0.0	0.0	8.8	2.0	
123	47	R47	Grain Legumes Research Program, Khajura, Banke	Station	Lentil	Sial	BS	99	0	0	0	1	100.0	0.0	0.0	0.0	9	1.6	
124	60	R60	Jute Research Program, Itahari	Station	Lentil	Khajura Masuro	FS	93	0	4	0	3	100.0	0.0	0.0	0.0	9.1	1.5	
125	98	R98	Directorate of Agricultural Research (Karnali Province), Dasharatpur, Surkhet	Station	Lentil	Khajura Masuro 2	FS	96	0	1	0	3	100.0	0.0	0.0	0.0	8.9	1.6	
126	121	R121	Horticulture Research Station, Kimugaun, Dailekh	Station	Lentil	N/A	FS	99	1	0	0	0	100.0	0.0	0.0	0.0	8.8	1.6	
127	122	R122	Horticulture Research Station, Kimugaun, Dailekh	Station	Lentil	N/A	FS	99	0	1	0	0	100.0	0.0	0.0	0.0	8.7	1.6	
128	170	R170	Directorate of Agricultural Research (Province 2), Parwanipur, Bara	Station	Lentil	Simal	FS	76	0	0	0	24	92.8	0.0	0.0	7.2	9.5	1.2	
129	171	R171	Directorate of Agricultural Research (Province 2), Parwanipur, Bara	Station	Lentil	Khajura masuro 2	FS	93	1	0	0	6	100.0	0.0	0.0	0.0	8.8	1.4	
130	172	R172	Directorate of Agricultural Research (Province 2), Parwanipur, Bara	Station	Lentil	Khajura Masuro 1	FS	94	3	0	0	3	100.0	0.0	0.0	0.0	8.6	1.4	
131	203	R203	Farmers' collection, Sabaila, Dhanusha	Farmers	Lentil	N/A	IS	96	1	0	0	3	98.9	0.0	0.0	1.1	8.6	1.3	
132	212	R212	Farmers' collection, Sabaila, Dhanusha	Farmers	Lentil	N/A	IS	91	0	0	0	9	99.9	0.0	0.0	0.1	8.8	1.7	
133	261	R261	Farmers' collection, Bardiya	Farmers	Lentil	N/A	IS	91	3	0	4	2	99.8	0.0	0.0	0.2	8.5	1.6	
134	262	R262	Farmers' collection, Bardiya	Farmers	Lentil	N/A	IS	96	1	0	0	3	99.6	0.0	0.0	0.4	8.5	1.7	
135	214	R214	Farmers' collection, Sabaila, Dhanusha	Farmers	Linseed	Til	IS	87	4	0	0	9	99.9	0.0	0.0	0.1	6.9	0.2	
136	386	R386	Gupta Agrovet Center, Kapilvastu	Agrovet	Long bean	Karma stickless	IS	96	3	0	0	1	100	0	0	0	8.9	11.3	
137	428	R428	Trimurti Agrovet Center, Nepalgunj	Agrovet	Long bean	Long bean 312	IS	65	12	0	0	23	100	0	0	0	-	-	Not enough seed
138	429	R429	Trimurti Agrovet Center, Nepalgunj	Agrovet	Long bean	N/A	IS	70	7	0	0	23	100	0	0	0	-	-	Not enough seed
139	70	R70	Jute Research Program, Itahari	Station	Maize	Rampur Composite	FS	81	8	0	0	11	100.0	0.0	0.0	0.0	12.5	29.1	
140	102	R102	Directorate of Agricultural Research (Karnali Province), Dasharatpur, Surkhet	Station	Maize	Rampur Hybrid 10	Hybrid	95	4	0	0	1	98.1	0.0	0.0	1.9	12.2	34.9	
141	103	R103	Directorate of Agricultural Research (Karnali Province), Dasharatpur, Surkhet	Station	Maize	Arun 2	FS	84	3	0	0	13	100.0	0.0	0.0	0.0	12.6	33.7	

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142	104	R104	Directorate of Agricultural Research (Karnali Province), Dasharatpur, Surkhet	Station	Maize	Rampur Composite	FS	95	2	0	0	3	100.0	0.0	0.0	0.0	12.2	27.5	
143	110	R110	Ginger Research Program, Kapurkot, Salyan	Station	Maize	Manakamana 7	FS	88	4	0	0	8	100.0	0.0	0.0	0.0	12.6	28.6	
144	116	R116	Horticulture Research Station, Kimugaun, Dailekh	Station	Maize	N/A	FS	95	2	0	0	3	100.0	0.0	0.0	0.0	12.1	30.1	
145	117	R117	Horticulture Research Station, Kimugaun, Dailekh	Station	Maize	N/A	FS	96	1	0	0	3	100.0	0.0	0.0	0.0	12.1	26.8	
146	224	R224	Hill Crop Research Program, Dolakha	Station	Maize	Rampur 1	FS	95	1	0	0	4	100.0	0.0	0.0	0.0	12	4.6	
147	225	R225	Hill Crop Research Program, Dolakha	Station	Maize	Rampur 2	FS	96	2	1	0	1	100.0	0.0	0.0	0.0	12	35.9	
148	226	R226	Hill Crop Research Program, Dolakha	Station	Maize	Rampur 3	FS	90	2	0	0	8	100.0	0.0	0.0	0.0	12.2	35.1	
149	227	R227	Hill Crop Research Program, Dolakha	Station	Maize	Ganesh 1	FS	95	3	0	0	2	100.0	0.0	0.0	0.0	12.3	36.6	
150	228	R228	Hill Crop Research Program, Dolakha	Station	Maize	Ganesh 2	FS	97	1	0	0	2	100.0	0.0	0.0	0.0	12.1	35.6	
151	229	R229	Hill Crop Research Program, Dolakha	Station	Maize	Ganesh 3	FS	98	2	0	0	0	100.0	0.0	0.0	0.0	12	36.4	
152	235	R235	Farmers' collection, Dolakha	Farmers	Maize	Arun 1	IS	87	3	0	0	10	99.8	0.0	0.0	0.2	12.1	29.4	
153	236	R236	Farmers' collection, Dolakha	Farmers	Maize	Arun 2	IS	88	4	0	0	8	99.9	0.0	0.0	0.1	12.2	33.9	
154	237	R237	Farmers' collection, Dolakha	Farmers	Maize	Rampur 1	IS	98	0	0	0	2	100.0	0.0	0.0	Trace	12	33.0	
155	238	R238	Farmers' collection, Dolakha	Farmers	Maize	Rampur 2	IS	94	3	0	0	3	100.0	0.0	0.0	Trace	12	33.4	
156	270	R270	Farmers' collection, Bardiya	Farmers	Maize	White makai	IS	81	9	0	0	10	100.0	0.0	0.0	Trace	12.1	23.7	
157	271	R271	Farmers' collection, Bardiya	Farmers	Maize	White makai	IS	91	6	0	0	3	100.0	0.0	0.0	Trace	12	24.9	
158	284	R284	Shining Star Vet Centre, Nepalgunj, Khajura Road	Agrovet	Maize	Rampur Composite	IS	93	2	0	0	5	100.0	0.0	0.0	0.0	12	27.3	
159	285	R285	Shining Star Vet Centre, Nepalgunj, Khajura Road	Agrovet	Maize	Arun 2	IS	84	4	0	0	12	100.0	0.0	0.0	0.0	12.3	25.4	
160	286	R286	Shining Star Vet Centre, Nepalgunj, Khajura Road	Agrovet	Maize	Top 55	IS	97	1	0	0	2	100.0	0.0	0.0	0.0	12	25.5	
161	331	R331	Adhinuk Agrovet and Suppliers, Rapti, Bhalubang	Agrovet	Maize	Rampur Composite	IS	99	1	0	0	0	100	0	0	0	12.1	29.4	
162	332	R332	Adhinuk Agrovet and Suppliers, Rapti, Bhalubang	Agrovet	Maize	Arun 2	IS	96	0	0	0	4	100	0	0	0	12.1	25.0	
163	374	R374	Adhikari Agrovet Center, Koholpur, Banke	Agrovet	Maize	Arun 2	IS	99	0	0	0	1	100	0	0	0	11.9	33.3	
164	375	R375	Adhikari Agrovet Center, Koholpur, Banke	Agrovet	Maize	VNR 4226	IS	97	0	2	0	1	100	0	0	0	12.1	25.1	
165	376	R376	Adhikari Agrovet Center, Koholpur, Banke	Agrovet	Maize	Pioneers 3355	IS	97	2	1	0	0	100	0	0	0	12.1	26.1	
166	377	R377	Adhikari Agrovet Center, Koholpur, Banke	Agrovet	Maize	Rampur Composite	IS	97	0	0	0	3	100	0	0	0	12.1	31.1	
167	378	R378	Adhikari Agrovet Center, Koholpur, Banke	Agrovet	Maize	Byers all season	IS	99	1	0	0	0	100	0	0	0	12	30.3	
168	379	R379	Adhikari Agrovet Center, Koholpur, Banke	Agrovet	Maize	Byers 9081	IS	99	0	1	0	0	100	0	0	0	12.2	22.8	
169	382	R382	Gupta Agrovet Center, Kapilvastu	Agrovet	Maize	NMH 589 Suvarna	IS	100	0	0	0	0	100	0	0	0	11.8	30.1	
170	399	R399	Trimurti Agrovet Center, Nepalgunj	Agrovet	Maize	Arun 2	IS	96	1	2	0	1	100	0	0	0	12	28.1	
171	433	R433	Tiwari Agro Seed Pvt.Ltd., Nepalgunj	Agrovet	Maize	Rampur Composite	IS	99	1	0	0	0	100	0	0	0	12.1	27.4	
172	434	R434	Tiwari Agro Seed Pvt.Ltd., Nepalgunj	Agrovet	Maize	Arun 2	IS	96	3	0	0	1	100	0	0	0	12.2	27.2	
173	435	R435	Tiwari Agro Seed Pvt.Ltd., Nepalgunj	Agrovet	Maize	Arjun 2	IS	98	2	0	0	0	100	0	0	0	12.1	31.5	
174	48	R48	Grain Legumes Research Program, Khajura, Banke	Station	Mung	Pratigya	BS	94	3	0	0	3	100.0	0.0	0.0	0.0	8.5	4.4	
175	49	R49	Grain Legumes Research Program, Khajura, Banke	Station	Mung	Pratikshya	BS	96	2	0	0	2	100.0	0.0	0.0	0.0	8.6	4.4	
176	50	R50	Grain Legumes Research Program, Khajura, Banke	Station	Mung	Pant 5	BS	94	3	0	0	3	100.0	0.0	0.0	0.0	8.7	5.4	
177	215	R215	Farmers' collection, Sabaila, Dhanusha	Farmers	Mung	N/A	IS	82	2	0	0	16	100.0	0.0	0.0	Trace	8.2	1.6	
178	119	R119	Horticulture Research Station, Kimugaun, Dailekh	Station	Onion	Red creole	FS	60	7	8	0	25	100.0	0.0	0.0	0.0	9.6	0.3	

S.No	E.N.	Lab No.	Name and Address of Sender		Kind	Variety	Class	Germn	Abnor.	Fresh	Hard	Dead	Pure Seed	Other Crop seed	Weed Seed	Innert matter	MOISTURE TEST (%)	100 SEED WEIGHT (gm)	Remarks
179	410	R410	Trimurti Agrovet Center, Nepalgunj	Agrovet	Onion	Red creole	IS	50	6	0	0	44	100	0	0	0	8.9	0.3	
180	412	R412	Trimurti Agrovet Center, Nepalgunj	Agrovet	Onion	Red creole	IS	5	5	0	0	90	100	0	0	0	8.9	0.3	
181	440	R440	Tiwari Agro Seed Pvt.Ltd., Nepalgunj	Agrovet	Onion	Red creole	IS	65	5	0	0	30	100	0	0	0	8.9	0.3	
182	330	R330	Adhikari Agrovet Center, Koholpur, Banke	Agrovet	Pakchoy	Pakchoy	IS	41	10	4	0	45	100	0	0	0	8.5	0.2	
183	337	R337	Adhinuk Agrovet and Suppliers, Rapti, Bhalubang	Agrovet	Pakchoy	Chinese pakchoy	IS	78	1	1	0	20	100	0	0	0	7.2	0.2	
184	359	R359	Buddha Agro International, Buddhachowk, Rupendehi	Agrovet	Pakchoy	Green crown pakchoy	IS	99	1	0	0	0	100	0	0	0	7.6	0.3	
185	401	R401	Trimurti Agrovet Center, Nepalgunj	Agrovet	Pakchoy	Pakchoy green	IS	89	0	0	0	11	100	0	0	0	7.5	0.3	
186	51	R51	Farmers' collection, Khajura	Farmers	Pea	Local	IS	96	0	0	0	4	100.0	0.0	0.0	Trace	8.8	22.9	
187	52	R52	Farmers' collection, Khajura	Farmers	Pea	Local	IS	74	3	10	0	13	100.0	0.0	0.0	Trace	9.5	14.2	
188	100	R100	Directorate of Agricultural Research (Karnali Province), Dasharatpur, Surkhet	Station	Pea	Sikkim local	FS	92	4	0	0	4	98.2	0.0	0.0	1.8	9.5	30.5	
189	125	R125	Horticulture Research Station, Kimugaun, Dailekh	Station	Pea	Arkel	FS	96	1	0	0	3	100.0	0.0	0.0	0.0	9.1	20.1	
190	126	R126	Horticulture Research Station, Kimugaun, Dailekh	Station	Pea	Sikkim local	FS	99	1	0	0	0	100.0	0.0	0.0	0.0	8.9	35.1	
191	127	R127	Horticulture Research Station, Kimugaun, Dailekh	Station	Pea	White	FS	97	2	0	0	1	100.0	0.0	0.0	0.0	8.9	28.6	
192	211	R211	Farmers' collection, Sabaila, Dhanusha	Farmers	Pea	N/A	IS	92	2	2	0	4	99.8	0.0	0.0	0.2	9.1	21.0	
193	265	R265	Farmers' collection, Bardiya	Farmers	Pea	N/A	IS	96	0	3	0	1	99.9	0.0	0.0	0.1	9.1	20.9	
194	321	R321	Adhikari Agrovet Center, Koholpur, Banke	Agrovet	Pea	Sikkim	IS	94	3	0	0	3	100	0	0	0	-	-	Not enough seed
195	322	R322	Adhikari Agrovet Center, Koholpur, Banke	Agrovet	Pea	Arkel	IS	100	0	0	0	0	100	0	0	0	-	-	Not enough seed
196	432	R432	Trimurti Agrovet Center, Nepalgunj	Agrovet	Pea	Sikkim local	IS	88	5	0	0	7	100	0	0	0	9.2	34.7	
197	208	R208	Farmers' collection, Sabaila, Dhanusha	Farmers	Pigeon pea	Rahar	IS	95	1	1	0	3	99.8	0.0	0.0	0.2	8.9	7.1	
198	266	R266	Farmers' collection, Bardiya	Farmers	Pigeon pea	N/A	IS	97	1	1	0	1	100.0	0.0	0.0	Trace	9.1	11.8	
199	267	R267	Farmers' collection, Bardiya	Farmers	Pigeon pea	N/A	IS	94	0	1	0	5	99.9	0.0	0.0	0.1	9.2	11.4	
200	268	R268	Farmers' collection, Bardiya	Farmers	Pigeon pea	N/A	IS	97	1	1	0	1	99.9	0.0	0.0	0.1	9.1	12.5	
201	269	R269	Farmers' collection, Bardiya	Farmers	Pigeon pea	N/A	IS	97	0	1	0	2	99.9	0.0	0.0	0.1	9.1	12.4	
202	314	R314	Adhikari Agrovet Center, Koholpur, Banke	Agrovet	Pumpkin	Local	IS	92	2	0	0	6	100	0	0	0	-	-	Not enough seed
203	361	R361	Buddha Agro International, Buddhachowk, Rupendehi	Agrovet	Pumpkin	Gomei	IS	97	0	3	0	0	100	0	0	0	-	-	Not enough seed
204	370	R370	Buddha Agro International, Buddhachowk, Rupendehi	Agrovet	Pumpkin	N/A	IS	90	3	1	0	6	100	0	0	0	-	-	Not enough seed
205	383	R383	Gupta Agrovet Center, Kapilvastu	Agrovet	Pumpkin	VNR 14	IS	87	7	0	0	6	100	0	0	0	-	-	Not enough seed
206	73	R73	Jute Research Program, Itahari	Station	Radish	40 days	FS	74	10	11	0	5	100.0	0.0	0.0	0.0	7.5	0.8	

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207	101	R101	Directorate of Agricultural Research (Karnali Province), Dasharatpur, Surkhet	Station	Radish	Mino Early	FS	96	3	0	0	1	100.0	0.0	0.0	0.0	7.5	1.3	
208	118	R118	Horticulture Research Station, Kimugaun, Dailekh	Station	Radish	Mino Early	FS	98	1	1	0	0	100.0	0.0	0.0	0.0	7.2	2.1	
209	294	R294	Shining Star Vet Centre, Nepalgunj, Khajura Road	Agrovet	Radish	All season	IS	32	8	17	0	43	100.0	0.0	0.0	0.0	7	1.6	
210	308	R308	Adhikari Agrovet Center, Koholpur, Banke	Agrovet	Radish	Mino Early	IS	94	1	1	0	4	100	0	0	0	7.7	1.8	
211	324	R324	Adhikari Agrovet Center, Koholpur, Banke	Agrovet	Radish	Pythane Rato	IS	95	3	0	0	2	100	0	0	0	7.1	1.1	
212	353	R353	Buddha Agro International, Buddhachowk, Rupendehi	Agrovet	Radish	40 days	IS	64	10	8	0	18	100	0	0	0	7.2	1.4	
213	355	R355	Buddha Agro International, Buddhachowk, Rupendehi	Agrovet	Radish	Pythane Rato	IS	80	7	5	0	8	100	0	0	0	7.1	1.1	
214	405	R405	Trimurti Agrovet Center, Nepalgunj	Agrovet	Radish	Pythane Rato	IS	92	4	2	0	2	100	0	0	0	7.2	1.1	
215	406	R406	Trimurti Agrovet Center, Nepalgunj	Agrovet	Radish	All season	IS	84	3	4	0	9	100	0	0	0	7.2	0.9	
216	407	R407	Trimurti Agrovet Center, Nepalgunj	Agrovet	Radish	40 days	IS	90	4	2	0	4	100	0	0	0	7.2	1.2	
217	408	R408	Trimurti Agrovet Center, Nepalgunj	Agrovet	Radish	Mino Early	IS	76	6	5	0	13	100	0	0	0	7.7	1.3	
218	409	R409	Trimurti Agrovet Center, Nepalgunj	Agrovet	Radish	40 days	IS	51	8	10	0	31	100	0	0	0	7.8	1.3	
219	439	R439	Tiwari Agro Seed Pvt.Ltd., Nepalgunj	Agrovet	Radish	Mino Early	IS	97	2	0	0	1	100	0	0	0	7.1	1.6	
220	42	R42	Directorate of Agricultural Research (Lumbini Province), Khajura, Banke	Station	Rapeseed	Bikash	FS	95	3	0	0	2	100.0	0.0	0.0	0.0	7.1	0.3	
221	56	R56	Farmers' collection, Khajura	Farmers	Rapeseed	Tori	IS	97	2	0	0	1	99.7	0.0	0.0	0.3	7.1	0.4	
222	71	R71	Jute Research Program, Itahari	Station	Rapeseed	Morang Tori 2	FS	95	3	1	0	1	97.8	0.0	0.0	2.2	7.2	0.3	
223	72	R72	Jute Research Program, Itahari	Station	Rapeseed	Nawalpur local	FS	94	3	1	0	2	98.4	0.0	0.0	1.6	7.2	0.4	
224	77	R77	Agricultural Reseach Station, Belachapi	Station	Rapeseed	Unnati	FS	94	0	0	0	6	98.9	0.0	0.0	1.1	8.2	0.3	
225	81	R81	Agricultural Reseach Station, Belachapi	Station	Rapeseed	Belachapi 1	FS	93	2	3	0	2	100.0	0.0	0.0	0.0	8.1	0.1	
226	99	R99	Directorate of Agricultural Research (Karnali Province), Dasharatpur, Surkhet	Station	Rapeseed	Surkhet local 3	FS	96	1	0	0	3	100.0	0.0	0.0	0.0	7.9	0.3	
227	109	R109	Ginger Research Program, Kapurkot, Salyan	Station	Rapeseed	Unnati	FS	92	4	2	0	2	97.3	0.9	0.0	1.8	8.2	1.1	
228	120	R120	Horticulture Research Station, Kimugaun, Dailekh	Station	Rapeseed	Khumal Chaudapat	FS	77	2	20	0	1	100.0	0.0	0.0	0.0	8.5	0.1	
229	132	R132	Oil Seed Research Program, Nawalpur	Station	Rapeseed	Pusa bold	FS	81	2	13	0	4	100.0	0.0	0.0	0.0	8.1	0.3	
230	133	R133	Oil Seed Research Program, Nawalpur	Station	Rapeseed	Pusa bold	BS	76	6	9	0	9	100.0	0.0	0.0	0.0	8.5	0.3	
231	134	R134	Oil Seed Research Program, Nawalpur	Station	Rapeseed	Krishna	FS	57	7	11	0	25	100.0	0.0	0.0	0.0	8.9	0.3	
232	135	R135	Oil Seed Research Program, Nawalpur	Station	Rapeseed	Krishna	BS	61	7	17	0	15	100.0	0.0	0.0	0.0	8.9	0.3	
233	136	R136	Oil Seed Research Program, Nawalpur	Station	Rapeseed	Pusa Jagannath	FS	59	9	19	0	13	100.0	0.0	0.0	0.0	8.9	0.3	
234	137	R137	Oil Seed Research Program, Nawalpur	Station	Rapeseed	Dibhya	FS	55	17	12	0	16	100.0	0.0	0.0	0.0	8.8	0.3	
235	138	R138	Oil Seed Research Program, Nawalpur	Station	Rapeseed	Pusa Agrani	FS	94	4	0	0	2	100.0	0.0	0.0	0.0	8	0.3	
236	139	R139	Oil Seed Research Program, Nawalpur	Station	Rapeseed	ICJ 01 69	FS	88	3	5	0	4	100.0	0.0	0.0	0.0	8	0.3	
237	140	R140	Oil Seed Research Program, Nawalpur	Station	Rapeseed	ICJ 01 40	FS	75	8	10	0	7	100.0	0.0	0.0	0.0	8.5	0.3	
238	141	R141	Oil Seed Research Program, Nawalpur	Station	Rapeseed	Morang Rayo 1	FS	75	7	13	0	5	100.0	0.0	0.0	0.0	8.5	0.3	
239	142	R142	Oil Seed Research Program, Nawalpur	Station	Rapeseed	Morang Rayo 1	BS	75	7	11	0	7	100.0	0.0	0.0	0.0	8.9	0.3	
240	143	R143	Oil Seed Research Program, Nawalpur	Station	Rapeseed	Unnati	FS	85	2	0	0	13	100.0	0.0	0.0	0.0	8.2	0.3	
241	144	R144	Oil Seed Research Program, Nawalpur	Station	Rapeseed	Unnai	BS	81	2	0	0	17	100.0	0.0	0.0	0.0	8.2	0.3	
242	145	R145	Oil Seed Research Program, Nawalpur	Station	Rapeseed	Pragati	FS	93	2	0	0	5	100.0	0.0	0.0	0.0	8.1	0.3	
243	146	R146	Oil Seed Research Program, Nawalpur	Station	Rapeseed	Pragati	BS	83	1	0	0	16	100.0	0.0	0.0	0.0	8.4	0.2	
244	147	R147	Oil Seed Research Program, Nawalpur	Station	Rapeseed	Nawalpur tori local 4	FS	78	1	0	0	21	100.0	0.0	0.0	0.0	8.9	0.2	

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245	148	R148	Oil Seed Research Program, Nawalpur	Station	Rapeseed	Nawalpur tori local 4	BS	76	3	0	0	21	100.0	0.0	0.0	0.0	8.9	0.3	
246	149	R149	Oil Seed Research Program, Nawalpur	Station	Rapeseed	Morang Tori 2	FS	81	2	0	0	17	100.0	0.0	0.0	0.0	8.5	62.7	
247	150	R150	Oil Seed Research Program, Nawalpur	Station	Rapeseed	Morang Tori 2	BS	83	1	0	0	16	100.0	0.0	0.0	0.0	8.2	0.3	
248	151	R151	Oil Seed Research Program, Nawalpur	Station	Rapeseed	Priti	FS	86	4	0	0	10	100.0	0.0	0.0	0.0	8.1	0.3	
249	152	R152	Oil Seed Research Program, Nawalpur	Station	Rapeseed	Priti	BS	79	1	0	0	20	100.0	0.0	0.0	0.0	8.7	0.3	
250	153	R153	Oil Seed Research Program, Nawalpur	Station	Rapeseed	Bikash	FS	84	2	0	0	14	100.0	0.0	0.0	0.0	8.5	0.3	
251	154	R154	Oil Seed Research Program, Nawalpur	Station	Rapeseed	Bikash	BS	82	1	0	0	17	100.0	0.0	0.0	0.0	8.1	0.2	
252	173	R173	Directorate of Agricultural Research (Province 2), Parwanipur, Bara	Station	Rapeseed	Pragati	FS	90	7	0	0	3	100.0	0.0	0.0	0.0	8.1	0.3	
253	246	R246	Farmers' collection, Dolakha	Farmers	Rapeseed	Pragati	IS	95	2	0	0	3	98.7	0.0	0.0	1.3	8	1.1	
254	247	R247	Farmers' collection, Dolakha	Farmers	Rapeseed	Pragati	IS	96	1	0	0	3	100.0	0.0	0.0	Trace	8	77.7	
255	248	R248	Farmers' collection, Dolakha	Farmers	Rapeseed	Pragati	IS	60	3	34	0	3	99.9	0.0	0.0	0.1	8.5	0.2	
256	274	R274	Farmers' collection, Bardiya	Farmers	Rapeseed	Pahelo tori	IS	80	3	13	0	4	99.7	0.0	0.0	0.3	8.2	0.3	
257	276	R276	Farmers' collection, Bardiya	Farmers	Rapeseed	Pahelo tori	IS	80	0	10	0	10	99.9	0.0	0.0	0.1	8.1	0.3	
258	277	R277	Farmers' collection, Bardiya	Farmers	Rapeseed	Rato tori	IS	88	3	3	0	6	99.9	0.0	0.0	0.1	8	0.3	
259	278	R278	Farmers' collection, Bardiya	Farmers	Rapeseed	Black tori	IS	97	1	1	0	1	99.9	0.0	0.0	0.1	8	0.3	
260	279	R279	Farmers' collection, Bardiya	Farmers	Rapeseed	Black tori	IS	73	2	18	0	7	100.0	0.0	0.0	Trace	8.3	0.3	
261	280	R280	Farmers' collection, Bardiya	Farmers	Rapeseed	Black tori	IS	52	1	41	0	6	99.9	0.0	0.0	0.1	8.8	0.3	
262	281	R281	Farmers' collection, Bardiya	Farmers	Rapeseed	Black tori	IS	66	3	30	0	1	99.9	0.0	0.0	0.1	8.9	0.3	
263	282	R282	Farmers' collection, Bardiya	Farmers	Rapeseed	Black tori	IS	89	2	7	0	2	99.5	0.0	0.0	0.5	8.1	0.3	
264	283	R283	Farmers' collection, Bardiya	Farmers	Rapeseed	Black tori	IS	48	1	51	0	0	99.7	0.0	0.0	0.3	8.5	0.3	
265	318	R318	Adhikari Agrovet Center, Koholpur, Banke	Agrovet	Rapeseed	Marpha Chaudapat	IS	80	3	0	0	17	100	0	0	0	8.2	0.1	
266	338	R338	Adhinuk Agrovet and Suppliers, Rapti, Bhalubang	Agrovet	Rapeseed	Marpha Chaudapat	IS	3	2	0	0	95	100	0	0	0	9.2	0.1	
267	339	R339	Adhinuk Agrovet and Suppliers, Rapti, Bhalubang	Agrovet	Rapeseed	Marpha Chaudapat	IS	31	2	17	0	50	100	0	0	0	8.8	0.1	
268	348	R348	Adhinuk Agrovet and Suppliers, Rapti, Bhalubang	Agrovet	Rapeseed	All season	IS	83	1	0	0	16	100	0	0	0	8.2	0.3	
269	349	R349	Adhinuk Agrovet and Suppliers, Rapti, Bhalubang	Agrovet	Rapeseed	All season	IS	95	1	0	0	4	100	0	0	0	8.1	0.3	
270	352	R352	Buddha Agro International, Buddhachowk, Rupendehi	Agrovet	Rapeseed	Marpha Chaudapat	IS	59	1	1	0	39	100	0	0	0	8.5	0.1	
271	402	R402	Trimurti Agrovet Center, Nepalgunj	Agrovet	Rapeseed	ZY no.2 leaf	IS	0	0	0	0	100	100	0	0	0	8.8	0.2	
272	403	R403	Trimurti Agrovet Center, Nepalgunj	Agrovet	Rapeseed	Khumal Rayo	IS	2	6	0	0	92	100	0	0	0	8.8	0.1	
273	404	R404	Trimurti Agrovet Center, Nepalgunj	Agrovet	Rapeseed	Marpha Chaudapat	IS	6	3	0	0	91	100	0	0	0	9	0.1	
274	82	R82	Agricultural Reseach Station, Belachapi	Station	Rice	Chaite 5	BS	53	16	26	0	5	67.3	0.0	0.0	32.7	12.6	1.8	
275	83	R83	National Rice Research Program, Hardinath	Station	Rice	Radha 14	FS	49	15	23	0	13	99.7	0.0	0.0	0.3	13.5	2.3	
276	84	R84	National Rice Research Program, Hardinath	Station	Rice	Swarna sub 1	FS	54	18	15	0	13	99.9	0.0	0.0	0.1	13	1.9	
277	85	R85	National Rice Research Program, Hardinath	Station	Rice	Makawanpur 1	FS	65	7	5	0	23	99.7	0.0	0.0	0.3	13.5	2.6	
278	86	R86	National Rice Research Program, Hardinath	Station	Rice	Hardinath samba mansuli	BS	64	10	6	0	20	99.5	0.0	0.0	0.5	12.9	1.8	
279	87	R87	National Rice Research Program, Hardinath	Station	Rice	Bahuguni dhan 2	BS	35	10	12	0	43	99.7	0.0	0.0	0.3	13.1	2.1	

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280	88	R88	National Rice Research Program, Hardinath	Station	Rice	Bahuguni dhan 1	BS	7	3	79	0	11	99.4	0.0	0.0	0.6	13.5	2.4	
281	89	R89	National Rice Research Program, Hardinath	Station	Rice	Radha 12	BS	53	9	11	0	27	99.5	0.0	0.0	0.5	12.7	2.6	
282	90	R90	National Rice Research Program, Hardinath	Station	Rice	Swarna sub 1	BS	51	10	14	0	25	99.9	0.0	0.0	0.1	13	2.0	
283	168	R168	Bikek Nepal, Dhading	Farmers	Rice	Manbhoga	IS	4	3	84	0	9	99.8	0.0	0.0	0.2	12.5	1.7	
284	174	R174	National Rice Research Program, Hardinath	Station	Rice	Radha 4	BS	84	8	0	0	8	99.1	0.0	0.0	0.9	13.1	2.6	0.2% GA3 treated
285	174	R174	National Rice Research Program, Hardinath	Station	Rice	Radha 4	BS	95	2	2	0	1							0.2% KNO3 treated
286	175	R175	National Rice Research Program, Hardinath	Station	Rice	Radha 12	BS	54	32	9	0	5	99.7	0.0	0.0	0.3	13.6	2.5	0.2% GA3 treated
287	175	R175	National Rice Research Program, Hardinath	Station	Rice	Radha 12	BS	63	21	8	0	8							0.2% KNO3 treated
288	176	R176	National Rice Research Program, Hardinath	Station	Rice	Radha 14	BS	58	21	4	0	17	98.0	0.0	0.0	2.0	13.2	2.3	0.2% GA3 treated
289	176	R176	National Rice Research Program, Hardinath	Station	Rice	Radha 14	BS	64	18	3	0	15							0.2% KNO3 treated
290	177	R177	National Rice Research Program, Hardinath	Station	Rice	Hardinath 1	BS	89	6	0	0	5	99.8	0.0	0.0	0.2	12.2	2.1	0.2% GA3 treated
291	177	R177	National Rice Research Program, Hardinath	Station	Rice	Hardinath 1	BS	89	5	2	0	4							0.2% KNO3 treated
292	178	R178	National Rice Research Program, Hardinath	Station	Rice	Hardinath 3	BS	69	19	1	0	11	98.1	0.0	0.0	1.9	12.9	2.1	0.2% GA3 treated
293	178	R178	National Rice Research Program, Hardinath	Station	Rice	Hardinath 3	BS	75	7	3	0	15							0.2% KNO3 treated
294	179	R179	National Rice Research Program, Hardinath	Station	Rice	Hardinath 5	BS	80	10	4	0	6	99.2	0.0	0.0	0.8	12.5	2.0	0.2% GA3 treated
295	179	R179	National Rice Research Program, Hardinath	Station	Rice	Hardinath 5	BS	79	8	5	0	8							0.2% KNO3 treated
296	180	R180	National Rice Research Program, Hardinath	Station	Rice	Hardinath 6	BS	81	8	7	0	4	98.6	0.0	0.0	1.4	12.2	1.3	0.2% GA3 treated
297	180	R180	National Rice Research Program, Hardinath	Station	Rice	Hardinath 6	BS	87	8	3	0	2							0.2% KNO3 treated
298	181	R181	National Rice Research Program, Hardinath	Station	Rice	Sabitri	BS	86	8	1	0	5	99.3	0.0	0.0	0.7	12.3	1.8	0.2% GA3 treated
299	181	R181	National Rice Research Program, Hardinath	Station	Rice	Sabitri	BS	87	10	1	0	2							0.2% KNO3 treated
300	182	R182	National Rice Research Program, Hardinath	Station	Rice	Ramdhan	BS	61	24	9	0	6	98.0	0.0	0.0	2.0	12.9	2.1	0.2% GA3 treated
301	182	R182	National Rice Research Program, Hardinath	Station	Rice	Ramdhan	BS	74	17	1	0	8							0.2% KNO3 treated
302	183	R183	National Rice Research Program, Hardinath	Station	Rice	Swarna sub 1	BS	33	52	0	0	15	99.6	0.0	0.0	0.4	12.9	1.9	0.2% GA3 treated

S.No	E.N.	Lab No.	Name and Address of Sender		Kind	Variety	Class	Germn	Abnor.	Fresh	Hard	Dead	Pure Seed	Other Crop seed	Weed Seed	Innert matter	MOISTURE TEST (%)	100 SEED WEIGHT (gm)	Remarks
303	183	R183	National Rice Research Program, Hardinath	Station	Rice	Swarna sub 1	BS	72	13	3	0	12							0.2% KNO3 treated
304	184	R184	National Rice Research Program, Hardinath	Station	Rice	Makawanpur 1	BS	61	20	0	0	19	98.0	0.0	0.0	2.0	12.8	2.6	0.2% GA3 treated
305	184	R184	National Rice Research Program, Hardinath	Station	Rice	Makawanpur 1	BS	71	13	12	0	4							0.2% KNO3 treated
306	185	R185	National Rice Research Program, Hardinath	Station	Rice	Sukha dhan 3	BS	90	7	0	0	3	99.4	0.0	0.0	0.6	12.5	2.1	0.2% GA3 treated
307	185	R185	National Rice Research Program, Hardinath	Station	Rice	Sukha dhan 3	BS	89	5	2	0	4							0.2% KNO3 treated
308	186	R186	National Rice Research Program, Hardinath	Station	Rice	Chaite 5	BS	74	18	0	0	8	99.9	0.0	0.0	0.1	13.2	1.8	0.2% GA3 treated
309	186	R186	National Rice Research Program, Hardinath	Station	Rice	Chaite 5	BS	75	14	0	0	11							0.2% KNO3 treated
310	187	R187	National Rice Research Program, Hardinath	Station	Rice	Samba mansuli	BS	62	27	3	0	8	99.8	0.0	0.0	0.2	13.5	1.4	0.2% GA3 treated
311	187	R187	National Rice Research Program, Hardinath	Station	Rice	Samba mansuli	BS	79	12	1	0	8							0.2% KNO3 treated
312	188	R188	National Rice Research Program, Hardinath	Station	Rice	Kala namak	BS	32	36	10	0	22	99.5	0.0	0.0	0.5	13.9	1.4	0.2% GA3 treated
313	188	R188	National Rice Research Program, Hardinath	Station	Rice	Kala namak	BS	52	30	4	0	14							0.2% KNO3 treated
314	189	R189	National Rice Research Program, Hardinath	Station	Rice	Hocho kala namak	BS	48	34	2	0	16	99.2	0.0	0.0	0.8	13.6	1.4	0.2% GA3 treated
315	189	R189	National Rice Research Program, Hardinath	Station	Rice	Hocho kala namak	BS	55	29	0	0	16							0.2% KNO3 treated
316	190	R190	National Rice Research Program, Hardinath	Station	Rice	Lalka basmati	BS	61	30	2	0	7	99.9	0.0	0.0	0.1	13.5	1.8	0.2% GA3 treated
317	190	R190	National Rice Research Program, Hardinath	Station	Rice	Lalka basmati	BS	63	24	3	0	10							0.2% KNO3 treated
318	191	R191	National Rice Research Program, Hardinath	Station	Rice	Bahuguni dhan 1	BS	76	10	3	0	11	99.3	0.0	0.0	0.7	12.9	2.2	0.2% GA3 treated
319	191	R191	National Rice Research Program, Hardinath	Station	Rice	Bahuguni dhan 1	BS	75	8	4	0	13							0.2% KNO3 treated
320	192	R192	National Rice Research Program, Hardinath	Station	Rice	Bahuguni dhan 2	BS	80	15	0	0	5	99.7	0.0	0.0	0.3	12.5	1.9	0.2% GA3 treated
321	192	R192	National Rice Research Program, Hardinath	Station	Rice	Bahuguni dhan 2	BS	77	15	4	0	4							0.2% KNO3 treated
322	193	R193	National Rice Research Program, Hardinath	Station	Rice	Ganga sagar 1	BS	52	32	0	0	16	99.7	0.0	0.0	0.3	13.4	1.9	0.2% GA3 treated
323	193	R193	National Rice Research Program, Hardinath	Station	Rice	Ganga sagar 1	BS	69	22	1	0	8							0.2% KNO3 treated
324	194	R194	National Rice Research Program, Hardinath	Station	Rice	Ganga sagar 2	BS	45	35	7	0	13	99.6	0.0	0.0	0.4	13.2	1.7	0.2% GA3 treated

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325	194	R194	National Rice Research Program, Hardinath	Station	Rice	Ganga sagar 2	BS	55	36	2	0	7							0.2% KNO3 treated
326	195	R195	National Rice Research Program, Hardinath	Station	Rice	Hardinath Hybrid 1-10	BS	87	10	1	0	2	100.0	0.0	0.0	0.0	12.5	2.0	0.2% GA3 treated
327	195	R195	National Rice Research Program, Hardinath	Station	Rice	Hardinath Hybrid 1-10	BS	89	10	0	0	1							0.2% KNO3 treated
328	196	R196	Ram Janaki Krishik Samuha, Dhanusha	Agrovet	Rice	Sabitri	IS	72	10	10	0	8	98.7	0.0	0.0	1.3	13.2	2.0	
329	197	R197	Ram Janaki Krishik Samuha, Dhanusha	Agrovet	Rice	Lalka basmati	IS	19	23	47	0	11	99.6	0.0	0.0	0.4	13.4	1.8	
330	198	R198	Ram Janaki Krishik Samuha, Dhanusha	Agrovet	Rice	Swarna sub 1	IS	38	12	42	0	8	99.5	0.0	0.0	0.5	13.2	2.0	
331	199	R199	Ram Janaki Krishik Samuha, Dhanusha	Agrovet	Rice	Sawa mansuli sub 1	IS	63	17	10	0	10	98.9	0.0	0.0	1.1	13.1	1.4	
332	200	R200	Ram Janaki Krishik Samuha, Dhanusha	Agrovet	Rice	Lalka basmati	IS	27	8	56	0	9	97.9	0.0	0.0	2.1	12.9	1.9	
333	201	R201	Ram Janaki Krishik Samuha, Dhanusha	Agrovet	Rice	Hardinath 6	IS	89	7	1	0	3	98.7	0.0	0.0	1.3	12.5	1.5	
334	205	R205	Farmers' collection, Sabaila, Dhanusha	Farmers	Rice	Lalka basmati	IS	37	5	55	0	3	98.3	0.0	0.0	1.7	13.1	2.0	
335	206	R206	Farmers' collection, Sabaila, Dhanusha	Farmers	Rice	N/A	IS	37	8	38	0	17	98.0	0.0	0.0	2.0	13.2	1.6	
336	207	R207	Farmers' collection, Sabaila, Dhanusha	Farmers	Rice	N/A	IS	36	8	51	0	5	96.1	0.0	0.0	3.9	13.3	1.9	
337	210	R210	Farmers' collection, Sabaila, Dhanusha	Farmers	Rice	N/A	IS	43	4	46	0	7	97.3	0.0	0.0	2.7	13.3	1.5	
338	239	R239	Farmers' collection, Dolakha	Farmers	Rice	Khumal 12	IS	92	7	0	0	1	98.3	0.0	0.0	1.7	13	1.7	
339	240	R240	Farmers' collection, Dolakha	Farmers	Rice	Khumal 12	IS	92	5	0	0	3	99.1	0.0	0.0	0.9	12.5	1.7	
340	251	R251	Farmers' collection, Bardiya	Farmers	Rice	Chaite dhan	IS	80	6	9	0	5	99.5	0.0	0.0	0.5	12.4	2.1	
341	252	R252	Farmers' collection, Bardiya	Farmers	Rice	Radha 4	IS	60	6	29	0	5	98.5	0.0	0.0	1.5	12.9	2.3	
342	253	R253	Farmers' collection, Bardiya	Farmers	Rice	Tara dhan	IS	63	4	22	0	11	98.7	0.0	0.0	1.3	13.2	1.2	
343	254	R254	Farmers' collection, Bardiya	Farmers	Rice	Radha 4	IS	54	15	19	0	12	99.4	0.0	0.0	0.6	13.5	2.3	
344	255	R255	Farmers' collection, Bardiya	Farmers	Rice	Anade dhan	IS	53	26	10	0	11	100.0	0.0	0.0	Trace	13.5	2.7	
345	256	R256	Farmers' collection, Bardiya	Farmers	Rice	Anade dhan	IS	61	7	26	0	6	99.6	0.0	0.0	0.4	13.6	2.7	
346	449	R449	National Seed Science Technology Research Center, Khumaltar	Station	Rice	Hardinath Hybrid 1-10	Hybrid	82	2	0	0	16	98.3	0	0	1.7	11.8	2.8	
347	384	R384	Gupta Agrovet Center, Kapilvastu	Agrovet	Ridge gourd	Aarati	IS	73	0	0	0	27	100	0	0	0	-	-	Not enough seed
348	155	R155	Oil Seed Research Program, Nawalpur	Station	Sarso	Binaya	FS	91	1	0	0	8	100.0	0.0	0.0	0.0	8.2	0.3	
349	156	R156	Oil Seed Research Program, Nawalpur	Station	Sarso	Binaya	BS	98	0	0	0	2	100.0	0.0	0.0	0.0	8	0.3	
350	157	R157	Oil Seed Research Program, Nawalpur	Station	Sarso	Ulto	FS	94	2	0	0	4	100.0	0.0	0.0	0.0	7.9	0.2	
351	158	R158	Oil Seed Research Program, Nawalpur	Station	Sarso	Ulto	BS	92	4	0	0	4	100.0	0.0	0.0	0.0	7.9	0.2	
352	159	R159	Oil Seed Research Program, Nawalpur	Station	Sarso	Ragini	BS	73	3	0	0	24	100.0	0.0	0.0	0.0	8.2	0.3	
353	160	R160	Oil Seed Research Program, Nawalpur	Station	Sarso	Bari 13	BS	84	1	0	0	15	100.0	0.0	0.0	0.0	7.9	0.3	
354	161	R161	Oil Seed Research Program, Nawalpur	Station	Sarso	Synthetic g	BS	81	3	0	0	16	100.0	0.0	0.0	0.0	8	0.3	
355	162	R162	Oil Seed Research Program, Nawalpur	Station	Sarso	ICT 2002 16	BS	91	1	1	0	7	100.0	0.0	0.0	0.0	7.9	0.3	
356	163	R163	Oil Seed Research Program, Nawalpur	Station	Sarso	ICT 2002 11	BS	89	2	0	0	9	100.0	0.0	0.0	0.0	8.1	0.2	
357	164	R164	Oil Seed Research Program, Nawalpur	Station	Sarso	Acc 5738	BS	88	3	0	0	9	100.0	0.0	0.0	0.0	8.1	0.2	
358	165	R165	Oil Seed Research Program, Nawalpur	Station	Sarso	Acc 9109	BS	85	2	0	0	13	100.0	0.0	0.0	0.0	8.2	0.2	
359	166	R166	Oil Seed Research Program, Nawalpur	Station	Sarso	Acc 9118	BS	92	0	0	0	8	100.0	0.0	0.0	0.0	8.1	0.2	
360	275	R275	Farmers' collection, Bardiya	Farmers	Sarso		IS	30	15	43	0	12	100.0	0.0	0.0	Trace	9.5	0.2	

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361	441	R441	Tiwari Agro Seed Pvt.Ltd., Nepalgunj	Agrovet	Snake gourd	N/A	IS	35	2	0	0	63	100	0	0	0	-	-	Not enough seed
362	328	R328	Adhikari Agrovet Center, Koholpur, Banke	Agrovet	Spinach	Palungo	IS	5	3	54	0	38	100	0	0	0	9.2	0.9	
363	329	R329	Adhikari Agrovet Center, Koholpur, Banke	Agrovet	Spinach	Green leafs	IS	58	10	25	0	7	100	0	0	0	9	0.8	
364	390	R390	Gupta Agrovet Center, Kapilvastu	Agrovet	Spinach	Palungo	IS	61	0	23	0	16	100	0	0	0	9.1	1.2	
365	367	R367	Buddha Agro International, Buddhachowk, Rupendehi	Agrovet	Sponge gourd	N/A	IS	47	2	0	0	51	100	0	0	0	8.1	11.0	
366	368	R368	Buddha Agro International, Buddhachowk, Rupendehi	Agrovet	Sponge gourd	N/A	IS	51	2	0	0	47	100	0	0	0	-	-	Not enough seed
367	387	R387	Gupta Agrovet Center, Kapilvastu	Agrovet	Sponge gourd	NS 1825	IS	97	0	0	0	3	100	0	0	0	-	-	Not enough seed
368	393	R393	Gupta Agrovet Center, Kapilvastu	Agrovet	Sponge gourd	N/A	IS	85	2	0	0	13	100	0	0	0	-	-	Not enough seed
369	323	R323	Adhikari Agrovet Center, Koholpur, Banke	Agrovet	Squash	Gray Zucchini	IS	66	20	0	0	14	100	0	0	0	-	-	Not enough seed
370	335	R335	Adhinuk Agrovet and Suppliers, Rapti, Bhalubang	Agrovet	Squash	N/A	IS	47	20	0	0	33	100	0	0	0	-	-	Not enough seed
371	357	R357	Buddha Agro International, Buddhachowk, Rupendehi	Agrovet	Squash	N/A	IS	100	0	0	0	0	100	0	0	0	-	-	Not enough seed
372	395	R395	Gupta Agrovet Center, Kapilvastu	Agrovet	Sunflower	N/A	IS	78	3	1	0	18	100	0	0	0	8.5	4.8	
373	397	R397	Trimurti Agrovet Center, Nepalgunj	Agrovet	Sunflower		IS	78	2	1	0	19	100	0	0	0	8.6	4.4	
374	303	R303	Shining Star Vet Centre, Nepalgunj, Khajura Road	Agrovet	Swiss chard	Swiss sag	IS	42	2	0	0	56	100.0	0.0	0.0	0.0	7.8	1.5	
375	443	R443	Tiwari Agro Seed Pvt.Ltd., Nepalgunj	Agrovet	Swiss chard	Susag	IS	46	9	0	0	45	100	0	0	0	7.8	2.0	
376	288	R288	Shining Star Vet Centre, Nepalgunj, Khajura Road	Agrovet	Teosinte	N/A	IS	48	2	47	0	3	100.0	0.0	0.0	0.0	13.5	-	Not enough seed
377	299	R299	Shining Star Vet Centre, Nepalgunj, Khajura Road	Agrovet	Tomato	Srijana	IS	95	0	2	0	3	100.0	0.0	0.0	0.0	8.1	0.3	
378	326	R326	Adhikari Agrovet Center, Koholpur, Banke	Agrovet	Tomato	BL 410	IS	51	5	38	0	6	100	0	0	0	8	0.2	
379	417	R417	Trimurti Agrovet Center, Nepalgunj	Agrovet	Tomato	Tomato S 22	IS	54	2	0	41	3	100	0	0	0	8.5	0.2	
380	418	R418	Trimurti Agrovet Center, Nepalgunj	Agrovet	Tomato	Srijana	IS	66	3	0	27	4	100	0	0	0	8.5	0.2	
381	442	R442	Tiwari Agro Seed Pvt.Ltd., Nepalgunj	Agrovet	Tomato	Srijana	IS	50	5	0	38	7	100	0	0	0	8.6	0.3	
382	347	R347	Adhinuk Agrovet and Suppliers, Rapti, Bhalubang	Agrovet	Turnip	Purple top	IS	39	9	2	0	50	100	0	0	0	8.8	0.2	
383	400	R400	Trimurti Agrovet Center, Nepalgunj	Agrovet	Unknown species	Unknown species	IS	40	4	36	0	20	100	0	0	0	-	-	Not enough seed
384	1	R1	National Wheat Research Program, Bhairahawa	Station	Wheat	Khumal Shakti	BS	93	4	0	0	3	100.0	0.0	0.0	Trace	12.1	4.3	
385	2	R2	National Wheat Research Program, Bhairahawa	Station	Wheat	Gautam	BS	92	3	0	0	5	100.0	0.0	0.0	Trace	12.2	4.2	

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386	3	R3	National Wheat Research Program, Bhairahawa	Station	Wheat	Bheriganga	BS	89	2	7	0	2	99.9	0.0	0.0	0.1	12.3	4.4	
387	4	R4	National Wheat Research Program, Bhairahawa	Station	Wheat	Zinc 1	BS	85	8	0	0	7	99.8	0.0	0.0	0.2	12.2	4.8	
388	5	R5	National Wheat Research Program, Bhairahawa	Station	Wheat	Banganga	BS	97	2	0	0	1	99.7	0.0	0.0	0.3	12.1	4.8	
389	6	R6	National Wheat Research Program, Bhairahawa	Station	Wheat	NL 971	BS	90	8	0	0	2	99.9	0.0	Trace	0.1	12.1	4.5	
390	7	R7	National Wheat Research Program, Bhairahawa	Station	Wheat	BL 4341	BS	92	2	0	0	6	99.9	0.0	0.0	0.1	12.1	3.8	
391	8	R8	National Wheat Research Program, Bhairahawa	Station	Wheat	Bijaya	BS	94	3	0	0	3	99.6	0.0	0.0	0.4	12	4.9	
392	9	R9	National Wheat Research Program, Bhairahawa	Station	Wheat	Aditya	BS	92	7	0	0	1	99.8	0.0	0.0	0.2	12.1	5.2	
393	10	R10	National Wheat Research Program, Bhairahawa	Station	Wheat	Dhaulagiri	BS	93	5	0	0	2	99.5	0.0	0.0	0.5	12.1	4.5	
394	11	R11	National Wheat Research Program, Bhairahawa	Station	Wheat	WK 1204	BS	97	1	0	0	2	99.7	0.0	0.0	0.3	12.1	4.4	
395	12	R12	National Wheat Research Program, Bhairahawa	Station	Wheat	Zinc 2	BS	84	13	0	0	3	100.0	Trace	0.0	Trace	12.4	3.6	
396	13	R13	National Wheat Research Program, Bhairahawa	Station	Wheat	Danphe	BS	92	4	0	0	4	98.5	0.0	0.0	1.5	12.2	3.5	
397	14	R14	National Wheat Research Program, Bhairahawa	Station	Wheat	Swargadwari	BS	98	2	0	0	0	98.6	0.0	0.0	1.4	12	4.9	
398	15	R15	National Wheat Research Program, Bhairahawa	Station	Wheat	Borlog 2020	BS	97	2	0	0	1	99.9	0.0	0.0	0.1	11.9	4.6	
399	16	R16	Farmers' collection, Bhairahawa	Station	Wheat	Biju	IS	95	1	0	0	4	99.2	0.0	Trace	0.8	12	4.3	
400	17	R17	Farmers' collection, Bhairahawa	Station	Wheat	Bheriganga	IS	90	7	0	0	3	99.3	0.0	0.1	0.6	12.2	4.6	
401	18	R18	Farmers' collection, Bhairahawa	Station	Wheat	Kalika	IS	95	3	0	0	2	99.5	0.0	Trace	0.4	12.4	4.5	
402	19	R19	Farmers' collection, Bhairahawa	Station	Wheat	Zinc Wheat	IS	88	7	0	0	5	99.4	0.0	Trace	0.6	12.5	4.5	
403	20	R20	Farmers' collection, Bhairahawa	Station	Wheat	Parbati	IS	84	9	0	0	7	99.4	0.0	0.1	0.5	12.6	4.4	
404	21	R21	Farmers' collection, Bhairahawa	Station	Wheat	Sanam	IS	89	9	0	0	2	99.3	0.0	Trace	0.6	12.2	4.5	
405	22	R22	Farmers' collection, Bhairahawa	Station	Wheat	Kalika	IS	94	2	0	0	4	99.5	0.0	Trace	0.5	12.2	4.4	
406	23	R23	Farmers' collection, Bhairahawa	Station	Wheat	Chaura	IS	96	2	0	0	2	99.7	0.0	0.1	0.2	12	4.5	
407	24	R24	Farmers' collection, Bhairahawa	Station	Wheat	Dhaulagiri	IS	92	6	0	0	2	99.2	0.0	0.1	0.8	12	4.6	
408	25	R25	Farmers' collection, Bhairahawa	Station	Wheat	Bijaya	IS	93	3	0	0	4	99.6	0.0	0.1	0.3	12	4.5	
409	26	R26	Farmers' collection, Bhairahawa	Station	Wheat	Gautam	IS	94	3	0	0	3	99.1	0.0	Trace	0.9	12.1	4.5	
410	27	R27	Farmers' collection, Bhairahawa	Station	Wheat	Banganga	IS	85	10	0	0	5	99.7	0.0	0.1	0.2	12.2	4.5	
411	28	R28	Farmers' collection, Bhairahawa	Station	Wheat	Chaura	IS	94	4	0	0	2	99.7	0.0	0.1	0.3	12.3	4.3	
412	29	R29	Farmers' collection, Bhairahawa	Station	Wheat	Aditya	IS	90	7	0	0	3	99.9	0.0	Trace	Trace	12.3	4.3	
413	30	R30	Farmers' collection, Bhairahawa	Station	Wheat	Punam	IS	96	2	0	0	2	99.5	0.0	Trace	0.5	11.9	4.3	
414	31	R31	Directorate of Agricultural Research (Lumbini Province), Khajura, Banke	Station	Wheat	NL 971	BS	97	1	0	0	2	97.7	0.0	0.0	2.3	12.1	4.8	
415	32	R32	Directorate of Agricultural Research (Lumbini Province), Khajura, Banke	Station	Wheat	BL 4341	BS	97	2	0	0	1	98.4	0.0	0.0	1.6	12	4.7	
416	33	R33	Directorate of Agricultural Research (Lumbini Province), Khajura, Banke	Station	Wheat	Banganga	BS	88	0	4	0	8	94.9	0.0	0.0	5.1	12.2	5.2	
417	34	R34	Directorate of Agricultural Research (Lumbini Province), Khajura, Banke	Station	Wheat	Bhrikuti	FS	93	5	0	0	2	99.6	0.0	0.0	0.4	12	4.4	
418	35	R35	Directorate of Agricultural Research (Lumbini Province), Khajura, Banke	Station	Wheat	BL 4341	FS	91	3	0	0	6	99.5	0.0	0.0	0.5	12.4	4.6	
419	36	R36	Directorate of Agricultural Research (Lumbini Province), Khajura, Banke	Station	Wheat	Zinc Wheat	FS	91	5	0	0	4	86.0	0.0	0.0	14.0	12.3	4.6	
420	37	R37	Directorate of Agricultural Research (Lumbini Province), Khajura, Banke	Station	Wheat	Borlog 2020	FS	92	5	0	0	3	96.8	0.0	0.1	3.1	12.2	4.6	

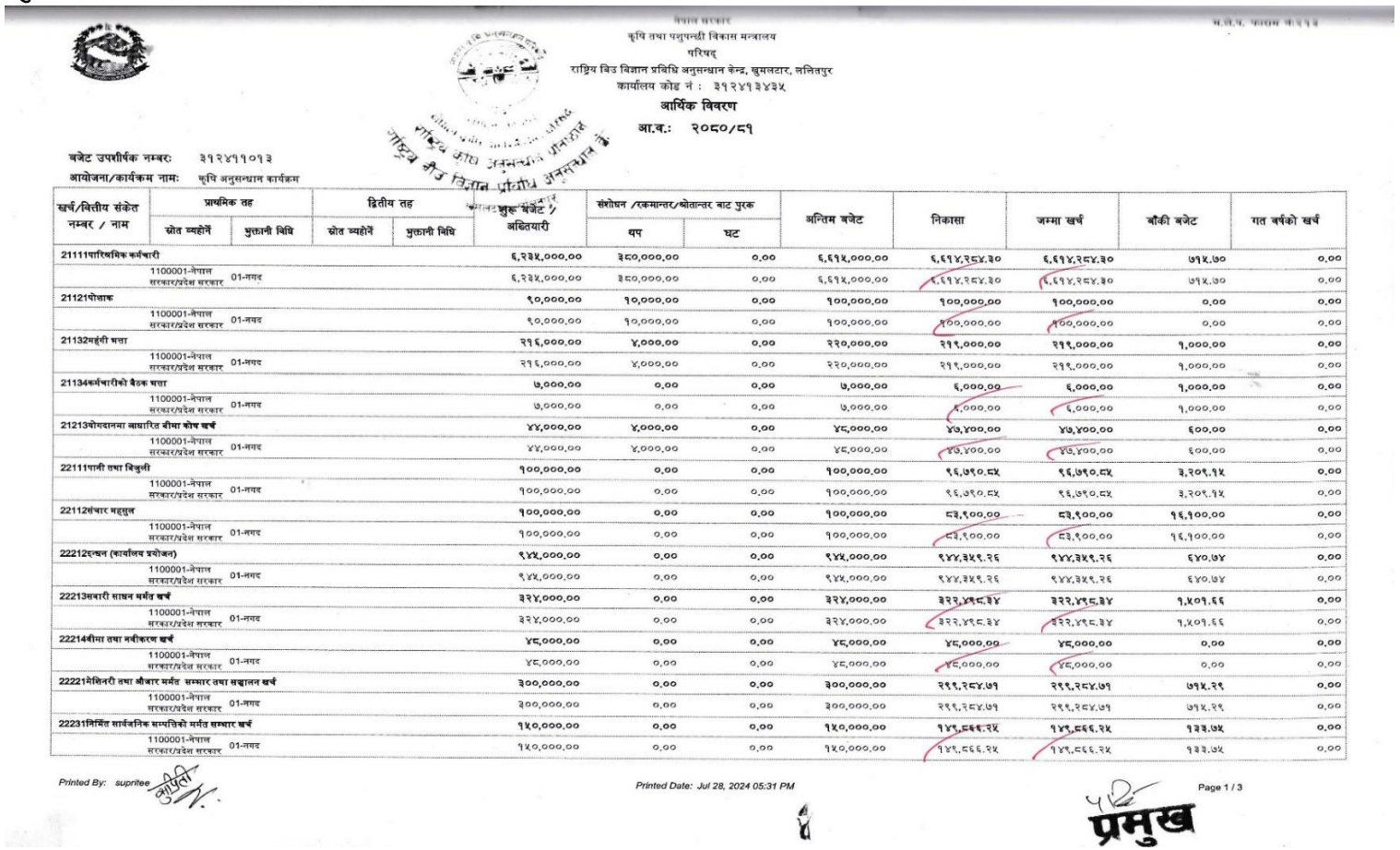
S.No	E.N.	Lab No.	Name and Address of Sender		Kind	Variety	Class	Germn	Abnor.	Fresh	Hard	Dead	Pure Seed	Other Crop seed	Weed Seed	Innert matter	MOISTURE TEST (%)	100 SEED WEIGHT (gm)	Remarks
421	38	R38	Directorate of Agricultural Research (Lumbini Province), Khajura, Banke	Station	Wheat	Banganga	FS	96	2	0	0	2	98.5	0.0	0.0	1.5	12.3	5.4	
422	39	R39	Directorate of Agricultural Research (Lumbini Province), Khajura, Banke	Station	Wheat	NL 971	FS	98	0	0	0	2	95.3	0.0	0.0	4.7	12.1	3.7	
423	40	R40	Directorate of Agricultural Research (Lumbini Province), Khajura, Banke	Station	Wheat	Gautam	FS	92	5	0	0	3	97.5	0.0	0.0	2.5	12.3	4.8	
424	41	R41	Directorate of Agricultural Research (Lumbini Province), Khajura, Banke	Station	Wheat	Bijaya	FS	97	3	0	0	0	98.4	0.0	0.0	1.6	12.1	5.4	
425	57	R57	Jute Research Program, Itahari	Station	Wheat	Bijaya	FS	80	8	2	0	10	100.0	0.0	0.0	0.0	12.5	5.1	
426	58	R58	Jute Research Program, Itahari	Station	Wheat	Gautam	FS	82	7	0	0	11	100.0	0.0	0.0	0.0	12.4	4.2	
427	59	R59	Jute Research Program, Itahari	Station	Wheat	Aditya	FS	83	10	0	0	7	100.0	0.0	0.0	0.0	12.5	4.2	
428	61	R61	Jute Research Program, Itahari	Station	Wheat	Zinc 1	FS	80	13	0	0	7	100.0	0.0	0.0	0.0	12.4	4.3	
429	62	R62	Jute Research Program, Itahari	Station	Wheat	BL 4341	BS	79	16	2	0	3	100.0	0.0	0.0	0.0	12.6	4.1	
430	63	R63	Jute Research Program, Itahari	Station	Wheat	BL 4341	FS	75	13	1	0	11	100.0	0.0	0.0	0.0	12.5	4.1	
431	64	R64	Jute Research Program, Itahari	Station	Wheat	Zinc 1	BS	86	8	0	0	6	100.0	0.0	0.0	0.0	12.2	3.7	
432	65	R65	Jute Research Program, Itahari	Station	Wheat	Aditya	FS	69	22	0	0	9	100.0	0.0	0.0	0.0	12.1	4.5	
433	66	R66	Jute Research Program, Itahari	Station	Wheat	Zinc 1	FS	79	12	0	0	9	100.0	0.0	0.0	0.0	12.2	3.5	
434	67	R67	Jute Research Program, Itahari	Station	Wheat	Gautam	FS	77	13	0	0	10	100.0	0.0	0.0	0.0	12.2	4.3	
435	68	R68	Jute Research Program, Itahari	Station	Wheat	Bijaya	FS	87	7	0	0	6	100.0	0.0	0.0	0.0	12.5	5.3	
436	69	R69	Jute Research Program, Itahari	Station	Wheat	Bijaya	BS	86	5	0	0	9	100.0	0.0	0.0	0.0	12.6	5.0	
437	78	R78	Agricultural Reseach Station, Belachapi	Station	Wheat	Gautam	FS	94	2	1	0	3	89.6	Trace	0.0	10.4	12.1	4.6	
438	79	R79	Agricultural Reseach Station, Belachapi	Station	Wheat	Borlog 2020	FS	91	2	2	0	5	97.2	0.0	0.0	2.8	12	4.4	
439	80	R80	Agricultural Reseach Station, Belachapi	Station	Wheat	Bijaya	FS	93	2	2	0	3	94.5	0.0	0.0	5.5	12.1	5.1	
440	91	R91	National Rice Research Program, Hardinath	Station	Wheat	Gautam	FS	78	13	0	0	9	99.6	0.0	0.0	0.4	12.3	4.5	
441	92	R92	National Rice Research Program, Hardinath	Station	Wheat	Bijaya	FS	79	17	0	0	4	99.7	0.0	0.1	0.3	12.3	4.6	
442	93	R93	National Rice Research Program, Hardinath	Station	Wheat	NL 971	FS	89	7	0	0	4	99.7	0.0	0.0	0.3	12.1	4.3	
443	94	R94	National Rice Research Program, Hardinath	Station	Wheat	Bijaya	FS	81	0	2	0	17	91.5	0.2	0.0	8.3	12.3	4.4	
444	95	R95	National Rice Research Program, Hardinath	Station	Wheat	NL 971	FS	88	1	2	0	9	99.3	0.1	0.0	0.6	12.5	3.6	
445	96	R96	Directorate of Agricultural Research (Karnali Province), Dasharatpur, Surkhet	Station	Wheat	Surma	FS	92	2	1	0	5	99.7	0.0	0.0	0.3	12.5	4.1	
446	97	R97	Directorate of Agricultural Research (Karnali Province), Dasharatpur, Surkhet	Station	Wheat	Bheriganga	FS	95	1	2	0	2	98.0	Trace	0.0	2.0	12.3	4.7	
447	105	R105	Directorate of Agricultural Research (Karnali Province), Dasharatpur, Surkhet	Station	Wheat	Banganga	FS	92	1	0	0	7	98.2	Trace	0.0	1.8	12.3	4.6	
448	106	R106	Directorate of Agricultural Research (Karnali Province), Dasharatpur, Surkhet	Station	Wheat	Swargadwari	FS	94	1	1	0	4	99.3	0.0	0.0	0.7	12.5	5.4	
449	107	R107	Directorate of Agricultural Research (Karnali Province), Dasharatpur, Surkhet	Station	Wheat	WK 1204	FS	93	1	2	0	4	98.2	0.3	0.0	1.5	12.3	4.2	
450	108	R108	Directorate of Agricultural Research (Karnali Province), Dasharatpur, Surkhet	Station	Wheat	Khumal Shakti	FS	93	3	0	0	4	97.8	0.0	0.0	2.2	12.2	4.6	
451	111	R111	Horticulture Research Station, Kimugaun, Dailekh	Station	Wheat	N/A	FS	98	1	0	0	1	100.0	0.0	0.0	0.0	12.2	5.1	
452	112	R112	Horticulture Research Station, Kimugaun, Dailekh	Station	Wheat	N/A	FS	79	15	0	0	6	100.0	0.0	0.0	0.0	12.2	4.9	
453	113	R113	Horticulture Research Station, Kimugaun, Dailekh	Station	Wheat	N/A	FS	83	6	0	0	11	100.0	0.0	0.0	0.0	12.1	5.2	
454	114	R114	Horticulture Research Station, Kimugaun, Dailekh	Station	Wheat	N/A	FS	95	2	0	0	3	100.0	0.0	0.0	0.0	12	4.0	

S.No	E.N.	Lab No.	Name and Address of Sender		Kind	Variety	Class	Germn	Abnor.	Fresh	Hard	Dead	Pure Seed	Other Crop seed	Weed Seed	Innert matter	MOISTURE TEST (%)	100 SEED WEIGHT (gm)	Remarks
455	115	R115	Horticulture Research Station, Kimugaun, Dailekh	Station	Wheat	N/A	FS	95	2	0	0	3	100.0	0.0	0.0	0.0	12	5.8	
456	128	R128	Horticulture Research Station, Kimugaun, Dailekh	Station	Wheat	WK 1204	FS	89	5	0	0	6	100.0	0.0	0.0	0.0	12.1	5.7	
457	129	R129	Horticulture Research Station, Kimugaun, Dailekh	Station	Wheat	Bheriganga	FS	78	7	1	0	14	100.0	0.0	0.0	0.0	12.3	4.9	
458	130	R130	Horticulture Research Station, Kimugaun, Dailekh	Station	Wheat	Surma	FS	84	13	0	0	3	100.0	0.0	0.0	0.0	12.2	5.1	
459	131	R131	Horticulture Research Station, Kimugaun, Dailekh	Station	Wheat	Kautilya	FS	74	19	0	0	7	100.0	0.0	0.0	0.0	12.4	5.2	
461	169	R169	National Seed Science Technology Research Center, Khumaltar	Station	Wheat	Kautilya	FS	100	0	0	0	0	100.0	0.0	0.0	0.0	12	3.9	
464	216	R216	Directorate of Agricultural Research (Province 2), Parwanipur, Bara	Station	Wheat	BL 4341	FS	88	8	0	0	4	100.0	0.0	0.0	0.0	12.5	4.8	
465	217	R217	Directorate of Agricultural Research (Province 2), Parwanipur, Bara	Station	Wheat	Banganga	FS	91	7	0	0	2	100.0	0.0	0.0	0.0	12.6	3.6	
466	218	R218	Directorate of Agricultural Research (Province 2), Parwanipur, Bara	Station	Wheat	Bijaya	FS	92	4	0	0	4	100.0	0.0	0.0	0.0	12.2	4.6	
467	219	R219	Directorate of Agricultural Research (Province 2), Parwanipur, Bara	Station	Wheat	Gautam	FS	83	13	0	0	4	100.0	0.0	0.0	0.0	12.5	4.4	
468	220	R220	Directorate of Agricultural Research (Province 2), Parwanipur, Bara	Station	Wheat	Aditya	FS	85	8	0	0	7	100.0	0.0	0.0	0.0	12.5	4.3	
469	221	R221	Directorate of Agricultural Research (Province 2), Parwanipur, Bara	Station	Wheat	NL 971	FS	85	8	0	0	7	100.0	0.0	0.0	0.0	12.5	4.4	
470	222	R222	Directorate of Agricultural Research (Province 2), Parwanipur, Bara	Station	Wheat	NL 971	BS	93	3	0	0	4	100.0	0.0	0.0	0.0	12.2	4.3	
471	223	R223	Directorate of Agricultural Research (Province 2), Parwanipur, Bara	Station	Wheat	Bijaya	BS	91	5	0	0	4	100.0	0.0	0.0	0.0	12.2	4.2	

Note: *DoLS=Department of Livestock Services, JJGBFPPNU=Jana Jyoti Ghas Bue Falfull Pashu Palan Nursary Udyog, NSPC=Nepal Seed Production Center, DCDC=Dalchoki Community Development Committee, NWRP=National Wheat Research Programme, PKF=Pramila Krishi Farm, HRS=Horticulture Research Station, SKTPS& IPI=Shree Kalinchowk TPS & Improved Seed Production Industry, SKSS Ltd.=Siddhi Krishi Sahakari Sanstha Limited, NKSPSS Ltd=Naldhunga Krishi and Seed Production Sahakari Sanstha Limited, ARS=Agricultural Research Station, SQCC=Seed Quality Control Centre, RS=Ranjitpur Sample, Nepalgunj sample, PS=Proficiency Sample, BS=Breeder Seed, SKSS Ltd= Siddhi Krishi Sahakari Sanstha Limited, Bhaktapur, FS=Foundation Seed, CS=Certified Seed, IS=Improved Seed, HS=Hybrid Seed. Blue = Standard, Pink= Below standard.*

Annex 13. नियमित तर्फको बार्षिक बजेट र खर्चको विवरण आ.ब. २०८०/८१ (२०२३/२४)

चालु खर्च बजेट खर्च उप शिर्षक: ३१२४११०१३



नेपाल सरकार
कृषि तथा पशुपन्छी विकास मन्त्रालय
परिषद्
राष्ट्रिय बिउ विज्ञान प्रविधि अनुसन्धान केन्द्र, खुमलटार, ललितपुर
कार्यालय कोड नं : ३१२४१३४३५

आर्थिक विवरण

आ.व.: २०८०/८१

बजेट उपशीर्षक नम्बर: ३१२४११०१३
आयोजना/कार्यक्रम नाम: कृषि अनुसन्धान कार्यक्रम

खर्च/वित्तीय संकेत नम्बर / नाम	प्राथमिक तह		द्वितीय तह		शुरू बजेट / अधिकारी	संशोधन /रकमान्तर/श्रोतान्तर बाट पुरक		अन्तिम बजेट	निकासा	जम्मा खर्च	बाँकी बजेट	गत वर्षको खर्च
	स्रोत व्यहोर्ने	भुक्तानी विधि	स्रोत व्यहोर्ने	भुक्तानी विधि		थप	घट					
21111पारिश्रमिक कर्मचारी					६,२३५,०००.००	३८०,०००.००	०.००	६,६१५,०००.००	६,६१४,२८४.३०	६,६१४,२८४.३०	७१५.७०	०.००
1100001-नेपाल सरकार/प्रदेश सरकार	01-नगद				६,२३५,०००.००	३८०,०००.००	०.००	६,६१५,०००.००	६,६१४,२८४.३०	६,६१४,२८४.३०	७१५.७०	०.००
21121पोशाक					९०,०००.००	१०,०००.००	०.००	१००,०००.००	१००,०००.००	१००,०००.००	०.००	०.००
1100001-नेपाल सरकार/प्रदेश सरकार	01-नगद				९०,०००.००	१०,०००.००	०.००	१००,०००.००	१००,०००.००	१००,०००.००	०.००	०.००
21132महंगी भत्ता					२१६,०००.००	४,०००.००	०.००	२२०,०००.००	२१९,०००.००	२१९,०००.००	१,०००.००	०.००
1100001-नेपाल सरकार/प्रदेश सरकार	01-नगद				२१६,०००.००	४,०००.००	०.००	२२०,०००.००	२१९,०००.००	२१९,०००.००	१,०००.००	०.००
21134कर्मचारीको बैठक भत्ता					७,०००.००	०.००	०.००	७,०००.००	६,०००.००	६,०००.००	१,०००.००	०.००
1100001-नेपाल सरकार/प्रदेश सरकार	01-नगद				७,०००.००	०.००	०.००	७,०००.००	६,०००.००	६,०००.००	१,०००.००	०.००
21213ओगदानमा आधारित बीमा कोष खर्च					४४,०००.००	४,०००.००	०.००	४८,०००.००	४७,४००.००	४७,४००.००	६००.००	०.००
1100001-नेपाल सरकार/प्रदेश सरकार	01-नगद				४४,०००.००	४,०००.००	०.००	४८,०००.००	४७,४००.००	४७,४००.००	६००.००	०.००
22111पानी तथा बिजुली					१००,०००.००	०.००	०.००	१००,०००.००	९६,७९०.८५	९६,७९०.८५	३,२०९.१५	०.००
1100001-नेपाल सरकार/प्रदेश सरकार	01-नगद				१००,०००.००	०.००	०.००	१००,०००.००	९६,७९०.८५	९६,७९०.८५	३,२०९.१५	०.००
22112संचार महसुल					१००,०००.००	०.००	०.००	१००,०००.००	८३,९००.००	८३,९००.००	१६,१००.००	०.००
1100001-नेपाल सरकार/प्रदेश सरकार	01-नगद				१००,०००.००	०.००	०.००	१००,०००.००	८३,९००.००	८३,९००.००	१६,१००.००	०.००
22212इन्धन (कार्यालय प्रयोजन)					९४५,०००.००	०.००	०.००	९४५,०००.००	९४४,३५९.२६	९४४,३५९.२६	६४०.७४	०.००
1100001-नेपाल सरकार/प्रदेश सरकार	01-नगद				९४५,०००.००	०.००	०.००	९४५,०००.००	९४४,३५९.२६	९४४,३५९.२६	६४०.७४	०.००
22213सवारी साधन मर्मत खर्च					३२४,०००.००	०.००	०.००	३२४,०००.००	३२२,४९८.३४	३२२,४९८.३४	१,५०१.६६	०.००
1100001-नेपाल सरकार/प्रदेश सरकार	01-नगद				३२४,०००.००	०.००	०.००	३२४,०००.००	३२२,४९८.३४	३२२,४९८.३४	१,५०१.६६	०.००
22214बीमा तथा नवीकरण खर्च					४८,०००.००	०.००	०.००	४८,०००.००	४८,०००.००	४८,०००.००	०.००	०.००
1100001-नेपाल सरकार/प्रदेश सरकार	01-नगद				४८,०००.००	०.००	०.००	४८,०००.००	४८,०००.००	४८,०००.००	०.००	०.००
22221मेशिनरी तथा औजार मर्मत सम्भार तथा सञ्चालन खर्च					३००,०००.००	०.००	०.००	३००,०००.००	२९९,२८४.७१	२९९,२८४.७१	७१५.२९	०.००
1100001-नेपाल सरकार/प्रदेश सरकार	01-नगद				३००,०००.००	०.००	०.००	३००,०००.००	२९९,२८४.७१	२९९,२८४.७१	७१५.२९	०.००
22231निर्मित सार्वजनिक सम्पत्तिको मर्मत सम्भार खर्च					१५०,०००.००	०.००	०.००	१५०,०००.००	१४९,८६६.२५	१४९,८६६.२५	१३३.७५	०.००
1100001-नेपाल सरकार/प्रदेश सरकार	01-नगद				१५०,०००.००	०.००	०.००	१५०,०००.००	१४९,८६६.२५	१४९,८६६.२५	१३३.७५	०.००

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खर्च/वित्तीय संकेत नम्बर / नाम	प्राथमिक तह		द्वितीयक तह		शुरू बजेट / अख्तियारी	संशोधन /रकमान्तर/श्रोतान्तर घट पुरक		अन्तिम बजेट	निकासा	जम्मा खर्च	बाँकी बजेट	गत वर्षको खर्च
	स्रोत व्यहोर्ने	भुक्तानी विधि	स्रोत व्यहोर्ने	भुक्तानी विधि		थप	घट					
22291अन्य सम्पत्तिहरुको संचालन तथा सम्भार खर्च					६०,०००.००	०.००	०.००	६०,०००.००	५५,७४२.९०	५५,७४२.९०	४,२५७.१०	०.००
1100001-नेपाल सरकार/प्रदेश सरकार	01-नगद				६०,०००.००	०.००	०.००	६०,०००.००	५५,७४२.९०	५५,७४२.९०	४,२५७.१०	०.००
22311मसलन्द तथा कार्यालय सामाग्री					३००,०००.००	०.००	०.००	३००,०००.००	२९७,६४५.६५	२९७,६४५.६५	२,३५४.३५	०.००
1100001-नेपाल सरकार/प्रदेश सरकार	01-नगद				३००,०००.००	०.००	०.००	३००,०००.००	२९७,६४५.६५	२९७,६४५.६५	२,३५४.३५	०.००
22314इन्धन - अन्य प्रयोजन					७६,०००.००	०.००	०.००	७६,०००.००	५९,६४८.००	५९,६४८.००	१६,३५२.००	०.००
1100001-नेपाल सरकार/प्रदेश सरकार	01-नगद				७६,०००.००	०.००	०.००	७६,०००.००	५९,६४८.००	५९,६४८.००	१६,३५२.००	०.००
22315पत्रपत्रिका, छपाई तथा सूचना प्रकाशन खर्च					२६८,०००.००	०.००	०.००	२६८,०००.००	२३१,१५६.५०	२३१,१५६.५०	३६,८४३.५०	०.००
1100001-नेपाल सरकार/प्रदेश सरकार	01-नगद				२६८,०००.००	०.००	०.००	२६८,०००.००	२३१,१५६.५०	२३१,१५६.५०	३६,८४३.५०	०.००
22512सीप विकास तथा जनचेतना तालिम तथा गोष्ठी सम्बन्धी खर्च					७५९,०००.००	०.००	०.००	७५९,०००.००	७५३,८३७.५०	७५३,८३७.५०	५,१६२.५०	०.००
1100001-नेपाल सरकार/प्रदेश सरकार	01-नगद				७५९,०००.००	०.००	०.००	७५९,०००.००	७५३,८३७.५०	७५३,८३७.५०	५,१६२.५०	०.००
22521उत्पादन सामग्री / सेवा खर्च					४,१२०,०००.००	०.००	०.००	४,१२०,०००.००	४,११५,६४९.९६	४,११५,६४९.९६	४,३५०.०४	०.००
1100001-नेपाल सरकार/प्रदेश सरकार	01-नगद				४,१२०,०००.००	०.००	०.००	४,१२०,०००.००	४,११५,६४९.९६	४,११५,६४९.९६	४,३५०.०४	०.००
22611अनुगमन, मूल्यांकन खर्च					५१३,०००.००	०.००	०.००	५१३,०००.००	५१२,३८५.९३	५१२,३८५.९३	६१४.०७	०.००
1100001-नेपाल सरकार/प्रदेश सरकार	01-नगद				५१३,०००.००	०.००	०.००	५१३,०००.००	५१२,३८५.९३	५१२,३८५.९३	६१४.०७	०.००
22612भ्रमण खर्च					१,०९८,०००.००	०.००	०.००	१,०९८,०००.००	१,०९६,६५९.२५	१,०९६,६५९.२५	१,३४०.७५	०.००
1100001-नेपाल सरकार/प्रदेश सरकार	01-नगद				१,०९८,०००.००	०.००	०.००	१,०९८,०००.००	१,०९६,६५९.२५	१,०९६,६५९.२५	१,३४०.७५	०.००
22711विविध खर्च					५१,०००.००	०.००	०.००	५१,०००.००	५०,९८०.००	५०,९८०.००	२०.००	०.००
1100001-नेपाल सरकार/प्रदेश सरकार	01-नगद				५१,०००.००	०.००	०.००	५१,०००.००	५०,९८०.००	५०,९८०.००	२०.००	०.००
28143सवारी साधन तथा मेसिनर औजार भाडा					२५५,०००.००	०.००	०.००	२५५,०००.००	२४७,६५०.००	२४७,६५०.००	७,३५०.००	०.००
1100001-नेपाल सरकार/प्रदेश सरकार	01-नगद				२५५,०००.००	०.००	०.००	२५५,०००.००	२४७,६५०.००	२४७,६५०.००	७,३५०.००	०.००
जम्मा					१६,०५९,०००.००	३९८,०००.००	०.००	१६,४५७,०००.००	१६,३५२,७३९.४०	१६,३५२,७३९.४०	१०४,२६०.६०	०.००

स्रोतगत विवरण

1100001-नेपाल सरकार/प्रदेश सरकार	१६,०५९,०००.००	३९८,०००.००	०.००	१६,४५७,०००.००	१६,३५२,७३९.४०	१६,३५२,७३९.४०	१०४,२६०.६०	०.००
01-नगद	१६,०५९,०००.००	३९८,०००.००	०.००	१६,४५७,०००.००	१६,३५२,७३९.४०	१६,३५२,७३९.४०	१०४,२६०.६०	०.००
जम्मा	१६,०५९,०००.००	३९८,०००.००	०.००	१६,४५७,०००.००	१६,३५२,७३९.४०	१६,३५२,७३९.४०	१०४,२६०.६०	०.००

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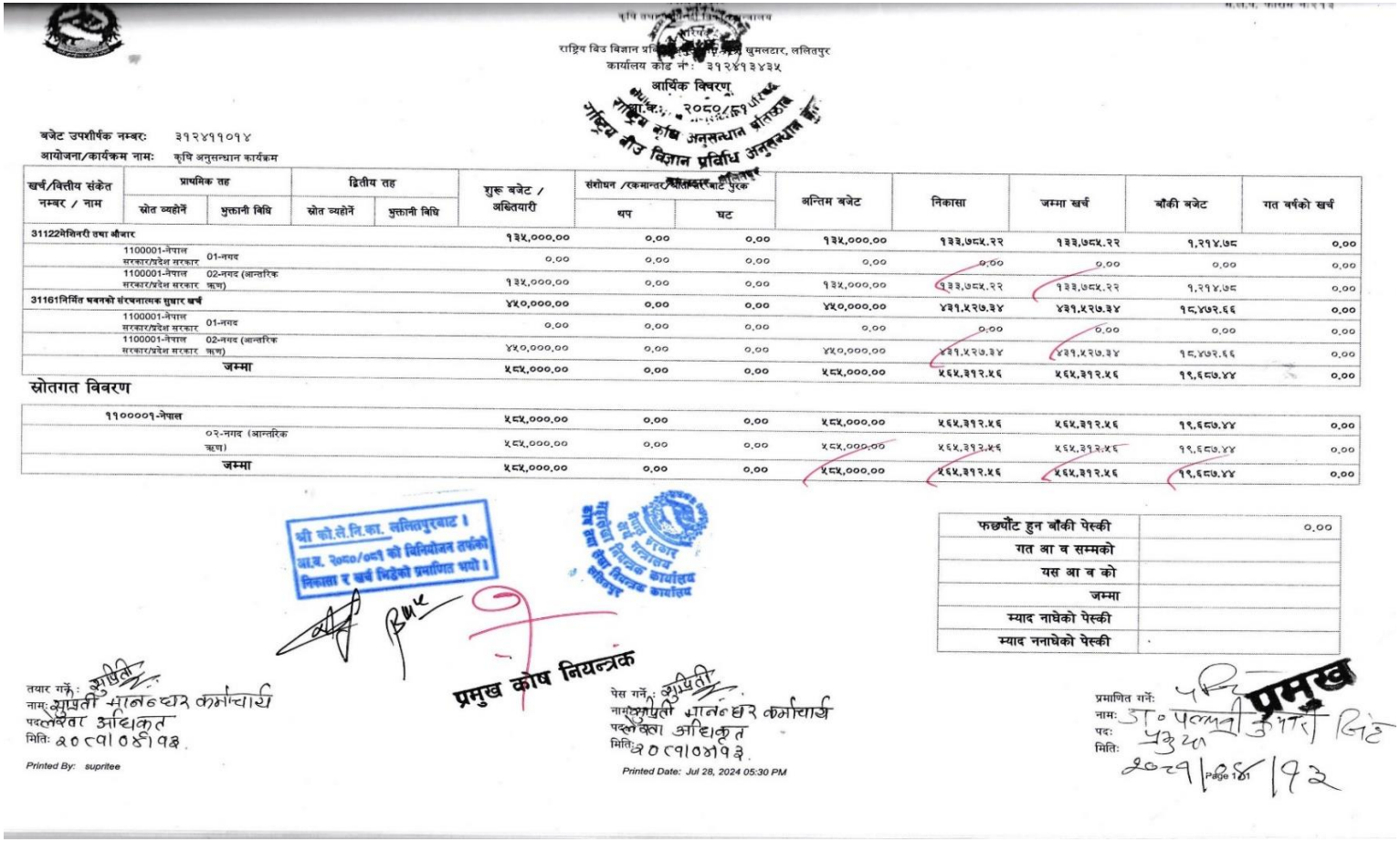
पूजीगत खर्च बजेट खर्च उप शिर्षक: ३१२४११०१४



राष्ट्रिय बिउ विज्ञान प्रविधि अनुसन्धान केन्द्र, खुमलटार, ललितपुर
कार्यालय कोड नं: ३१२४१३४३५

आर्थिक विवरण

राष्ट्रिय कोष अनुसन्धान बालुवाटार

बजेट उपशीर्षक नम्बर: ३१२४११०१४
आयोजना/कार्यक्रम नाम: कृषि अनुसन्धान कार्यक्रम

खर्च/वित्तीय संकेत नम्बर / नाम	प्राथमिक तह		द्वितीय तह		शुरू बजेट / अख्तियारी	संशोधन /रकमान्तर/थप/घट पुरक		अन्तिम बजेट	निकासा	जम्मा खर्च	बाँकी बजेट	गत वर्षको खर्च
	स्रोत व्यहोर्ने	भुक्तानी विधि	स्रोत व्यहोर्ने	भुक्तानी विधि		थप	घट					
31122मेशिनरी तथा औजार					१३५,०००.००	०.००	०.००	१३५,०००.००	१३३,७८५.२२	१३३,७८५.२२	१,२१४.७८	०.००
	1100001-नेपाल सरकार/प्रदेश सरकार	01-नगद			०.००	०.००	०.००	०.००	०.००	०.००	०.००	०.००
	1100001-नेपाल सरकार/प्रदेश सरकार	02-नगद (आन्तरिक ऋण)			१३५,०००.००	०.००	०.००	१३५,०००.००	१३३,७८५.२२	१३३,७८५.२२	१,२१४.७८	०.००
31161निर्मित भवनको संरचनात्मक सुधार खर्च					४५०,०००.००	०.००	०.००	४५०,०००.००	४३१,५२७.३४	४३१,५२७.३४	१८,४७२.६६	०.००
	1100001-नेपाल सरकार/प्रदेश सरकार	01-नगद			०.००	०.००	०.००	०.००	०.००	०.००	०.००	०.००
	1100001-नेपाल सरकार/प्रदेश सरकार	02-नगद (आन्तरिक ऋण)			४५०,०००.००	०.००	०.००	४५०,०००.००	४३१,५२७.३४	४३१,५२७.३४	१८,४७२.६६	०.००
	जम्मा				५८५,०००.००	०.००	०.००	५८५,०००.००	५६५,३१२.५६	५६५,३१२.५६	१९,६८७.४४	०.००

स्रोतगत विवरण

११०००१-नेपाल		५८५,०००.००	०.००	०.००	५८५,०००.००	५६५,३१२.५६	५६५,३१२.५६	१९,६८७.४४	०.००
	०२-नगद (आन्तरिक ऋण)	५८५,०००.००	०.००	०.००	५८५,०००.००	५६५,३१२.५६	५६५,३१२.५६	१९,६८७.४४	०.००
	जम्मा	५८५,०००.००	०.००	०.००	५८५,०००.००	५६५,३१२.५६	५६५,३१२.५६	१९,६८७.४४	०.००

श्री चो.ले.नि.का. ललितपुरबाट । आ.व. २०८०/०८१ को विनियोजन तर्फको निकासा र खर्च भिडेको प्रमाणित भयो ।

फछर्यौट हुन बाँकी पेस्की	०.००
गत आ व सम्मको	
यस आ व को	
जम्मा	
म्याद नाघेको पेस्की	
म्याद ननाघेको पेस्की	

प्रमुख कोष नियन्त्रक

तयार गर्ने: सुप्रीती
नाम: सुप्रीती भानेश्वर कर्माचार्य
पद: लेखा अधिकृत
मिति: २०८१।०४।१४

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पेस गर्ने: सुप्रीती
नाम: सुप्रीती भानेश्वर कर्माचार्य
पद: लेखा अधिकृत
मिति: २०८१।०४।१३

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प्रमाणित गर्ने:
नाम: डा० पल्लवी कुमारी सिंह
पद: प्रमुख
मिति: २०८१।०४।१२

प्रमुख

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Annex 14. राजश्व विवरण आ.ब. २०८०/८१ (२०२३/२४)

आम्दानीको श्रोत	जम्मा रकम (रु.)	कैफियत
बाली उत्पादन बाट	४०,५९५	बाली / बीउ उत्पादन बाट
प्रशासनिक बाट	२४,२००	बिभिन्न प्रशासनिक आम्दानी बाट प्राप्त रकम
बाली तथा बागबानी अनुसन्धान / सेवा आदि बाट	६१,२६३	सेवा नमुना र अनुसन्धान नमुना परिक्षण बाट प्राप्त भएको
कुल जम्मा	**१,२६,०५८**	

Annex 15. बेरुजु विवरण आ.ब.२०८०/८१ (२०२३/२४)

आर्थिक बर्ष	बेरुजु रकम (रु.)	कैफियत
आ. ब. २०७४/७५ देखि २०७५/७६ सम्म	८४,२२५	फछर्यौटको प्रक्रियामा रहेको
जम्मा बेरुजु	**८४,२२५**	