

A Report on

**“Market Information Study for Analyzing  
National Demand, Supply, Import and export  
Situation of Vegetable Seeds in Nepal”**



Submitted to

**Vegetable Seed Project (III)  
Centre for Environmental and Agricultural Policy  
Research, Extension and Development (CEAPRED)**

Submitted by

**Durga P Adhikari  
General Secretary, Seed Entrepreneurs' Association of Nepal (SEAN)**

**October, 2013**

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## ACKNOWLEDGEMENT

The market size of vegetable seed in Nepal is yet to be well analyzed based on survey research and study since past couple of years. Survey reports prepared in the past were published on speculated basis or quoted without any verification with actual market situation. Several donor funded projects and I/NGOs have been implementing vegetable seed production program in various remote areas of Nepal primarily aiming to raise income of the rural poor. Seed production of the open pollinated vegetable crop varieties has been carried out without assessing the actual market demand resulting into dumping of the produced seeds and loss of trust between seed growers and entrepreneurs. There is urgent need of seed market information on current situation to re-visit the production program in Nepal. The issues were seriously raised during several seed related formal and informal meetings by all the concerned stakeholders.

The study on **“Market Information Study for Analyzing National Demand, Supply, Import and export Situation of Vegetable Seeds in Nepal”** has been carried out through critical analysis of overall vegetable seed sector. Since I worked as Program Coordinator for more than five years and as the General Secretary for Seed Entrepreneurs’ Association of Nepal for more than a decade, I was involved in several seed related studies including market study carried out by several consultants/firms. However, I had not directly been involved with such a challenging task. Due to lack of appropriate personnel to carry out this market information study. Based on my working experiences with seed sector of Nepal, I took this responsibility to prepare a brief comprehensive report on the given subject.

Due to long open border with India, enormous quantity of seeds have been importing through informal way. Without realistic data from regular importer specially from bordering market places it would not have been possible to carry out this study. I am very much grateful to seed importers in the private sector, authorities in Custom Offices, National Plant Quarantine Program and offices who supported to provide relevant data on the import and export of vegetable and other seed and I would like to extend my sincere appreciation for their kind support and encouragement especially from Mr. Indra Raj Pandey, Team Leader and Dr. Ram Chandra Bhusal, Value Chain Specialist of CEAPRED for providing me the opportunity to prepare this report. Likewise, I would like to thank Ms. Subhechcha Shrestha, Monitoring, Evaluation and Knowledge Management Specialist and Ms. Ritu Limbu, Gender and Social Inclusion Officer for helping me in preparation of this report. Special thanks goes to Dr. H. K. Shrestha who worked with SEAN and generated information on seed market, he contributed a lot for this study. Finally, I would also like to thank Mr. Bal Krishna Upadhaya, Finance Manager and Mr. Dharma Raj Adhikari, Marketing Manager of SSSC for their contribution to prepare this report. It is hoped that informations presented in this report will contribute to the formulation and development of more responsive programs to support the growth and diversification of national seed system in Nepal.

Durga P Adhikari  
General Secretary, Seed Entrepreneurs’ Association of Nepal (SEAN)

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**ACRONYMS**

APPPC	Asia Pacific Plant Protection Commission
CBSP	Community Based Seed Production
CEAPRED	Center for Environmental and Agricultural Policy Research, Extension and Development
CO	Custom Office
CSTL	Central Seed Testing Laboratory
DADO	District Agricultural Development Office
DISSPRO	District Seed Sufficiency Program
DoA	Department of Agriculture
DoC	Department of Customs
DoCs	Department of Cooperatives
DPP	Directorate of Plant Protection
EDR	Eastern Dev. Region
FWR	Far-western Dev. Region
GoN	Government of Nepal
I/NGOs	International/Non-Governmental Organizations
ISTA	International Seed Testing Association
CDR	Central Development Region
MoAD	Ministry of Agriculture Development
MoC	Ministry of Co-operatives
MoF	Ministry of Finance
MT	Metric Tons
MWDR	Mid-western Development Region
n.a.	Not Available
NARC	Nepal Agriculture Research Council
NEAT	Nepal Economic, Agriculture and Trade Activity
NPQP	National Plant Quarantine Program
NSB	National Seed Board
NSC	National Seed Company Ltd.
OP	Open Pollinated
PC	Phytosanitary Certificate
PQ	Plant Quarantine
RSTL	Regional Seed Testing Laboratory
SAARC	South Asian Association for Regional Cooperation
SEAN	Seed Entrepreneurs' Association of Nepal
SQCC	Seed Quality Control Centre
SRR	Seed Replacement Rate
SSSC	SEAN Seed Service Centre
SSSP	Seed Sector Support Project
TEPC	Trade Export and Promotion Center
TIA	Tribhuvan International Airport
WDR	Western Development Region
WTO	World Trade Organization

## EXECUTIVE SUMMARY

Farmers all over Nepal share common concern on how to get the best seed and planting material for next season's crop. Seeds of high quality are prerequisite for a crop that is superior in quantity and quality. Over time, Nepal's seeds industry has undergone considerable transformation. Likewise in most regions of the world, the uptake of high-performing hybrid seeds from multinational seed companies has been increasing progressively in Nepal also.

Many governmental agencies, private sector, co-operatives and International/non-governmental organizations (**I/NGOs**) have been involved in national seed program for many years. Since 1980s, more than 20 donors funded projects and engaged in the promotion and development of seed sector in Nepal. In spite of enormous efforts, the situation is yet to be improved as anticipated by all concerned stakeholders. The volume of import has rather increased significantly during past few years, whereas export has almost non-existed.

In total; fifty seven crop species, including cereals, vegetables, grasses, oil seeds, legumes and others, were found to be imported mainly from India and other countries like China, Japan, Korea, Italy, Netherlands and France. The results of survey showed that 2,194 MT seeds including cereals (approx. 1,100 MT cereal seeds) were imported in FY 2068/69. Out of the total quantity i.e. 2,194 MT, 78% was found to be imported illegally by passing the custom offices or formal channels. Out of this total quantity imported 70% seed was imported from India and 30% from other countries. Therefore, it can be concluded that Nepal has increased level of dependency on import. The reasons might be unavailability of locally produced superior quality seeds, weak implementation of rules and regulations, complicated registration and custom clearance system, unavailability of domestically produced hybrids, high profit margin from imported seeds, weak research and breeding program from public sector etc.

In contrary to import, export was almost none during last few years; however, it was found to be moderately improved in 2068/69. The quantity of seed exported to India was 89 tons in 2068/69. The drop in export was mainly due to quality and price of seed. The quality was found to be decreased from its source centre to farmers' field. Therefore, the produce has become less competitive in the international market.

The record showed that there are 2,204 registered seed traders with National Seed Board (**NSB**). Out of them, about 50 traders, situated in the bordering areas with India, are largely involved in seed import from India. Moreover, out of total import of 2,194 MT, about 94% and 71% of seed has been illegally imported from China and India respectively in FY 2068/69. Hence, the data reference taken from the vegetable seed transaction in the Eastern Development Region showed that in total 213 varieties were found to be transacted in that area. In addition, between the registered and unregistered varieties of vegetable crops, about 25% varieties were found to be registered and rest 75% varieties were not registered at NSB. The imports of seeds are mainly from India and some other countries like China, Italy, Korea, Japan and Thailand. The import percentage seems to be on increasing trend in forthcoming years.

There are three systems of import/export prevailing in the border areas i.e. i) formal ii) semi-formal and iii) informal. The formal system consists of only importing/exporting of registered seeds by adopting formal channels. Similarly, the semi-formal system consists of importing/exporting unregistered seeds by adopting formal channels, and informal system consists of importing/exporting



of either registered or unregistered seeds adopting informal or unofficial channel. The informal channel is considered as the most vulnerable channels mainly in terms of limiting the growth of seed industry in Nepal.

The data of seed import through custom offices, plant quarantine and seed traders were found not uniform in the same year. The total quantity of illegally imported seed was found to be highest than the formal channel. This indicates that there was lack of co-ordination among different stakeholders as well as the system was not properly adopted while importing or exporting of seeds.

Most of the labs with plant quarantines offices are not able to perform the quarantine activities due to lack of trained manpower and adequate physical facility. Therefore, some custom offices have been ignoring them while clearing the custom. Due to lengthy quarantine procedure, custom offices usually do not have enough space to store the seeds so they usually prefer to complete the custom clearance process without quarantining the seeds and planting materials.

Due to complicated plant variety registration system; unfair and unhealthy plant quarantine and custom clearance; open border system; unavailability of varieties (particularly hybrids); weak monitoring and quality control system, un-harmonized rules and regulations have encouraged illegal import of seeds resulting in crop failures and low productivity.

## PART-1

### INTRODUCTION

The study on “**Market Information Study for Analyzing National Demand, Supply, Import and export Situation of Vegetable Seeds in Nepal**” has been carried out based on data of primary and secondary sources. Primary data were collected from major seed traders, custom offices and plant quarantine offices. The data presented in this study are estimates based on internal surveys; information gathered from various market places and published data. The seed export and import data is compiled from official statistics and published trade reports. While every effort has been made to ensure accuracy and to provide updated information but often in the absence of reliable data, such accuracy is not possible for many cases. SEAN will not accept any responsibility for the use of these statistics by others.

#### 1.1 Background

In Nepal, major areas for producing vegetable seeds are focused in mid and high hills. Major vegetable seed crops include radish, beans, peas, okra and coriander. High altitude is suitable for radish variety Tokinashi, cauliflower variety Kathmandu Local, carrot variety New Kuroda and Nantis, and Broad leaf mustard variety Marpha Chauda Pat Leaf. Current production potential of vegetable seed has been assessed at nearly 2,000 MT. Domestic market size is more than 1,900 MT; however, half of the total requirement is being fulfilled by import (SEAN, 2010). The seed requirement at the national level has been assessed for last three years period. In the year 2066/67 it was 1,850 MT; in the year 2067/68, it reached up to 1,900 MT; followed by 1,950MT in the year 2068/69 and while for the year 2069/70 it is estimated around 1,950 MT for all types of vegetable crops. A share of imported seeds was 628 MT which was worth of NPR 304.25 million in FY 2068/69 (DoC).

In traditional agriculture, seed business is largely through informal sources. In the formal system the public sector dominates the seeds of staple food crops where as the private sector focuses mainly on high value vegetable seeds. Nepalese seed business is observed as a core trading, however, handful seed companies for instance SEAN, Seed Service Centre (SSSC) is operating seed enterprise as it is involved in research, production, processing (value addition), and marketing of seeds with it's own brand. SSSC since last 12 years has been involved in production and marketing of vegetable seeds of nationally released varieties through its own marketing network. Research and development activities in private sector is still weak and in infant stage to develop new varieties, demanding serious attention of Nepal government and donor agencies for collaboration as Public Private Partnership (PPP) basis.

Presence of multinational seed companies in Nepal exist through importing houses. They are selling their variety, mostly F1 hybrids, in Nepalese market upon completion of variety registration process from NSB. Variety registration is legitimized and enacted by the National Seed Board under Seed Act of Nepal 1988 (amended on 2006). So, variety registration is compulsory before importing the seeds. Mostly F1 hybrid seeds of vegetable and cereals sold are imported mainly from India, Thailand, Japan, Korea, China and other countries. Significant amount of OP seeds are also imported from India. Therefore domestic seed companies have to compete with many imported seeds both in terms of quality and price. Cross-border import of sub-standard seeds makes domestic market distorted and at present beyond the monitoring capacity of SQCC. Farmers believe that all imported seed are of high quality based on attractive pouches and higher price as well. Such lack of quality awareness has

resulted into tough competition in the market. Most of the people engaged in the seed business are technically weak regarding the quality aspects of the seeds.

Nepalese seed market is also largely influenced by several factors, such as total crop surpluses or shortages, weather conditions, and demand for specific disease and/or pest resistant traits. In the years to come, likewise in other countries in the world, Nepalese seeds market is also projected to grow, driven by rising standards in farming, improved infrastructure, enhanced land reclamation, scientific development, and advanced management systems. Farmers in various parts of country are showing increased preference for improved seeds, and innovative high-yielding varieties.

Another important trend in the agriculture sector is the growing shift towards hybrid seeds. Several biotech companies have introduced hybrid seeds as well as biotech traits in these seeds to render them disease and environmental calamity resistant. Promoting the use of hybrid seeds has been considered an effort to address rising food demand. Increasing competition in the hybrid seeds market is likely to result in improved crop varieties, with increased productivity and tolerance towards severe environmental factors. In the forthcoming years, seed producers are expected to introduce a variety of hybrid seeds by technology licensing and partnering with each other. Demand for vegetable seeds in Nepal is therefore, expected to maintain steady growth in the coming years. The market is also likely to be shaped by a number of favourable factors, such as kitchen garden and growing commercial vegetable production for domestic as well as export to India as off season produces and expanding new uses of crops.

## 1.2 Objective

Main objective of this task is to assess and analyze the seed production and marketing situation of vegetable seeds under the SDC-Nepal funded Vegetable Seed Project (VSP-III Phase) entitled **“Market Information Study for Analysing National Demand, Supply, Import and export Situation of Vegetable Seeds in Nepal”**. At the end of the study, variety wise demand, supply and unit price situation will be assessed aiming to expand market and maximise profit through production, processing and marketing of superior quality seeds in Nepal and export market.

## 1.3 Scope of the study

This study focuses on the reviewing of vegetable seed market in general and export and import in particular. The study analyses the collected data from seed traders (**STs**), custom offices (**COs**), plant quarantine offices (**PQOs**). Moreover, the study highlights and identifies some current provisions made on the seed export and import market, some major problems and challenges associated with them. Finally, based on the observation some solution and measures are highlighted along with responsible organizations. Based on the available resources, a report was prepared with some recommendations for the growth and development of seed sector in Nepal.

## 1.4 Methodology

This study was carried based on the primary and secondary data. A questionnaire was developed for primary data. Primary data were received through telephonic interview with the major seed importers without disclosing the company details. Major central level organisations like DoC, NPQP, SQCC, TEPC were directly visited and data were gathered. The historical backgrounds; area, production and yield of crops, and seed production and requirements are based on the secondary data. The major

findings of the task are based on the primary and secondary data. Suggestions and recommendations from the stakeholders and participants from interaction meeting have been incorporated in the report.

### **1.5 Limitation of the study**

This study is just an assessment and not an indepth market survey. Respondents were selected only from SEAN membership list. It does not include the impact of the project. Due to budget limitation all seed trading firms could not be covered in the study. Not all vegetable varieties but only commercially produced and marketed varieties were considered which were potential and included in the project. During the data collection, database at most of the respondents were found unrecorded and very weak. Therefore, the data provides only indicative estimates.

## PART- 2

### FINDINGS OF THE STUDY

The study was conceptualised as an assessment. It has been carried out in major market centre of Nepal namely Kathmandu, Biratnagar, Janakpur, Birgunj, Hetaunda, Narayangarh, Butwal, Bhairahawa, Pokhara, Damauli, Nepalgunj, Doti, Dadeldhura, and Dhangadhi where SEAN has its member companies dealing with large portion of the vegetable seed market (producer/processor, stockist and wholesaler) in regular basis. Market data and analysis are derived from primary and secondary research. Company profiles are primarily based upon SEAN's member's domain.

Market centres along cross-country highway were selected and respondents were purposively identified. Likewise in previous assessment study, a total of 14 companies one from each location were interviewed through telephone based on the checklist (Annex 1) prepared for the study. All selected respondents are actively involved in seed marketing. Information on focused and other potential crops were generated like current demand, price and supply situation. While generating the required data, phone interviews and personal interviews were made and collected data were analysed using simple spread sheet. Results of the study are presented graphically and in tabulated form. Result and discussion chapter focuses more on production and marketing plan, future strategy based on the assessed data, and other relevant topics.

#### 2.1 Production status

The vegetable seed in the areas where there is no immediate market access for fresh produce has been considered as a high value, low volume essential agricultural input with increasing domestic demand and export potentiality. It has both the comparative and competitive advantage for the local markets as well as exports to nearby Indian markets and Bangladesh (AEC, July 2003 and AEC, 2004). The major vegetable seeds produced in Nepal include radish, onion, broad leaf mustard, cauliflower, cabbage, carrot, peas, beans, cress and tomato. **Table 1** provides a picture of major varieties of vegetable seeds and productions areas. Among these areas, Rapti Area (Rukum, Salyan, Rolpa and Pyuthan) in Mid Western Region is the highest contributor of vegetable seed production in the country. Rukum is the highest contributor among the districts.

The domestic production of vegetable seeds has been largely displaced across the production pockets (see **Table 1.**). The eastern hills production pockets have disappeared and been replaced by other cash crops. The only large vegetable seed production pockets that exist in Nepal are in Rapti area (especially Rukum and Salyan) and central hills around Kavre and Dolakha. The current production of vegetable seeds is estimated (in 2011/12), i.e., around 1000 tons.

**Table 1: Major Vegetable Seed Production Areas in Nepal and their Production Potentials**

Area	Major Seed Produced	Production Potential (MT)	Current Situation
KoshiHills: Dhankuta, Tehrathum, Bhojpur and Sankhuwasabha	Radish-40 Days, Broad leaf mustard-Manakamana, Peas-SL, Broccoli, Cauliflower-KTM, Cress, Turnip and Beans	150	Largely non-existent now, current focus on other cash crops such as tea, coffee, cardamom and ginger
Sarlahi, Mahottari, Rautahat and Bara	Okra, Chilli, Tomato, Brinjal, Gourd, Peas and Beans	90	Decreasing trend of vegetable seed farming, facing pressure of fresh vegetable farming as access to market centres exists
Makawanpur, Kathmandu, Bhaktapur, Nuwakot	Radish, Beans and Cauliflower	60	Shifted to fresh vegetables, production sites facing pressures of real estate
West (Lumle) Kaski, Parbat, Baglung and Myagdi	Tomato, Radish, Broad leaf mustard, Peas, Beans, Cress and Cucumber	150	Interactions indicate that around half or less than half of the seed mentioned may be currently produced
Rapti: Dang, Rukum, Salyan, Rolpa and Pyuthan	Radish-ME, Onion, Broad leaf mustard-MBL, Okra, Cauliflower-KTM, Peas, Beans and Carrot-NK	220	Rukum contributes to 75-80% of the production from this, status of other area are unclear
Mid West Area (other than Rapti): Dailekh, Surkhet and Jumla	Carrot, Radish-all season, Peas, Beans and Broad leaf mustard	65	Project led efforts exists at hills and mountain pocket areas
Far West Area: Baitadi, Dadeldhura, Achham and Doti	Radish-ME, Broad leaf mustard-K Red, Peas and Beans	75	Pockets developed in early and mid 2000s, production less than 1/4th of the reported potential
Other Areas: Mustang, Dolpa, Kavre, Dolakha, Sindhupalchok, Lamjung and Gorkha	Radish, Cauliflower, Cabbage Carrot, Onion, Beans, Tomato, Cucumber and Broad leaf mustard	190	In areas of Kavre and Dolakha pockets exists, which are being supported by project activities, areas of Mustang and Dolpa have largely been underutilised.

Source: SSSC, SEAN, CEAPRED and interactions with some seed companies

## 2.2 Institutional framework of the Nepalese seed sector

### 2.2.1 Involvement of major public institutions in the seed sector

The Ministry of Agriculture Development (MoAD) is the major seed regulatory institution working in the public sector for seed planning, co-coordinating and assuring the execution of policies in over all agriculture sectors. The National Seed Board (NSB), Seed Quality Control Centre (SQCC), Department of Agriculture (DoA), Department of Livestock Services (DoLS), Department of Cooperatives (DoC), Nepal Agricultural Research Council (NARC) and National Seed Company Ltd. (NSC) are some of the major organizations involved in seed sector.

**Table 2: Total released varieties of different crops by NSB in Nepal (SQCC, 2069)**

SN	Crops	Released	Registered	Total
1	Cereals	107	49	156
2	Legumes	34	1	35
3	Oil seeds	15	-	15
4	Industrial crops	9	-	9
5	Vegetables	44	252	296
	<b>Total</b>	214	302	516

**Table 3: Total registered varieties of imported vegetable crops in Nepal (SQCC, 2070)**

SN	Crops	Total Number (%)	Remarks
1	Vegetables	35	All the hybrids were registered at NSB as of 2070 (2013).
2	Varieties (H+OP)	294 (100)	
3	Hybrids	223 (76)	
4	OP	22 (14)	

## 2.2.2 Private sector

With enforcement of Seed Act 1988, it has boosted up the critical role of private sector seed industry in Nepalese agriculture. SEAN as the apex body representing the seed industry, engages, assists and partners with various governments' regulatory and scientific entities in favorable policy environment for the growth of the seed industry.

The Nepalese seed industry is undergoing wide ranging transformations which include an increasing role of private sector for bringing changes in regulatory frameworks which positively affect research, marketing and trade of seeds and planting materials. Private sector is playing a role of partner rather than advisory role to the public sector therefore, actively contributing to the policy development with the government to ensure that policies and regulations create an enabling environment. Major private sector involved in the national seed program are comprised of ccompanies and agro-vets, cooperatives and groups supported by various I/NGOs or donor funded projects like FAO-FVVSP/SDC and SSSP/DFID funded in the past and presently SDC funded VSP Phase-III, HVAP/IFAD, Seeds for Farmers/IFAD, NEAT Activity/USAID, UMN, MEDEP/UNDP etc.

**Table 4: Demand and supply situation of vegetable seeds in Nepal**

Year	Requirement (t)	Domestic supply (t)	Gap (t)
2005/2006	1,633	830	803
2006/2007	1,700	870	830
2007/2008	1,750	930	820
2008/2009	1,775	930	845
2009/2010	1,850	930	920
2010/2011	1,900	950	950
2011/2012	1,950	1,000	950
2012/2013	1,950	1,000	950

Source: Nepal Seed Market Study and Border Seed Trade Survey with India and China, September 2012 (Unpublished report, SEAN)

Above table clearly shows that there is steady growth in all requirement, supply and gap for last eight years. It is estimated that last two years remained stable in all cases and there seems no expansion in market of seeds. However, superior quality seeds of new varieties is of utmost importance to

increase productivity of vegetables as import of hybrids from overseas is increasing year by year. The domestic supply is fulfilled mainly from formal production and almost all are OPVs whereas, the gap is fulfilled mainly from import of both OPVs and F1 hybrid varieties. Out of 950 MT of imported varieties, the share of F1 hybrids is approx. 35 MT (3.7%). However, the value of hybrid seeds is estimated as equal to rest of all OPVs i.e. NPR 350 Millions.



## PART-3

### SEED ACT, REGULATION & POLICIES

#### 3.1 Prevailing seed policies and legislation mechanism

There are specific seed policies and legislations for the growth and development of seed sector in Nepal. Among all, the principle national law on seed is the Seed Act, 2045/1988AD (first amendment in 2064), which was enacted in 1988. The other important rules and regulations are National Seed Policy 2055 (**NSP**); Seed Regulation 2069; and Plant Quarantine Act and Regulations, which are considered as very important in import and export of seeds (**SQCC, 2000, 2067b; NPQP, 2064**).

##### 3.1.1 Seed Act and Seed Regulation

Nepal has enforced Seed Acts 2045 (amended in 2064), Seed Regulation 2069 and Seed Policy 2056. Based on the requirements of the WTO as member country, it has already modified the Seed Act 2045 in 2064. However, new Seed Regulation has recently been amended and approved from Government of Nepal on 14 Falgun 2069. It has covered several new dimensions of the seed industry specifically to registration of the seeds for import/export and marketing purposes.

##### 3.1.2 Plant Protection Act and Rules

The National Plant Quarantine Program (**NPQP**) of the DoA is responsible to implement the Plant Protection Act and Rules (**NPQP, 2064**). Theoretically, Phytosanitary Certificate (**PC**) is issued from the PQ Offices after thorough examination and proper treatment of exportable seeds. For importing seeds, the seed should be first registered at NSB. Then, based on their import permit, NPQP provides the import permit. For importation of seed, an application for import permit (**IP**) and PC should be submitted by the importer to NPQP together with required fees for the permit.

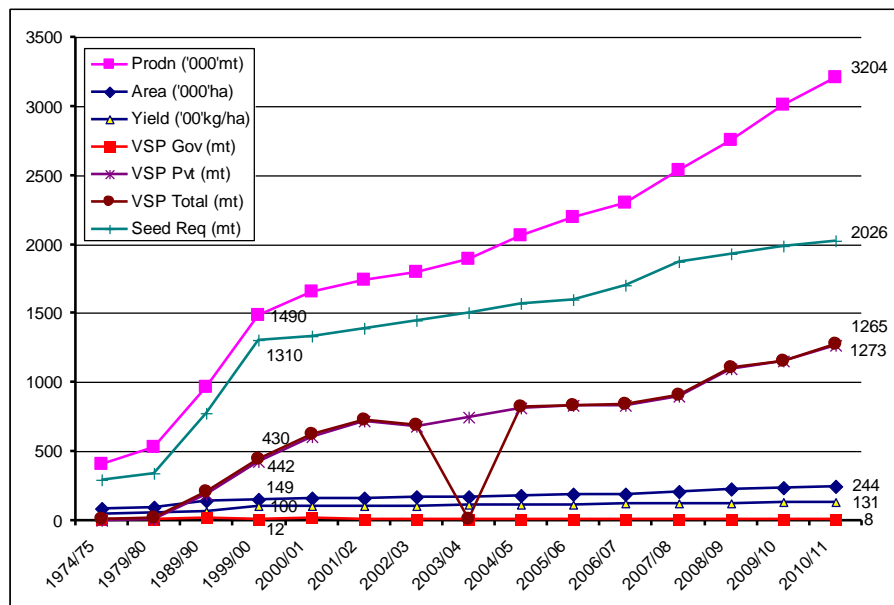
**PART-4**

**ANNUAL REQUIREMENT, DOMESTIC PRODUCTION, IMPORT AND EXPORTSITUATION OF VEGETABLE SEEDS**

**4.1 Annual requirement and domestic production**

The total seed production of vegetables has increased dramatically from 9 MT in 1974/75 to 1273mt in 2010/11(VDD). This remarkable change in vegetable seed sector was due to the increased involvement of private sector. Although the seed requirement has significantly increased by 2,026 MT, the domestic production has also increased by 1,273 MT during the same period. This increment was due to increase in the area under fresh vegetable. The vegetable production area has rapidly increased due to food habit of Nepalese people, promotion of tourism industry, export promotion of fresh vegetables to other countries and import of high yielding varieties of vegetable seeds from overseas, particularly hybrids in Nepal. It was through domestic supply as well as imports.

**Figure 1: Area ('000'ha), production ('000't), yield ('00' kg/ha), and seed requirement (t) of vegetable crops in Nepal during 1974/75 to 2010/11**



Source: Annual Progress Report of Potato, Vegetables and Spices Development Program (FY 2067/68), VDD, Khumaltar, Lalitpur and Nepal Seed Market Study and Border Seed Trade Survey with India and China, September 2012 (Unpublished report, SEAN)

Nepal has a diversified agro-climatic zone. Therefore, it could turn out to be the hub of quality seed production and distribution. However, due to lack of superior quality seeds (especially F1 hybrids which are absolutely of high yielding, uniform and short season) in Nepal, farmers are preferring imported seeds and demand for hybrid varieties is at increased rate. Recently, there are many points for the regular import of seeds, whereas very few of them are used for seed exporting purposes to India and other countries. Presently, there are thirty import points however; some of them may be export points. No record has been found towards formal export of vegetable seeds since last couple

of years. However, 87 tons of seeds were exported during FY 2068/69. In this section, annual requirement, domestic production and import from last three years are mentioned focusing on crop and varieties.

Although there was 2,026 MT annual requirement in FY 2010/11 as per the report from VDD in Figure 4 above, the actual annual requirement as per the Table 5 is observed as 1950 MT in FY 2069/70. The above table shows that the demand for seeds has increased by 50 tons each year. However, domestic production has slightly reduced each year and trend of import has increased steadily. Reduction in domestic production is mainly due to over production of some crop varieties seeds like peas, onion, cauliflower etc. The increased in import is mainly due to replacement of locally produced seeds by the imported varieties. It clearly shows that the import level is increasing each year which may ultimately replace domestic production for crops like radish, cauliflower, cabbage, tomato, cucumber and gourds.

**Table 5: Crop variety wise annual requirement, domestic production and import situation of vegetable seeds (in MT) during FY 2066/67- 2068/69**

(Figure in MT)

SN	Crop/Variety	FY 2066/67			FY 2067/68			FY 2068/69		
		Requirement	Production	Import	Requirement	Production	Import	Requirement	Production	Import
1	<b>Asparagus Bean</b>									
1.1	All varieties	150	30	120	160	30	130	170	35	135
2	<b>Radish</b>									
2.1	ME	70	80		70	90		60	80	
2.2	40-D	40	30		45	30		40	35	
2.3	PR	5	2		5	3		5	4	
2.4	Chetki	10		10	10		10	8		
2.5	All season+ MEWL	20	1	19	22	3	19	25	5	2
2.6	F1 Hybrids	4		4	8		8	10		10
3	<b>Broad leaf mustard</b>									
3.1	MBL	10	3.5		10	8		10	12	
3.2	KBL	4	4		4	4.5		5	6	
3.3	KRL	2	1		2	1.2		2	1.5	
3.4	Manakamana	1	0.5		1	0.5		1	0.5	
3.5	Imported	0.2		0.2	0.3		0.3	0.3		0.3
4	<b>Cauliflower</b>									
4.1	All OPVs	5	4	1	5.5	6	1	5	5	0.5
4.2	F1 Hybrids	5		5	5.5		5.5	6		6
5	<b>Cabbage</b>									
5.1	All OPVs	3	0.5	2.5	3	0.3	2.7	2.5	0.3	2.2
5.2	F1 Hybrids	5		5	5.2		5.2	5.5		5.5
6	<b>Broccoli</b>									
6.1	F1 Hybrids	0.3		0.3	0.35		0.35	0.35		0.35
6.2	GS	0.2	0.2		0.2	0.3		0.5	0.5	
7	<b>Carrot</b>									
7.1	NK	2	0.8		2.5	1.1		3	1.5	
7.2	Nantees	0.5	0.05	0.45	0.5	0.075	0.42	0.5	0.075	0.425
7.3	Imported OPVs	5		5	6.5		6.5	7.7		8
7.4	Imported F1 Hybrids	0.5		0.5	0.5		0.5	0.7		0.7
8	<b>Beans</b>									
8.1	4 Season	80	50		85	60		90	70	
8.2	Trishuli	25	15		25	15		25	20	
8.3	Rajma/Bush Bean	175	175		180	180		190	190	

SN	Crop/Variety	FY 2066/67			FY 2067/68			FY 2068/69		
		Requirement	Production	Import	Requirement	Production	Import	Requirement	Production	Import
4.3	Boroad Bean	10	7		12	10		13	10	
9	<b>Peas</b>									
9.1	Sikkime	80	150	10	80	60	50	90	75	50
9.2	Arkel+Aajad+other var	200	20	180	210	20	190	220	20	200
10	<b>Swiss Chard</b>								0.5	
10.1	FHJ	2	1		2	0.5		2	0.5	
11	<b>Tomato</b>									
11.1	All OPVs	3	2.5	0.5	3	2.5	0.5	35	3.7	0.2
11.2	F1 Hybrid	0.5	0.04	0.44	0.55	0.060	0.49	0.6	0.1	0.5
12	<b>Cress</b>									
12.1	Local/Indian	15	6	9	18	7	1	20	8	1.2
13	<b>Spinach</b>									
13.1	Patane/Indian	12	3	9	12	4	8	12	5	7
14	<b>Cucumber</b>									
14.1	Bhaktapur	4	4.5		4	4.6		3.5	4	
14.2	Kusule	0.3	0.2		0.3	0.2		0.3	0.2	
14.3	F1 Hybrid	1		1	1.2		1.2	1.4		1.4
15	<b>Onion</b>									
15.1	Red Creole	8	8		9	12		8	10	
15.2	Nasik/imported	20		20			18			20
16	<b>Okra</b>									
16.1	F1 Hybrid	1		1	2		2	2.5		2.5
16.2	Arka Anamika/all OPVs	175	15	160	180	15	165	185	20	165
17	<b>Bitter Gourds</b>									
17.1	All OPVs	10	1	9	11	1	10	12	0.5	11.5
17.2	F1 Hybrid	1		1	1.5		1.5	2		2
18	<b>Sponge/ridge gourd</b>									
18.1	All OPVs	3.5	0.5	30	3.7	0.5	3.2	3.7	0.7	3
18.2	F1 Hybrid	0.7		0.7	0.8		0.8	1		1
19	<b>Bottle Gourd</b>									
19.1	PSPL	0.5	0.1	0.4	0.5	0.2	0.3	0.5	0.1	0.4
19.2	F1 Hybrid	1		1	0.12		1.2	1.5		1.5
20	<b>Fenugreek</b>									
20.1	Local	10	9		11	11		12	10	

SN	Crop/Variety	FY 2066/67			FY 2067/68			FY 2068/69		
		Requirement	Production	Import	Requirement	Production	Import	Requirement	Production	Import
21	<b>Summer Squash</b>									
21.1	Squash-Grey Zucchini	2	0.1	1.9	0.2	0.1	1.9	2.2	0.050	21.50
21.2	Pumpkin-Local	3	2	1	0.35	2.2	1.3	3.7	2.2	15
21.3	Pumpkin-F1 Hybrid	0.5	0.5		0.6		0.6	0.6		0.6
22	<b>Turnip</b>									
22.1	PTWG/Red	2	1	1	2	0.7	1.3	2	1	1
23	<b>Chilli</b>									
23.1	All OPVs	2	0.2	1.8	1.7	0.3	1.4	1.7	0.2	1.5
23.2	F1 Hybrid	0.5		0.5	0.65		0.65	0.7		0.7
24	<b>Coriander</b>									
24.1	All OPVs	50	4.5	45	55	5	50	65	5	60
25	<b>Brinjal</b>									
25.1	All OPVs	1	0.2	0.8	1.1	0.2	0.9	1.1	0.2	0.9
25.2	F1 Hybrid	0.3		0.3	0.3		0.3	0.35		0.35
26	<b>Melon</b>									
26.1	F1	0.3		0.3	0.35		0.35	0.4		0.4
	<b>Sub total</b>	<b>1243.8</b>	<b>633.89</b>	<b>661.11</b>	<b>1290.65</b>	<b>590.53</b>	<b>703.01</b>	<b>1348.05</b>	<b>643.34</b>	<b>719.91</b>
27	Other OPVs+Hybrids	606.2	484.96	121.24	609.35	487.48	121.87	601.95	401.56	120.39
	<b>Total</b>	<b>1850</b>	<b>1118.85</b>	<b>782.35</b>	<b>1900</b>	<b>1078.01</b>	<b>824.88</b>	<b>1950</b>	<b>1044.90</b>	<b>840.29</b>

Source: Informal Market Survey, SEAN (2012)

## 4.2 Current seed import and export systems/channels

Based on the research observation, import and export of seeds are carried out using three different seed marketing systems/channels, such as legal, semi-legal and illegal. They are briefly described hereunder:

### 4.2.1 Official system/channel

The official system/channel is also known as legal or formal channel. In this system, seeds of registered kinds and varieties are either imported from other countries by importers or exported to other countries by exporters. The main purpose of this official system is i) seed import/export system totally adopts the government rules and regulations, ii) follows regulation of financial or revenue generating procedure, and iii) ensures entry of designated diseases, pest and weed free seeds and planting materials. In this system, taxes paid by the tax payers are materialized by the plant quarantine and custom offices. Nowadays, little amount of seeds are imported/exported adopting this channel, particularly; third countries' seeds are imported rather than Indian seeds. Most of the importers in this category are located in Kathmandu valley, whereas, other type of seed traders are situated with Indian border.

### 4.2.2 Unofficial system/channel

The unofficial import/export system is also known as illegal, informal or unregistered system/channel. In this system, unregistered seeds and/or registered seeds are imported/exported by seed traders/farmers/agents/individual in Nepal. Provision of import processes for seed import from India tends to become impractical (Paudel, 2010). There is wide gap between the theoretical basis and practice. It is because the importer, who has not placing purchase order, has also been importing seed very easily. Seed importers/exporters are not willing to adopt formal channel to save tax money and escape from administrative procedures. This system of import/export is considered as more vulnerable in terms of seed quality and cheating taxation. Majority of the Indian seeds are either imported or exported from/to India using this system. Due to open border system and other factors this system has been booming up in Nepal for a long time. For example, one truck load seed, either OP or Hybrid requires a tax Rs. 200.00. Nowadays, large volume of seeds is imported adopting illegal channels, around 76% in Nepal (Table 5).

**Table 6: Seed import / export by different importers using custom and plant quarantine offices in 2068/69**

Stakeholders	Import-2068/69		Export-2068/69	
	Quantity (MT)	Value (Rs.'000')	Quantity (MT)	Value (Rs.'000')
COs (1)	475	837015	72	28824
PQOs (2)	1295	387271	50	0
STs (3)	2194	841964.491	89	6322
2-1	820	-449744	-22	-28824
3-1	1719	841127.476	17	-22502
3-2	899	841577.220	39	6322
% of 2-1	63	-116	-44	0

Stakeholders	Import-2068/69		Export-2068/69	
	Quantity (MT)	Value (Rs. '000')	Quantity (MT)	Value (Rs. '000')
% of 3-1	78	100	19	-356
% of 3-2	41	100	44	100
Note: COs = Custom Offices; PQOs = Plant Quarantine Offices; STs = Seed Traders				

Source: *Nepal Seed Market Study and Border Seed Trade Survey with India and China, September 2012 (Unpublished report, SEAN)*

Nowadays, small quantity of seeds of rice, wheat and vegetables are being exported to India through informal channels. The data prepared and published by COs and PQs does not differentiate how much quantity of vegetable seeds and cereals seeds have been exported categorically. Such practice is not beneficial in terms of seed trade between two countries. Therefore, this type of informal trade has to be formalized by enforcement of clear policies related with import and export of seeds and planting materials between two countries with harmonization of these policies in the Asia and Pacific region.

#### 4.2.3 Vegetable Seed Export from Nepal and Market Access Barriers

Due to the variety of agro-climatic regions and fertile soils, Nepal has the potential and also produces a wide variety of good quality vegetables. Vegetable seeds are not only one of the high value agricultural produce but are also a major input in the vegetable production. As indicated earlier, the major vegetable seed that is being produced in Nepal is Mino early variety of Radish and it used to be exported in countries like Bangladesh and India.

#### 4.2.4 Market access barriers for vegetable seed exports (Tariff barriers)

Neighbouring markets: Bangladesh has bound its tariffs for vegetable seeds (HS Code 120991) at the highest level compared to others, i.e., 200 per cent, followed by India and Pakistan (100 percent), Sri Lanka (50 percent), and China (zero percent). In the case of applied tariffs, India maintains the highest tariff (14.40 percent), followed by Pakistan (10 percent). Others have maintained zero percent tariffs. Bangladesh maintains 0.3 percent ODC.

Other major international markets: The U.S.A., the EU, Canada, Japan, Republic of Korea, Australia and Hong Kong do not have high tariff on vegetable seeds. Their bound and applied tariff rates are encouraging for the exporters of vegetable seeds, as it ranges from 0 to 8.3%. Japan and Republic of Korea do not have any tariff (both applied and bound), however, these countries can impose tariffs under Special Agricultural Safeguards (SSG).

However, incidences of non-tariff barriers imposed by various countries have been reported. These non-tariff measures can range anywhere from Specific Limitations on Trade, Quotas and Licenses, Customs and Administrative Entry Procedures, Testing/ Certification, Standards, Export subsidies, Countervailing duties, and Charges on imports (*Source: A Report on Value Chain Analysis of Vegetable Seeds in Nepal*)



### 4.3 Import situation of seed

Despite of multifold increment of seed production in Nepal, many seed traders have been importing different kind of seeds from different countries due to shortage of modern high yielding varieties specially hybrid seeds in a domestic market. Many seed traders and commercial growers prefer to use imported seeds. Most of these observations were highlighted previously by **SSSP and SEAN**.

A look at the data available for the year 2011/12 indicates that for vegetables such as cabbage, carrots, coriander, onion, spinach, tomato and zucchini; Nepal is very much dependent on imports (see Table 7). It is to be noted that most of these are introduced varieties of new vegetable crops in Nepal during the process of modernisation of agriculture in Nepal. These figures have been based on demand figures for the year 2011/12, which was considered to be over 25% less than current demand and at times when domestic seed production was at its heights.

**Table 7: Share of Domestic and Imported Seed in the Nepalese Market for Selected Crops in (2011/12)**

Seed Crop		Supply Share %		
Season	Crop	Domestic	Imported	
		Open Pollinated	Hybrid	Open Pollinated
Winter	Cabbage	2	85	13
	Carrot	20	40	40
	Cauliflower	46	42	12
	Coriander	2	20	78
	Onion	24	5	71
	Peas	85	0	15
	Spinach	45	15	40
Summer	Sponge Gourd	33	20	47
	Tomato	40	50	10
	Zucchini	5	60	35

*Source: Informal Market Survey, SEAN, 2012*

Nepal is seen to be comparatively less dependent on imports for popular indigenous vegetables such as varieties of peas, cowpeas, radish, cucurbit crops, varieties of beans and Broad leaf mustard. Interactions at the field levels and during the study indicate that due to the porous border with India many of the “hand carried” seeds and/ or directly delivered seeds (to seed traders) could also have “accommodated” as domestic production over the years. As most of the domestic production is calculated based on “reported” data by the sellers or producers actual domestic production or imports that are accommodated into domestic production may never be known.

### 4.4 Involvement of Seed Traders (STs) in seed import

In total, there are 2204 registered seed traders (as of March 2013) at NSB. Among them more than 60 were involved in import business and only 12 seed traders were involved in export business. They were situated in different border regions of Nepal and Kathmandu valley. Out of 62 seed traders; Eastern Dev. Region (**EDR**), Central Dev. Region (**CDR**), Western Dev. Region (**WDR**), Mid-western Dev. Region (**MWDR**) and Far-western Dev. Region (**FWR**) consist of around 15%, 50%, 6%, 105 and 19% seed traders respectively (**Table 6**). Based on the field observations, some recommendations are suggested for the growth and development of seed sectors in Nepal.

**Table 8: Region wise import of different crops seed from other countries in 2068/69**

Development Regions	OP		HB	
	Quantity (t)	Value ('00000'Rs.)	Quantity (t)	Value ('00000'Rs.)
Eastern (EDR)	18	44	147	326
Central (CDR)	481	1312	1308	5773
Western (WDR)	32	60	9	14
Mid-western (MWDR)	22	278	102	317
Far-western (FWDR)	60	104	13	191
<b>Total</b>	<b>614</b>	<b>1798</b>	<b>1580</b>	<b>6622</b>

Source: Nepal Seed Market Study and Border Seed Trade Survey with India and China, September 2012 (Unpublished report, SEAN)

Based on the results of this survey, about 57 crops, including OP and HB seed have been imported from other countries in Nepal. Based on the quantity of OP seeds; okra, onion, cowpea, coriander, spinach, radish, peas and beans were found to be the most important crop seeds in Nepal. Similarly, in the case of hybrid seeds of vegetables; tomato, cucumber, cauliflower, cabbage, radish, okra and coriander were found to be the most important crops in Nepal.

The quantity and value of open pollinated seed varieties were 615 MT and 1803 ('00000'Rs.) respectively in 2068/69 (**Table 6**). Similarly, the quantity and value of hybrid seed varieties were 1579 MT and 6616 ('00000'Rs.) respectively in the same year (**Table 6**). Among different regions, CDR ranks in the first position in quantity and value of OP seed followed by Far-western FWR, WDR, MWDR and EDR respectively in its quantity, and MWDR, FWDR, WDR and EDR respectively in its value in 2068/69. Similarly, CDR ranks in the first position in quantity and value of hybrid seed followed by EDR, MWDR, FWDR and WDR respectively in both quantity and value of seed (**Table 6**).

The total quantity and values of imported vegetable seeds (OP and HB) were **969** MT and Rs. **634,384,462** respectively in 2068/69. If it is compared between OP and hybrids, OP ranks in the first position in quantity and in the second position in values and vice-versa. The quantity and value of imported OP seed were 457 MT and Rs.160,734,865 respectively, and hybrids were 512 MT and Rs.473649597 respectively. The vegetable seeds import has dramatically increased from 2002 to 2068/69. The quantity of vegetable seed import was 213 MT, 680MT and 968 MT in 2002, 2009 and 2068/69 respectively.

#### 4.5 Involvement of custom offices in seed import

In total, 31 custom offices are in operation in different border regions of Nepal with India and China (**Figure 1**). one is situated at Tribhuvan International Airport, Kathmandu; 20 at Nepal-India border regions from east to west, mainly terai region of Nepal; 9 at Nepal-China border region from east to west at Himalayan regions and one at Koteshwor, Kathmandu (**DoC, 2068**).

Based on recently updated information of 2068/69, the major crops seed imported through these customs were cereals (maize and rice); vegetables (tomato, radish, pumpkin, onion, watermelon, okra, brinjal, sponge gourd, chilli, cauliflower and followed by other vegetables); Oil seeds (mustard, sarson, sunflower, sesame and rape seed); grass (sudan, barseem, oat, bajra and rye) and fiber

crops (jute and cotton). As per the database of the custom offices, it was very difficult to separate different crops; varieties (open pollinated and hybrids). Therefore, the quantity mentioned in this report is in an aggregative form. There is a row of differences between total (compiled based on the recent data) and DoC data. The positive value denotes that DoC value is higher than the total value and vice-versa. In this survey, it was trying to compile data from DoC and CO sources in the field. All these custom data are considered as independent data, therefore, it considered as a basis for further data analysis with seed traders and plant quarantine data. The import of seed through custom has sharply reduced from 2,518 MT (Rs.189311300) in 2066/67 to 474.5 MT (Rs.831715100) in 2068/69. This reduction in quantity was about 431%, where as the increment in the value by about 339% in 2068/69. The reasons of this reduction might be i) the database of custom offices are not managed properly, ii) increasing the amount of illegal import, iii) importation of high value and low volume crop seed, iv) import of seed in the name of food grains and v) a customary or an influencing factor of some seed traders to hide the actual quantity of seed. Among all customs, Biratnagar is considered as the major import point (155MT) followed by Mechi (145 MT), Jaleswor (31MT), Birganj (23MT), Krishnanagar (MT), etc.

In Nepal, the custom clearance service is considered as very weak, therefore around 64% custom offices ignore phytosanitary certificate together with import permit during custom clearance. Moreover, a discussion was also made with custom officials about the coordination between custom and plant quarantine offices. As already mentioned in the previous sections, the custom officials had no knowledge and experiences in seed quality control and management. Therefore, 100% custom officials are very interesting to take seed related training as soon as possible. Major problems and issues related with custom offices are explained in depth and some recommendations are also made for its improvement.

#### **4.6 Involvement of plant quarantine offices in seed import**

In total, 14 custom offices were consulted, including NPQP, Kathmandu and PQCP, TI Airport, during the study from east to west. Their database system was found weaker than custom database. In total, the quantity of seed imported by importers through plant quarantine system has moderately decreased from 2587 MT in 2066/67 to 2,281 MT in 2068/69. However, the value has dramatically increased from Rs. 48,001,200 to Rs.388,513,000 in the same years. The decrease in seed import through adopting this system might be importation of seed by adopting illegal channel. It can be assumed that the amount of illegal import has progressively increased in Nepal. The reasons might be import of seeds as grain commodities.

Similarly, some discussion was made about the quarantine system. Out of total PQ offices, only 42% laboratory received phytosanitary certificate and seed testing reports with seed lot. However, import permit has been providing without phytosanitary certificate also. Around 50% PQ offices have been issuing import permit without it. Similarly, based on their data some PQ offices (25%) have issued import permit for the unregistered seeds also. It indicates that there is higher risk of importing substandard seeds with harmful seed borne pathogens, weed seeds and insect-pests. PQ is established to control the importation of these problems with seed and plant materials. However, many of them have been ignoring the rules and regulations while issuing import permit.

There were some remarkable events, such as some of the PQ officials are directly or indirectly involved in seed trade, have been issuing import permit directly without checking the imported

materials. This would have created a critical problem for seed sector of Nepal in general and for the NPQP as well as SQCC in particular evaluating the quality of commonly imported seeds. Some of the common problems faced by almost all of the PQ offices and custom offices are listed with some recommendations in the conclusion and recommendation part of the study.

#### 4.7 Export situation of seed

Nepal has exported around 87 MT (Rs.6234000) seed to India in 2068/69. In comparison to imported quantity, it was very nominal i.e., around 14.42 %. The data of COs, PQs and STs were not uniform due to lack of coordination between custom and plant quarantine offices while implementing the existing rules and regulations. The amount and value of export varies among stakeholders. The total amount of seed exported through COs was 72 MT (Rs. 28,824,000), 50 MT with PQOs and 87 MT (Rs. 6,234,000) with STs. It indicates that there are some hidden factors affecting seed export. The differences between CO and PQO indicate that there might be some coordination problem with them. Hence, customs have been ignoring PQ offices while exporting the seeds. There might be several other factors affecting to lead this unhealthy export situation in Nepal. Many seed traders, agents and individual farmers are also interesting to export Nepalese seed to India. They also prefer to adopt illegal channel, which is the most common practice in between Nepal and India. In export, the difference value between COs and STs was 17%. Therefore, this value is considered as illegally exported value.

Due to certain inherent climatic and geographical difficulties and conditions in India, Bangladesh and other countries having similar barriers there exists wide scope of seed production and marketing potential, particularly in vegetable seeds, for Nepal (**Gautam, 1994**). Hence, the neighboring big cities and border markets of North India in particular and Dhaka in Bangladesh found to be more potential for Nepalese seed export market (**Gautam, 1994**). Therefore, export of high value seeds to countries other than India started in 1986/87 (**Gautam, 1994**). During that time Nepal started to export some flower seeds to Japan and other countries, however the export volume couldn't increase subsequently. It was due to decrease in the quality and increase in the price of Nepalese seed in the market. For example, the Mino-early variety of Radish costs around Rs.210 per kg in Nepal, that costs around Rs.180 per Kg in Bangladesh imported from New Zealand. Therefore, Nepalese seed couldn't compete with other countries' better quality and lower priced seed. For exporting seed, Nepalese seed should fulfill some requirements of importing countries, such as germination, physical quality, moisture content, seed health and phytosanitary certificate. For exporting seeds to other countries, Nepalese seed should pass the plant quarantine and custom clearance system. Sometimes, it is also complicated for them. Therefore, traders are willing to sell seed to Indian farmers in Nepal. Mainly, custom agents are involved in such case. In this section, the involvement of seed traders, custom offices and plant quarantine offices are briefly discussed with their seed export data.

#### 4.8 Involvement of Seed Traders (STs) in seed export

In Nepal, there were very few seed traders who were involved solely in seed exporting business. Those seed traders mostly used to export through informal channel. Only a few quantities of seeds were exported via formal channel. Recently, out of total seed traders, there are only 12 seed traders mainly from bordering areas involve in exporting of seeds by their own efforts. Among these, three traders were situated in Eastern region, seven in Central and two traders in the Mid-western

development regions respectively. The traders were consulted by the researchers to understand their business experience, their major problems/issues and to collect seed import/export data for the study. Based on the results of this survey, only seven crops seed have been exported to other countries. Some OP seeds of cereals (Paddy and wheat), vegetables (brinjal, radish, and broad leaf mustard) were found to be the most important exportable crop seeds from Nepal to India. Similarly, some quantity of hybrid seeds of tomato and cauliflower (first imported seed) were also exported to India.

The total quantity and value of seed varieties exported to India were 89MT and 632 ('0000' Rs.) respectively in 2068/69. Among different crop seed, wheat ranks in the first position followed by rice and vegetables. The quantity of wheat exported to India was 61MT and 245('0000'Rs) in 2068/69). Similarly, the quantity of rice was 27MT whereas the value was 105 ('0000' NRs). Similarly, the quantity of vegetable was 0.56MT and 282.6 ('0000' NPR). There were mainly 3 development regions, where seed importers are active MDR ranks in the first position in quantity and value of seed followed by EDR and MWDR.

Based on the survey data, the vegetable seeds export has dramatically increased from 45MT in 1998/99 to 124t in 1999/00. Therefore, in the whole, the export from Nepal seems to have gone up during 1999/00 (**SSSP, 2001**). However, in the recent year it has surprisingly reduced to 0.56MT (Rs.2826000) (**Figure 6**). Even the total volume of seed export, including rice, wheat and vegetables was found to be lesser (i.e. 89.06MT in 2011/12) than the volume of vegetable seed export (i.e. 124MT in 1999/00). Therefore, this situation has alarmed all the seed stakeholders from research centre to final user on its urgency and necessity to improve the situation. There are several factors affecting to rapid decrease in the export seed market of Nepal. However, based on this market survey, the quality control mechanism was found to be very weak in Nepal. In some cases, the roles of the seed traders are also not supportive to control the quality of seed. The other reasons of decreasing export to India might be due to the demand for seed from India site is not secure, hindering Nepali seed export to India. Majority of the Indian parties are farmers and agents who visit Nepal and import seeds with no proper planning for purchasing seed from Nepal. This situation does not permit Nepalese seed exporter to prepare an advance planning for the next crop season or year for seed production and export to India. Most of the Indian farmers or Agents carry seeds using illegal channel including some Nepalese seed importers while importing from India. Other obstacles are the Nepalese export system, which is considered to be difficult.

#### 4.9 Seed export from custom offices

The custom offices are considered as more authentic source of formal import and export of seeds. Without custom clearance any seed can't be imported or exported in and from Nepal. The total export of seed has increased from 52MT in 2066/67 to 71MT in 2068/69. The share of export was 52 MT, 12 MT, 6MT and 1 MT from Kathmandu, Birganj, Biratnagar and Tatopani respectively.

#### 4.10 Seed export from National Plant Quarantine Offices

National Plant Quarantine Office has responsibility to regulate import and export of seeds to other countries. In total, the amount of export has decreased from 894MT in 2067/68 to 50MT in 2068/69 (**Table 7-8**). However, the export quantity was even smaller i.e. 1MT in 2066/67. It was due to the

unavailability of complete seed data of 2068/69. It was requested with NPQP, Harihar Bhawan also, however, they could provide the data of 2067/68 only.

**Table 9: Export of Nepalese seeds (vegetable and others) during 1984/85 to 2011/12**

Year	India		Other countries		Total		Remarks
	Qty (t)	Value '000'Rs	Qty (t)	Value '000'Rs	Qty (t)	Value '000'Rs	
1983/84	-	0	-	-	0	0	
1984/85	-	33	-	-	0	33	India
1985/86	-	33	-	-	0	33	India
1986/87	-	156	-	170	0	332	Bangladesh/India/Japan/Korea
1987/88	-	140	0.5	33	0.5	173	Bangladesh/India
1988/89	-	14	4.1	702	4.1	716	Bangladesh/ India
1989/90	-	371	9.4	809	9.4	1,180	Bangladesh/India
1991/92	-	1,268	2.6	443	2.6	1,711	Bangladesh/Germany/India/Japan/NZ
1992/93	57	575	4.5	922	61.5	1,497	Bangladesh/Germany/India /NZ
1993/94	21	620	2.7	793	23.7	1,413	Bangladesh/Germany/India/NZ/Japan/Germany, Switzerland
1998/99*	-	-	-	-	45	1,680	Vegetables
1999/00*	-	-	-	-	124	3,980	Vegetables
2000/01	-	-	-	-	30	4,640	Vegetables
2001/02	-	-	-	-	71	2,450	Vegetables
2011/12a	89	6,322	0	0	89	6,322	India

Source: NSB (1994); \*SSSP (1999); VDD (2067/68) and Field survey data

**Table 10: Export of seeds to other countries through different plant quarantine offices during the year 2066/67 to 2068/69**

SN	Plant Quarantines	2066/67		2067/68		2068/69	
		Qty (t)	Value (Rs.'000')	Qty (t)	Value (Rs.'000')	Qty (t)	Value (Rs.'000')
1	RPQP, Parsa	NA	NA	376.5	11295		
2	RPQP, Banke	NA	NA	515.5	26091	50	NA
3	NPQP, Ktm	0.9	NA	1.7	NA	NA	NA
	Total	0.9	NA	893.7	37386	50	NA

Note: NA = Not available

Source: Nepal Seed Market Study and Border Seed Trade Survey with India and China, September 2012 (Unpublished report, SEAN)

#### 4.11 Comparative analysis of the data of customs, plant quarantines and seed traders

In the previous section, the data of import and export were analyzed in relation to seed traders, custom offices and plant quarantine offices separately. Without comparing the data of these sectors, it was difficult to conclude the amount of seed imported and exported through legal, semi-legal and illegal systems. Therefore, based on the available data, a general comparative analysis was carried out to define the import and exports of data through different systems or channels. However, based on the seed data collection, there was a great variation among their data. In the present context, the data of COs is considered as a basis for analyzing data, due to its major official responsibility in custom clearance as well as independent database system. When the seed import and export system runs smoothly, then the data of custom and plant quarantine will be similar, otherwise, it will fluctuate each year. The plant quarantine data depends on custom offices. Importers are compelled to visit PQ offices for import permission only after the custom offices deem it as a requirement otherwise, such process are usually avoided as they are considered as time consuming. Therefore, custom office provides the custom clearance without consulting PQ office. Based on the survey, nobody can import and export seeds without consulting custom office for adopting an official channel. The comparisons are made based on the import and export of seeds.

#### 4.12 Seed Import

In Nepal, seeds are imported from India, China, Korea, Thailand, Japan, Italy, etc. Except India and China, most of the seed imported from other countries has been adopted a formal channel. Therefore, without comparing COs and STs, it is difficult to predict the authenticity of imported data. For calculating legal and illegal data, the COs data is deducted from the STs data. Then, the positive value is considered as the illegally imported data. In this case, due to seed import database problem, it was difficult to separate between legal and semi-legal data. Therefore, the total data of COs are considered as legal data. Further, it is converted into percentage to reach the amount of illegal data. Therefore, the data of COs i.e. 475MT was compared with the data of PQOs in 2068/68. It was found that 37% were illegally imported seed through PQOs system. Similarly, 78 % were illegally imported through STs in 2068/69. Based on these comparative data, the amount higher than the COs data is considered as illegal data. Other comparisons were made for reference only. Therefore it is concluded that the illegally imported quantity of seed was 1719 MT (78%).

The total border seed import trade was assessed from two neighbouring countries i.e. India and China. In the previous chapters the total seed import from different countries was assessed with seed traders, where the total quantity and value was 2194MT and Rs.841964491 respectively in 2068/69. When the data of border trade from India and China was compiled, the total imported quantity and values was 1680MT and Rs.475919150 in 2068/69. Based on the total quantity imported from different countries, the illegally imported quantity was 78%. The imported quantity of seed was calculated with India and China separately.

**India:** Out of total quantity, the vegetable seed imported from India was 1531mt (90%). The total custom quantity of seed imported from India was around 452mt. The Indian seed imported through TIA custom i.e. 1.0mt is not included in the border seed trade. Therefore, the difference between traders quantity (MT) and custom quantity (MT) was  $1531-452=1079$  (70.5% of imported seeds from India). This is the illegally imported quantity from India.

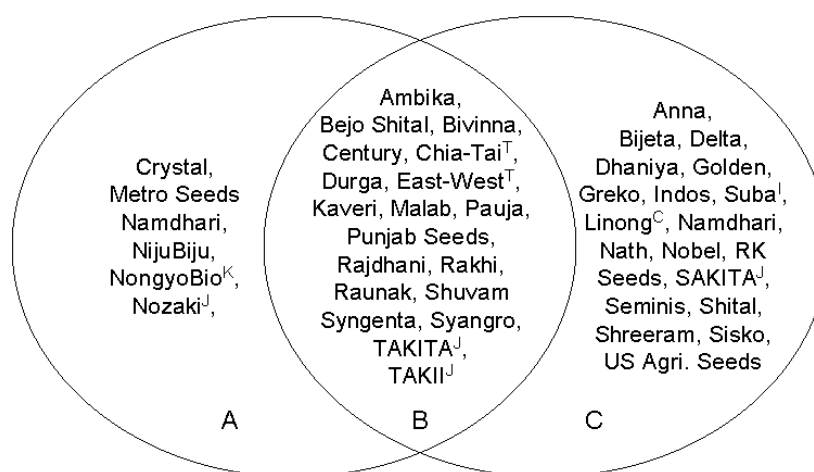
**China:** Out of total quantity, the seed imported from China was 149MT (10%). The custom quantity (MT) of imported seed from Tatopani was 9.5MT. The TIA custom quantity is not included in the border seed trade. Based on the available import and the Tatopani custom data, the difference was 139.5MT i.e. 93.6% of 149MT. Therefore, it can be concluded that the illegally imported seed from China was around 23% higher than India. There are some Chinese varieties of paddy, which are registered by NSB; however, it can be suspected to be illegally imported from China. The total number of crop seed imported from China was 16, including rice and vegetables, where as the total quantity was 149MT (Rs.88015000). Out of total quantity, 47MT (Rs.38750000) and 102MT (Rs.49265000) of seed was found to be OP and hybrids respectively.

#### 4.13 Major international companies involved in the border seed market

Among the leading seed companies in the world, there are major twelve seed companies for the vegetable seeds, which cover around 80-90%. They are Seminis (USA); Syngenta (Switzerland); Bilmorain-Clause (France); Takii and Sakata (Japan); Nunhems Sun (Netherlands), Rijk Zwaan, Bejo, De Ruiter seeds (Netherlands), and Hazera Genetics and Zeraim Gedera (Israel).

Case study has been carried out as example in the Eastern Development Region (EDR) for the types of imported seeds. In total, there were 213 varieties, including 54 and 175 registered and unregistered varieties respectively. The proportion of these varieties has remained 25% and 75% respectively. In comparison to the registered/notified kind and varieties, the percentage of unregistered kind and varieties was found to be three times higher than the registered one. It is estimated that percentage is considered as similar to the national figure. Based on this available data, it is concluded that Nepal is importing nearly 75% unregistered kind and varieties especially in border market with India.

**Figure 2: Involvement of forty four international seed companies in supplying vegetable seeds in Nepal in 2068/69.**



*Source: Nepal Seed Market Study and Border Seed Trade Survey with India and China, September 2012 (Unpublished report, SEAN)*

The study showed that 44 foreign seed companies involved in exporting of seeds to Nepal. Among these companies, six (14%) companies were totally involved in supplying registered seeds, 19 (43%)



companies were totally involved in supplying unregistered seeds, and rest 19 (43%) seed companies were involved in supplying both registered and unregistered seed in Nepal (**Figure 2**).

Out of 63 international seed producing and marketing seed companies, 40 and 60percentage were found to be involved in supplying registered and unregistered seeds respectively in Nepal. In this figure A denotes six seed companies which are supply only registered seeds (only 14%); B denotes nineteen seed companies supply both the registered and unregistered seeds (43%), and C denotes nineteen seed companies which supply unregistered seeds only (43%). The power letters <sup>I, J, K and T</sup> denotes Seed Companies of Italy, Japan, Korea and Thailand respectively, and the others are seed companies of India. This diagram is based on the annual seed transaction data of Eastern Development Region. In total, there are 44 international seed companies involved in export of seeds to Nepal.

If we categorize this data into two group i.e. registered and unregistered suppliers, the involvement of seed companies in supplying registered and unregistered seeds were 25 (40%) and 38 (60%) respectively in Nepal. Therefore, it is concluded that large number of international players have been involved in supplying unregistered seed in Nepal. Supplying of unregistered seed to Nepal is illegal. They have been adopting both the semi-legal and illegal channel to supply these seeds (**Figure 5**). If the Seed Acts and Regulations are implemented properly, the concerned persons/ companies can be held accountable and punishable under the law including seizure of such illegally imported seed. But lack of strong seed quality control system and other several factors, international players have been involved in this business very actively in Nepal. Majority of these companies are from India and few of them from other countries, including China, Korea, Japan and Thailand. Beside these countries, other countries have also been involved in such activities.

A cross-border analysis market analysis was carried out by **Pohit and Tanija** in India. “Their analysis of transacting environment of formal trade in India/Nepal indicated that Government procedures in Nepal/India are excessively bureaucratic and inefficient and needed to be reformed. Measures to improve poorly performing agencies need to be implemented promptly and comprehensively. When exported and imported goods are held up for lengthy periods of time, entrepreneurs’ costs increase and the competitiveness of these goods decreases; moreover, the temptation to ask for and pay bribes to speed up the process increases. An interesting feature that emerged was that formal traders preferred to use mechanisms of informal trading to settle disputes. If transaction costs of operating through informal channel are lower than the costs for the formal channel” (Pohit and Tanija, 2008). However, seed policy has not addressed anything about open border system.

## **PART-5**

### **SCOPE, OPPORTUNITIES & CHALLENGES**

#### **5.1 Increasing demand for food and seed**

Due to increasing number of population, demand for food has increased in Nepal. To solve the food supply, there is necessary to increase yield level of crops. Seed is the cheapest and important inputs to increase the yield. Therefore, the demand for quality seed has been increased in Nepal. However, the governmental as well as private sector couldn't meet the requirement (**Annex 11**). Therefore, there is a great scope and opportunities of seed industries in Nepal.

#### **5.2 Development of hybrid varieties**

The global agriculture has been moving towards use of high yielding hybrid varieties. However, Nepal has developed and released only two hybrid varieties i.e. Gaurav of maize and Sirjana of Tomato. The performance of Gaurav is to be de-notified soon. The performance of Sirjana is good in the field and therefore; it has been popularized in Nepal and some parts of India also. It indicates that if the hybrid varieties are developed in Nepal, it will help to substitute import and promote export business of seeds.

#### **5.3 Accredited seed testing laboratory**

CSTL and SQCC was accredited by the ISTA in 2012, ISTA issued orange certificate for the export market. This certificate will be accepted by its member countries. Therefore seed exporter can use this testing facility in Nepal for exporting their seed.

#### **5.4 Diversified agro climatic zone**

Nepal has diversified agro terrains for growing different kinds of crops, including high value and low volume seed. In some tropical countries, such as Bangladesh and India, they don't have enough areas to produce seeds for temperate crops. Therefore, Nepal has got this opportunity to grow such kind of seeds in her temperate regions and supply to countries like Bangladesh and India.

#### **5.5 Increasing awareness of farmers**

Due to increasing level of education, training and services provided by the DoA, the level of awareness with farmers have been increasing. Therefore, the number of commercial farmers has been increasing in Nepal. With increase of quality seeds in Nepal, the area and production of crops will also increase.

## 5.6 Growing number of seed traders

After 1990s, number of seed traders has dramatically increased. For example, the number of registered seed traders at NSB was increased from 1476 in 2067/68 to 2208 (as of Falgun 14, 2069) in 2068/69 (SQCC, 2069).

## 5.7 Emergence of co-operatives in seed sector

Each year there is rising interest in cooperatives and number of co-operative seed traders has been increasing. Presently, there are 233 registered seed co-operatives in Nepal (Source: Annual Report, Registration Unit, SQCC/NSB, 2012). Out of the total seed producing and marketing groups and cooperatives organizations, seed co-operatives have occupied about 15%.

## 5.8 Encouraging role of private sector

After 1990s, the involvement of private sectors has been dramatically increased in seed sector in Nepal and their contribution to the national seed program is highly encouraging. (Annex 12). Due to lack of enough nationally developed and released varieties including hybrids, the role of private sectors is increasing year after year for fulfilling the demand for quality seed in Nepal as well as in export promotion.

## 5.9 Government policy

Opportunities exist to trade at national, regional and global level, and the government has adopted liberalized policy to support more open markets for the farmers/traders. However, existing seed policies is not adequate enough to regulate the illegal seed trade through open border with India.

## 5.10 Major issues/Problems/Challenges

This study has synthesized several issues/problems/challenges of the Nepalese seed industry which are presented as follows:

- Complicated seed registration system as well as un harmonized policies,
- Dilemma in the duties and responsibilities of national plant quarantine program,
- High competition in seed market (quality, price, number of varieties/hybrids, availability in time),
- Lack of quality source seed, mainly in vegetables,
- Misuses of subsidized seeds (30-40% cheaper; some dealers have been selling at its original price and some are exporting to India),
- Open/porous border with India has led to illegal import of seeds,
- Poor coordination among stakeholders, particularly between custom and plant quarantine offices,
- Weak seed database management in SQCC, NPQP, CO, RSTL,
- Lack of proper post harvest handling of seed is has deteriorate the quality of seed,
- Lack of resources, including trained human resources is a major problem facing all concerned institutions,

- Operation of seed business by the person working either at custom or plant quarantine offices leads to release of goods without checking at the customs,
- Unclear revenue policies have led to import of seeds through illegal system,
- Weak implementation of seed regulatory mechanism (seed/custom/plant quarantine rules and regulation).

## PART-6

### OVERALL CONCLUSIONS AND RECOMMENDATIONS

Nepal having a wide agro-ecological diversity has enormous huge potential of producing a wide range of vegetable seeds both for domestic and export market. However, due to lack of investment in research and development, import trend of seeds is increasing each year. Though Nepal has to import certain types of seeds especially F-1 Hybrids, there is also good potential to export seeds of certain crop varieties of the comparative advantage. Thus, the seed strategy and policies have to be conducive for investment from the private sector. Based on the primary and secondary data as well as several discussion made with different stakeholders, the followings are the conclusions and recommendations of this survey.

#### 6.1 Conclusions

Based on the discussion with different stakeholders (District Chamber Office, District Agriculture Office, Plant quarantine Office etc) including seed traders, custom officials, plant quarantine officials and farmers, followings are the concluding remarks made for the revision of the existing policies and program planning of the national seed program:

- The NSB has released 194 varieties of different crops, where 35 varieties are already denotified and remaining 114 are in existing commercial use. Similarly, 161 hybrid and 22 OP varieties of 33 vegetables crops have been registered at NSB in 2066 (2010). In total 275 varieties can be officially used for import and/or export purposes, including a hybrid variety of tomato i.e. Srijana (**SQCC, 2068**).
- The imports comprise of open pollinated and hybrid varieties of cereals, vegetables, grasses, oil seeds, legumes, etc. The result showed that there is rapid increase in the import of seeds, especially hybrids.
- Seed Acts and Regulations are implemented only in 33 districts, including all the districts of terai region in Nepal. However, due to open/porous border system, weak quality control system as well as other hidden factors, a large volume of seeds is imported from India each year.
- Seed production has increased after the involvement of private sector in seed business, particularly in vegetable seeds.
- Some seed traders have not taken seed trading and/or import/export license; however, they are doing all types of seed business including import/export.
- The nature of seed traders are usually mixed types. They have been selling seed in combination with other agricultural and livestock commodities, such as insecticides, herbicides, veterinary medicines, fertilizers, agri-tools and equipments. Hence, it is very difficult to classify some traders into wholesalers, retailers, importers and exporters. It is because; they are involved in all sectors.
- Some traders in Biratnagar and Dhangadhi did not provide data. They insisted that they had no data on seed import and export, however that was not true in reality.

- Seed import is in increasing trend over the years. Mainly 57 crop & varieties of vegetable seeds have been imported from India and other countries through formal, semi-formal and informal channels from India, China and other countries.
- In principle, phytosanitary certificate is necessary with seed lot, however, in practice, it is not compulsory to submit during custom clearance and plant quarantine check up. Hence, the same rules apply for seed testing report also.
- Except few quarantine offices, most of them lack seed testing facilities and other resources. They have issued import permit based on the physical observation. However, plant quarantine check post, Kathmandu, has been taking samples of suspected lots and handing them over to NARC, Khumaltar for checking the samples.
- There is need for sufficient facilities and resources like man power, material, money and information (3M+I), for performing the given task properly.
- Most of the other governmental offices have been facing a problem of resources to carry the duties and responsibilities smoothly. For example, SQCC lacks trained manpower, protocol or procedures and other physical facilities in GMO examination and DUS testing.
- The Nepalese agro-terrain is favourable for growing number of varieties, including fresh vegetable and seed production, where some tropical countries have problem of producing sufficient vegetable seeds in their countries, such as Bangladesh and India. Therefore, our temperature vegetable seeds have valuable scope to promote seed export business. The only problem with Nepal is managing quality source, reducing the cost of production, poor post harvest handling and packaging in Nepal.
- Though there are potential for seed production and marketing, the seed sector is constrained by many factors, such as non-existence of improved seed varieties, shortage of finance, lack of timely and accurate market information, lack of extension services, inability to explore the potentials of the global seed market, poor infrastructures, high cost of transportations, unavailability of controlling and facilitating institution in place, and malpractices in some institutions and check point taxation were few of the problems mentioned during the study.
- The Nepalese seed industry is undergoing wide ranging transformations which include an increasing role of private sector for bring about changes in regulatory frameworks which positively affect research, marketing and trade of seeds and planting materials
- Private sector is playing the role of partner rather than advisory role to the public sector and contributing actively to the policy development with the government to ensure that policies and regulations create an enabling environment.

## 6.2 Recommendations

Based on the findings and conclusions of this survey, the following recommendations that calls for policy measures (interventions) so as to improve seed production and marketing are forwarded:

### 6.2.1 Source seed production and management

1. Regardless of the availability of high yielding varieties, the productivity is very low in Nepal as compared to other countries. However,, there is a great potentiality of increasing yield by supplying superior quality propagation material.
2. Based on the survey, the lack of supply of source seed (breeder and foundation seed) in adequate quantity is an obstacle for commercialization of new improved varieties in the country. The supply is not only the problem for new varieties, but also for regularly grown improved varieties, including those which are location specific. Therefore, NARC should strengthen source seed production and management.
3. Collect as much as genetic resources at national gene bank for developing new varieties through research and plant breeding program.
4. Horticulture RD had no sufficient trained manpower, farm/station, and other infrastructures for research and development as well as source seed production and management. Therefore, it is urgent necessity to strength the HRD.
5. Hybrid seed production is another great challenge for Nepal in general and NARC in particular. Therefore, GoN/NARC should manage new staff with breeding background or provide trainings and study opportunities for the existing manpower or collect a database of hybrid breeders.
6. Hybrid development for many varieties would not be practical. Therefore, it is necessary to determine the most valuable and popular crop in Nepal, development of such new crop hybrid varieties would be more advantageous.
7. The breeders, who have been involved in breeding OP and HB, should be rewarded after developing varieties.
8. If possible, it is better to manage a scientific exchange program with related international disciplines/organizations.
9. Encourage private sector in vegetable breeding, particularly hybrid varieties development.
10. It is better to select few OP varieties of crop and determine its genetic quality. If genetic quality is true to type, then multiplication is necessary for these varieties. Some varieties crops are still very popular, such as Mino-Early of Radish, Marphachaudapat of Broad leaf mustard, etc. Therefore, based on the competitive advantage, it is suggested to select eight to ten most popular varieties and produce sufficient amount of seed rather than dealing with greater number of crops.
11. Focus should always give to produce high quality seeds. as they can be sold easily in the international market, including India, Bangladesh, etc.

### 6.2.2 Foundation/certified seed (FS/CS) production and management

1. Seeds must come from genuine and superior source and their production, management practices, pre- and post- harvest handling is critical for maintaining quality of seed.
2. The role of government and private sector is important for producing foundation seeds; where as private sector is fully responsible for producing and marketing of seeds in Nepal.
3. Many new seed companies and co-operatives have been emerging with qualified manpower in seed business. After evaluating technical capability of such kind of companies, it is highly recommended to encourage them by providing financial support by the GoN.
4. Provide under-utilized government farms and stations, seed processing and storage facilities to capable seed companies of Nepal.
5. Seed production area should be notified as per the varieties and crops. It is also recommended to produce seed using seed zone concept.

### 6.2.3 Seed quality control and management

1. Government has developed Seed Act, Seed Regulations, Seed Policy, Seed Guidelines, Plant Protection Act and Rules along with National Standards on Phytosanitary Measures. However, Seed Act and Regulations are implemented only in 33 districts of Nepal.
2. Although there are some seed rules and regulations, it has not been implemented effectively by NSB, the customs and plant quarantine offices. An effective implementation of new seed regulation may improve the seed program in Nepal.
3. Seed related Database at NSB/SQCC is weak. There was seed database software which was developed during SSSP. Custom offices are unaware of notified kind and varieties (registered varieties) that can be used as a reference for import and export of seeds. Therefore, there is need for proper management and strengthening of seed related database.
4. Due to lack of trained manpower and laboratory as well as testing field; GMO, DUS and VCU testing are challenging areas for SQCC/CSTL. Therefore, their infrastructure, laboratory facilities and manpower should be upgraded as per international standards.
5. NSB has already initiated to prepare annual balance sheet of cereal seeds. Therefore, it is also recommended to make a balance sheet of vegetable as well as other crop seeds.
6. Monitoring of seed market is very weak. Therefore, it is suggested to monitor frequently to understand the real situation of seed market and people involved in seed businesses. The harmonization of Acts and Regulations with international agreements such as WTO and SAFTA is also one of the requirements for further business development.
7. Quality control is complex and challenging task; therefore, each and every stakeholder should support SQCC in an integrated way for an effective seed quality control in Nepal.
8. Government should revise its seed policy and regulations, particularly focusing open border seed trade aiming to regulate seed trade specially in bordering areas of Nepal. A seed export subsidy scheme should be implemented by the government to promote export market.



#### 6.2.4 Management of border seed trade (import/export)

1. Almost all of the retailers, wholesalers at bordering areas act as importers and exporters without following the seed and quarantine regulations of Nepal. Therefore, they have to be trained, registered and licensed on importing and exporting seeds.
2. It is estimated that around 76% seeds in the border area are imported unofficially. The illegal import with India and China was considered as 93% and 70% respectively. In addition, the involvement of international seed players is 40% and 60% in Nepal for supplying both registered and unregistered seeds. This has been possible mainly due to weak seed quality control system, which needs to be implemented with strong and user friendly regulation in Nepal.
3. For this, all the private actors in seed industry, custom offices and plant quarantines are more responsible to control and manage border trade in a more systematic way. Even custom and plant quarantine offices have not adopted the rules and regulation properly. A common seed import and export database system should be developed and adopted in practice by all related offices and agencies to bring more accuracy of the data.
4. As the south border of Nepal is open with India from east to west, some of the crop varieties may become popular immediately during one crop season. Therefore, it is suggested that those varieties should be immediately tested and registered so that seed multiplication of that variety comes under formal seed production program.
5. To increase seed replacement rate (SRR) with new improved varieties, it is crucial to create awareness among farmers. Training for agricultural extension agents in seed/plant health issues would strengthen awareness. Extension services should play an active role and need to be linked to other stakeholders in the sector.

Therefore, government must pay their attention to resolve all the problems in a priority basis. Hence, it will help to substitute import and promote export. This report would be of benefit to all the stakeholders to formulate, plan and develop effective programs and activities aiming to develop and promote seed industry in Nepal.

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## ANNEXES

**Annex 1: Areas ('000'ha) and Production of fresh vegetables ('000't), and seed production (t), requirement (t) and seed deficit (%) of vegetable seeds since last 37 years (VDD, 2067/68)**

SN	Fiscal Year	Area ('000'ha)	Prod <sup>n</sup> ('000't)	Yield ('00'kg/ha)	VSP Govm <sup>n</sup> (t)	VSP Pvt (mt)	VSP Total (t)	Seed Req <sup>d</sup> (t)	Seed deficit (%)
1	1974/75	82	410	50	9	1	9	293	96.93
2	1975/76	83	423	51	9	1	10	296	96.62
3	1976/77	85	442	52	190	4	193	303	36.27
4	1977/78	88	466	53	10	3	14	314	95.67
5	1978/79	91	491	54	10	15	25	325	92.43
6	1979/80	96	528	55	12	8	20	343	94.17
7	1980/81	104	521	50	9	15	25	520	95.27
8	1981/82	118	625	53	10	29	39	675	94.27
9	1982/83	126	668	53	13	26	39	700	94.50
10	1983/84	130	700	54	12	26	38	750	94.99
11	1984/85	138	743	54	12	21	33	770	95.69
12	1985/86	139	783	56	11	39	50	770	93.57
13	1986/87	139	839	60	11	59	70	770	90.94
14	1987/88	140	875	63	9	73	82	770	89.40
15	1988/89	140	922	66	10	90	100	775	87.16
16	1989/90	141	967	69	15	190	205	775	73.57
17	1990/91	141	1075	76	14	188	202	777	73.99
18	1991/92	141	1128	80	16	166	181	790	77.06
19	1992/93	141	1179	84	11	215	226	820	72.45
20	1993/94	141	1197	85	10	300	310	834	62.80
21	1994/95	141	1212	86	11	250	261	854	69.45
22	1995/96	144	1327	92	13	450	463	1000	53.70
23	1996/97	147	1357	93	19	400	419	1168	64.13
24	1997/98	150	1450	97	11	441	452	1200	62.33
25	1998/99	140	1343	96	12	500	512	1293	60.37
26	1999/00	149	1490	100	12	430	442	1310	66.26
27	2000/01	157	1653	105	16	604	620	1334	53.55
28	2001/02	161	1738	108	14	715	729	1390	47.55
29	2002/03	166	1800	108	14	680	694	1444	51.97
30	2003/04	173	1890	110	11	<b>745</b>	11	1507	99.27
31	2004/05	181	2065	114	11	810	821	1569	47.70
32	2005/06	190	2190	115	7	830	837	1595	47.54
33	2006/07	192	2299	120	6	835	841	1705	50.69
34	2007/08	208	2539	122	7	900	907	1875	51.64
35	2008/09	225	2754	122	7	<b>1100</b>	<b>1107</b>	1932	42.71
36	2009/10	235	3004	128	8	<b>1150</b>	<b>1158</b>	1987	41.72
37	2010/11	244	3204	131	8	<b>1265</b>	<b>1273</b>	2026	37.18
	% growth (+/-)	198	681	162	-14	126400	14041	591	-62

**Annex 2: Plant Quarantine Check Posts in Nepal (NPQP, 2067/68)**

SN	Plant Quarantine Offices	Address	Office contacted Yes/No
1	NPQP	HariharBhawan, Lalitpur	Yes
2	RPQO	Kakadbhitta, Jhapa	Yes
3	RPQO	Birganj, Parsa	Yes
4	RPQO	Bhairahawa, Rupandehi	Yes
5	RPQC	Nepalganj, Banke	Yes
6	RPQC	Gaddachauki, Kanchanpur	Yes
7	PQCP	Biratnagar, Morang	Yes
8	PQCP	Bhantabari, Sunsari	Yes
9	PQCP	Jaleswor, Mahottari	Yes
10	PQCP	Malangawa, Sarlahi	Yes
11	PQCP	Tatopani, Sindlupalchowk	Yes
12	PQCP	TI Airport, Kathmandu	Yes
13	PQCP	Krishnanagar, Kapilvastu	Yes
14	PQCP	Rasuwa	No
15	PQSCP	Nechung, Lomangthan	No
16	PQSCP	Jhulaghat, Baitadi	No

Note: NPQP = National Plant Quarantine Program; RPQP = Regional Plant Quarantine Program; PQCP = Plant Quarantine Check Post; PQSCP = Plant Quarantine Sub-Check Post

**Annex 3: Custom Offices in Nepal and their address (DoC, 2068)**

SN	Custom Office	Address	Offices contacted
1	Olangchunggola	Olangchunggola, Sankhuwasabha	No
2	Pashupatinagar	Pashupatinagar-1, Ilam	No
3	Mechi	Mechi MC-10, Kakadbhitta, Jhapa	Yes
4	Biratnagar	Biratnagar SMC-21, Rani, Morang	Yes
5	Kimathanka	Kimathanka, Sankhuwasabha	No
6	Sunsari	Haripur VDC-9, Sunsari	Yes
7	Rajbiraj	Tilathi VDC-8, Belahi, Saptari	Yes
8	Siraha	Madar VDC-6, Khaiyartoka, Siraha	Yes
9	Janakpur	Janakpur MC-1, Station Rd., Dhanusha	Yes
10	Jaleswor	Jaleswor MC-12, Mahottari	Yes
11	Lamabagar	Lamatar, Dolakha	No
12	Sarlahi	Malangwa MC-5, Sarlahi	Yes
13	Tatopani	Tatopani VDC-3, Sindhupalchowk	Yes
14	Gaur	Gaur MC-3, Rautahat	No
15	Birganj	Birganj SMC-19, Parsa	Yes
16	Sukhabandargaha	SirsiyaVDC, Parsa	Yes
17	TribhuvanInternationalAirport	Kathmandu GMC-35, Gauchar, Kath.	Yes
18	Rasuwa	Timure VDC-1, Rasuwagadhi, Rasuwa	No
19	Larke	Larke, Gorkha	No
20	Bhairahawa	Siddharthanagar MC-1, Rupandehi	Yes

SN	Custom Office	Address	Offices contacted
21	Mustang	Mustang	No
22	Krishnanagar	Krishnanagar VDC-5, Kapilvastu	Yes
23	Koilabas	Koilabas, Dang	No
24	Nepalganj	Jaisapur VDC-7, Banke	Yes
25	Mugu	Mugu	No
26	Rajapur	Rajapur, Bardiya	Yes
27	Kailali	Dhangadhi MC-2, Kailali	Yes
28	Yarinaka	Humla	No
29	Kanchanpur	Mahendranagar MC, Kanchanpur	Yes
30	Mahakali	Jhulaghat, Baitadi	No
31	Custom Check Post	Kathmandu GMC-35, Koteshwor, Kath.	No

#### Annex 4: Import of seeds through different plant quarantine offices during the year 2065/66 to 2068/69

SN	Plant Quarantines	2066/67		2067/68		2068/69	
		Qty (t)	Value (Rs.'000')	Qty (t)	Value (Rs.'000')	Qty (t)	Value (Rs.'000')
1	RPQP, Jhapa	17	NA	134	Na	48	NA
2	PQCP, Sunsari	45	450	30	3000	40	560
3	PQCP, Mahottari	3	29	NA	NA	NA	NA
4	PQCP, Tatopani	252	9953	10	NA	54	NA
5	RCQP, Parsa	NA	NA	NA	NA	2137	387857
6	RPQP, Bhairahawa	15	1230	97	74	0.4	22
7	RPQP, Banke	252	34668	NA	NA	NA	NA
8	RPQP, Kanchanpur	NA	NA	NA	NA	2	74
9	PQCP, TI Airport	2003	1671	187	2069947	6	20315
10	NPQP, Ktm	NA	NA	592	14233	NA	
	<b>Total</b>	<b>2587</b>	<b>48001</b>	<b>1050</b>	<b>2087254</b>	<b>2287.4</b>	<b>388728</b>
	<b>PQCP, TI Airport</b>					<b>1588</b>	<b>1901</b>
	<b>NPQP, Ktm (pkt)</b>	<b>2001</b>	<b>445</b>	<b>533</b>	<b>532</b>		

**Note:** NA = Not available; the last two rows show the flower seed quantity in packets. The quantity and value of mushroom seed is not included in the above data; NPQP refused to provide data of 2068/69

Source: ACEPP (2068); Field survey data and DoC (2012)

## **Annex 5: Proceeding of the Workshop**

### **“Vegetable Seed Market Status (Demand, Supply, Import & Export) in Nepal” Jointly Organized by Seed Quality Control (SQCC), MoAD & Vegetable Seed Project (VSP), CEAPRED 9 July 2013, Siddhartha Cottage, Lalitpur**

#### **Opening Session**

The session began with introduction of the participants. Mr. Dila Ram Bhandari, Chief of SQCC chaired the workshop.

Mr. Indra Raj Pandey, Team Leader of VSP welcomed all the participants to the workshop. He highlighted the objective of the workshop which included two aspects; The government supply and demand situation including import and export scenario and the shortcoming and challenges and secondly, the study of SQCC will help us to understand the kind of policy, program we need to improve on. The workshop will discuss on moving forward and developing programs. There are around 2000 seed businesspersons and SEAN has an important role to bring them together. Mr. Pandey also hoped that collective suggestions raised during the workshop would be able to provide a direction.

#### **Presentation**

Mr. Durga P. Adhikari, General Secretary of Seed Entrepreneurs' Association of Nepal (SEAN) presented a paper on marketing information study for analyzing national demand, supply, import and export situation of vegetable seeds in Nepal.

Mr. Adhikari said that seed industry has undergone much change in Nepal since 2047. Internationally the demand for high performing hybrid seeds has been increasing. However, there has been more increased import whereas export has been almost non- existed. Fifty seven crop species including cereals, vegetables and others were imported mainly from India, China, Japan, Korea, Italy, Netherland and France. Out of the 2194 MT imported seed including cereal, 78% were illegally imported with 70% imported from India and 30% from other countries. Complicated registration process, open border, problems in custom clearance has encouraged such illegal import of seeds. Mr. Adhikari also presented the volume of seed production by the government and private sector, requirement and supply situation of vegetable seeds in Nepal including the estimated annual seed requirement. Mr. Adhikari said that the market is likely to be shaped by a number of favorable factors and there is growing shift towards hybrid seeds production. Mr. Adhikari also presented different tables and graphs from notified varieties of imported vegetable crops in Nepal till 2069, demand and supply situation of vegetable seeds in Nepal, the situation of demand and supply, requirements of crop variety wise, the situation of seed import and exported in Nepal, from different countries especially from India, China and Tibet, the major international companies involved in the border seed market and other related aspects.

Mr. Adhikari said that along with many challenges there are also equal opportunities in the vegetable seed. He also shared the lessons learnt from past experiences particularly in marketing aspects followed by conclusion and recommendations. He concluded his presentation with specific recommendations on ways forwards.

#### **Suresh Bhattarai, UMN**

Mr. Bhattarai said that it is important to talk about value and policies but there is some level of confusion in the demand and supply difference (presentation). In Rukum, large volume of seed were produced but could not be sold while on the other hand, in many places farmers do not have access



to quality seed. He also stressed that farmers may have been producing seeds which are imported from other countries. There is need to find out about such production so that the import seed can be replaced.

**Dr. Dilli K.C, HMRP**

Dr. K.C said that the data of different sector varies greatly and needs to be verified with the data of HMRP. Common software for actual data entry and analysis of production and demand can be developed.

**Dr. Mahendra Khanal, SQCC**

Dr. Khanal said that it is the existing issues with regard to seed regulation process due to which illegal seed import is high and if there are any suggestions for minimizing the effect, it should be the part of the recommendation in the presentation.

**Mr. Kanchan Raj Pandey, DOA**

Mr. Pandey pointed out the big gap in the imported data, whether it is due to illegal or informal or mismanaged because such gap could be disaster and there is need to minimize them in future. He also questioned what of such semi informal data stands for. He said there is increasing trend in hybrid seed as the farmers receive more profit, in such context whether it is reasonable that the Seed Vision 2025 has more emphasis on open pollinated.

**Dr. Dhruva Raj Bhattarai, HRD/ NARC**

Dr. Bhattarai commenting on the presentation said that if there were some analysis in the challenges part in the seed value chain, it could have been helpful for future.

**Mr. Komal Pradhan, IDE Nepal**

Mr. Pradhan said that there is huge gap between import and export. While there is high potential for export in India and Bangladesh, there is need to work on the quality aspect of seed for increasing market such as customized seed production and building link with Bangladesh.

**Mr. Ganesh Baniya, Kathmandu Agro-vet**

Mr. Baniya said that imported vegetable seeds can be substituted with domestic production. He suggested that the seed that can be exported and possible ways for decreasing cost of production should be added in the report as well. He also stressed on the possibility of developing more hybrid varieties and specialization.

**Dr. Surendra Joshi, SNV**

Dr. Joshi said that the value chain status presented in the recommendation and opportunities can be reached in five, ten years. However, it would have been better if the project analysis had been made in this regard.

**Mr. Bimal Thapa, SQCC**

Mr. Thapa said that this study should be related more with trade and ways to facilitate it and substitute the import seeds. Nepal is a member of the WTO and the membership can be useful for policy maker.

**Dr. Bharat Poudel, CVSPC**

Dr. Poudel said that there is need for collaboration with all the concerned stakeholders, the status of import and export should be observed and incorporate in the study. He also suggested that in such collaboration, the Vegetable Development Directorate and Marketing Directorate should take the lead.

### **Mr. Indra Raj Pandey, VSP/ CEAPRED**

Mr. Pandey raised the concern that there is not enough data on seed production, demand and supply. He said that the Ministry of Finance should work for trade promotion. The traders should associate with SEAN and make effort for developing data on different aspects of seed sector such as import, number of retailers, wholesaler. Such data should be updated regularly. There is need for establishing common mechanism.

### **Dr. Hari Kumar Shrestha, HEADS Nepal**

Dr. Shrestha said that most of the seed reach Nepal through informal means; unregistered agents are involved in such transaction. Though the custom and PQ are suppose to collaborate, there is not much effort and without strengthening the PQ not much can be expected. He also raised the concern that the custom has no knowledge over the aspects of seeds imported and there is need to increase awareness. There are no promotional activities about quality seed. In the rural areas many farmers do not have trainings on quality seed production.

### **Mr. Durga Adhikari, SEAN**

Responding to queries and comments, Mr. Adhikari said that overproduction is indeed a problem and seed production without pre agreement makes the process more difficult in getting the seed into markets. Also the market demand varieties are not produced enough. The need for a common data management system will be incorporated in the recommendation of the study. The registration of seed is a complicated process and with increase in illegal imports of seed, there is need to register seed but for this the concerned importer/ companies should be made responsible. The registration of detail data is complex and difficult, such process takes time and NARC charge high and the results are not in time.

He further said that illegal imports of seed traders and with unrecorded data of imports in CU and PQ, it would be difficult to minimize the gap of data information in a common database mechanism. Hybrid is a complex process and requires investing, both private and public collaboration with NARC. There has been effort towards production of specialized variety. CEAPRED has also supported for it but due to price factor the cost of production gets higher. Increasing the quality of the seed along with lowering the price is a challenge. There will be collaborative effort with concerned stakeholders based on the strategic document of Seed Vision 2025. He also raised concern over the lack of training of businessperson.

### **Mr. Dhruba Raj Pandey, Seed Cooperative Federation**

Mr. Pandey expressed his concern on the problem of production without understanding the market demand often resulting in overproduction. He also highlighted other problems such as production without pre agreement, the seeds not bought by the buyers on time and even if they are bought, the farmers are not paid on time. The presentation does not mention which seed needs to be produced. Mr. Pandey said that if they could have data on demand of seeds and volume, they could plan accordingly. With seed packaging, different field experience has shown that farmers in Nepal have more trust in foreign seeds and packaging. There is lack of training and the farmers are also inclined to grow more high cost seed resulting in overproduction. On one hand, there are excess productions in certain area and on the other hand, the farmers do not have access to such seeds which is mainly because of lack of information. Mr. Pandey also briefed about the formation of the Seed Federation and the present development.

### **Mr. Bharat Prasad Upadhyay, CEAPRED**

Mr. Upadhyay stressed on the need of a common vision and strategy. He also informed that the market study was commissioned by CEAPRED but there is need to give more effort. The technical committee has given this study lot of importance. He went on to explain the objective of vegetable seed project which began with bringing the farmers together during the first phase, the second phase

focus was much on developing capacity and finally the present third phase, marketing has become the main issue. It was necessary that such study were conducted by private sector so that they would also be able to observe and realize the market situation. There is need for critical analysis while conducting market analysis, demand and supply trends and the gaps need to be critically analyzed including scenario of total supply and concerns of farmers over quality seed and access on time. He also forwarded some suggestions such as need to analyze entrepreneurial development by private bodies, whether the export subsidies is to be provided by the government and how is the import substitution being managed and how it is being promoted.

**Ms. Yamuna Ghale, SDC**

Ms. Ghale questioned whether the business based on seed can be sustainable or not, is it economical? Because only with possibilities can one adopt seed business. There is need to change in system and there is lack of information exchange. She also stressed on the role of the private sector who are finally the one to conduct seed business, the NGOs can only facilitate or support the seed sector while the government can monitor and do much more. The government mechanism can be strengthened on basis of Agricultural Development Strategy and Seed Vision 2025. The programs have to be implemented by projects but such projects should come from government and I/NGO's can take responsibilities for certain components. The support for different actors in value chain is different so there is need for different support accordingly. SQCC, National Seed Board and development partners should come together and seek resources and support. There is need to start discussion in this regard.

**Mr. Ishwor Rijal, AICC**

Mr. Rijal said that the PQ has to play more roles. The exporters bring seed to Nepal and again export them to other countries so the difference in the data is natural. There has been improvement but not to the desire level. For import the requirement for PC certification should be compulsory. The seed industry is growing but it requires improvement with focus on export and also to explore the seeds which can be promoted for export in other countries. Collaborated efforts of all concerned stakeholders are required for providing trainings and creating awareness on seed and seed business.

**Mr. Dila Ram Bhandari, SQCC**

Mr. Bhandari said that the importing compared to exporting is ever increasing to fulfil the demand of the farmers; this concern needs to be addressed. Priority should be given to our local production and less to importing product. Rather than expecting concession from the government if we can increase our export, there will be more revenue. There has been much focus on hybrid. There should be more role of Commission, DADO and only the local seed should be promoted because it is matter of sovereignty. He emphasized that certain variety must be developed by NARC as well as private sector and SQCC can also provided needed resources. It should be compulsory for the local agrovets to promote and sell local seed. On policy level, for development of seed, SQCC has documents and donors should work on its basis. Only good labelling, branding and packaging is not enough and there should be assurance of good quality seed for promoting our products. There is registration process for seed but it needs to be followed duly. There will be more control for due process such control should not be given over to multinational companies.

## Participants List

S.N.	Name	Institution/Organisation
1	Mr. Dila Ram Bhandari	Chief, SQCC
2	Mr. Bimal Thapa Chhetri	SQCC/CSTC
3	Dr. Mahendra Prasad Khanal	SQCC
4	Mr. Madan Thapa	SQCC
5	Mr. Dhruva Raj Bhatta	SQCC
6	Mr. Ash Lal Tamang	SQCC
7	Mr. Lal Prasad Acharya	SQCC
8	Ms. Yamuna Ghale	Sr. Program Officer, SDC
9	Mr. Ganesh Baniya	Kathmandu Agro
10	Mr. Dhruva Prasad Sapkota	Dahachoki Seed Bank
11	Mr. Durga Adhikari	GS, SEAN/ SSSC
12	Dr. Hari Kumar Shrestha	HEADS Nepal
13	Mr. Jaganath Adhikari	SEAN
14	Dr. Dilli Bahadur K.C	HMRP
15	Mr. Nirmal Gadai	HMRP
16	Mr. Basanta Marahattha	Gorkha Seed
17	Mr. Bal Bahadur Dura	NIMACOL
18	Mr. Dhruva Raj Pandey	Seed Cooperative Federation
19	Mr. Kanchan Raj Pandey	DOA
20	Dr. Bharat Kumar Poudyal	CVSPC
21	Mr. Reeti Singh	CVSPC
22	Ms. Dev Raj Gauli	AICC
23	Mr. Atish Tulsyan	Jay Kishan Seed Centre
24	Mr. Komal Pradhan	IDE Nepal
25	Dr. Surendra Joshi	SNV
26	Mr. Phaindra Raj Pandey	AEC- FNCCI
27	Dr. Dhruva Raj Bhattarai	HRD, NARC
28	Mr. Min Bahadur Ghimire	Central Seed Cooperative Association
29	Mr. Suresh Bhattarai	UMN
30	Mr. Kul Prasad Subedi	RAD Central Region
31	Mr. Pradip Kumar Yadav	NSC
32	Mr. Satish Ghimire	CG Seed
33	Mr. Prakash Neupane	Bhaktapur Krishi Samagri
34	Mr. Indra Raj Pandey	VSP/ CEAPRED
35	Dr. Ram Chandra Bhusal	VSP/ CEAPRED
36	Mr. Purna B.Shakya	CEAPRED
37	Mr. Karina Lundahl	CEAPRED
38	Mr. Rajesh Shrestha	VSP/ CEAPRED
39	Mr. Iswor Pd. Rijal	Agriculture Information and Communication Centre
40	Mr. Pramod Pokhrel	CEAPRED
41	Ms. Laxmi Khadka	VSP/ CEAPRED

42	Ms. Suchita Upreti	VSP/ CEAPRED
43	Ms. Subhechchha Shrestha	VSP/ CEAPRED
44	Ms. Ritu Limbu	VSP/ CEAPRED
45	Mr. Dilip Basnet	VSP/ CEAPRED
46	Mr. Dibyeswor Prasad Shrestha	CEAPRED
47	Mr. Kishor Dhakal	VSP/ CEAPRED
48	Mr. Gagan Bahadur Bisunkhe	CEAPRED