Report of Laboratory Survey

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Executive Summary

This report includes the survey of all laboratories and institutes that are involved in testing Nepalese imports and exports. The survey includes a brief description of modus operandi of the authorized organizations, the list of their laboratories, and a report on the manpower and equipments that each of these laboratories have.

Nepal's import and export regulations are mainly dependent on three acts: Food Act (1966), Plant Protection Act(1972) and Livestock Services At(1998).Nepal's import and export acts are all influenced by the international standards set in Codex Alimentarius Commission(CAC) International Offie of Epizootics(OIE) and International Plant Protection Commission(IPPC). Furthermore, there are different, country dependent voluntary export certification systems in place in some cases. Currenty, the government is in process of formulating World Trade Organization (WTO) consistent Export Import Certification System (EICS) that details precise testing procedures of the country.

We found that Animal Quarantine Office in Nepal is poorly equipped, though reasonably well manned. They take assistance of other agencies such as National Forensic Science Lab, Central Vet Lab(CVL) and regional and central Animal Diseases Laboratories, but otherwise, rely on very basic testing procedures. Plant Quarantines are reasonably well supported, as they own reasonably good lab, and has a network of laboratories to refer to. For food items, Department of Food Technology and Quality Control plays a major role in controlling qualities of the goods imported. It has a reasonably well equipped system of laboratories, and has a good upgrade plan as well.

This report is divided into three different parts. In the first part, we discuss the details related to animal quarantine inspections and laboratories available in Nepal. In the second part, we provide details related to the plant quarantine and its laboratories. In the third part, we discuss the details related to the inspection of food items in Nepal, as related to the DFTQC, which is the sole authority for food related inspection in Nepal. The report mainly emphasizes the processes followed by these agencies, as well as the manpower and equipments these agencies have.

SECTION 1

The procedure of livestock examination

The national quarantine standards (i.e. SOP, International Health Certificate etc) are prepared by each member country according to the World Organization of Animal Health standards. Nepal also follows the same standard. To meet the OIE standards, three major acts, i.e. Animal Health and Animal Services Act (2056 BS),Animal Health and Animal Services Regulations(2066 BS) and Animal Quarantine Regulation (2064 BS), were enacted in the past. These acts guide the processes followed by these quarantines in examining livestock and livestock products there.

The procedure for examining the livestock has been divided into two parts, based on whether the product is livestock itself or the livestock product.

1. Procedures for examining livestock:
   a. Conducting physical and clinical examination
   b. Conducting laboratory examination
   c. Conducting other sophisticated examination
2. Procedures for examining livestock *products*:
   a. Examining whether the products are as par with the certificates
   b. Examining the labeling, packing, weight etc
   c. Examining unsealed products: In case of products are not sealed, the thorough examination shall be carried out.

When livestock products are examined, a random sample of *ten* percent of the shipment is taken for examination. If clinical result is not available immediately and there is no chance of the shipment having adverse impact on the health of human, the shipment is released upon the collection of samples. However, the product is restricted from distributing to the people until the result of clinical examination comes. Birgunj, which is the largest customs office, does not have a *separate* livestock quarantine lab. Food and livestock quarantine lab are operating together there.

The quarantine office provides certificate of clearance to the relevant importer after receiving the result of quarantine examination. The export clearance certificates are of different format, however. These formats of certificates are based on the types of animals and their products and are given as follows:

1. Form-1 for dogs and cats
2. Form-2 for domestic and wild animals
3. Form-3 for semen of animals
4. Form-4 for meat of animals
5. Form-5 for animal feeds and the products of animas origin which are to be used for industrial or medical purpose
6. Form -6 for equines
7. Form-7 for avian
8. Form-8, for eggs, day-old chicks, other newly hatched avian species and hatching eggs

These certificates are valid for ten days from the date of issue.

The confiscated livestock and livestock products may be auctioned by the quarantine officer. The officer should publish the intent to auction notice for the public, providing seven to fifteen days to bid for these goods. There are regulations governing what the public auction notice must include. In general, such notice must include details such as name of the source animal, minimum price, date, time and place of auction, the condition of cash deposit (which should be five percent of the quoted price), as well as all other necessary matters stipulated by the existing law.

The minimum price of auction should be determined by a Price Determination Committee. The committee should include the following persons:

- Quarantine Officer-Chairperson;
- Represented District Administration-Member
- Represented Office of Controller of Fund and Accounts-Member
- Customs Officer- Member

When a livestock or livestock product is accepted in the auction but not removed within the stipulated time, the deposit amount of the winning bidder is confiscated and the item is re-auctioned. If the minimum price is not accepted, the item is re-auctioned. In the re-auction, if the amount not less than ten percent of the minimum price is accepted, the sale is carried out. If the auction is not successful even with this criterion, the committee will directly sell the product.

While exporting livestock or livestock products, the exporter should do the following things:

1. A notice shall be given to the concerned quarantine officer in advance. This notice must include types, species and breed origin, numbers of animals and customs points through which exports are made.
2. Health certificate and certificate of exportable quality should be received from the quarantine.
3. The transportation vehicle to be used for export of such products should be disinfected. The vehicle should be suitable from the technical point of view.

While importing livestock or livestock products, the following rules are observed:

1. If any imported animal dies during the course of journey after having departed alive from the point of departure, the dead animal should be submitted to the officer.
2. The transport vehicle should be disinfected.
3. The particulars of animal products should be submitted to the quarantine while importing.

Central Animal Quarantine Office is located at Budhanilkantha, Kathmandu. There are 8 divisions under it. The list of manpower and equipments these offices have is listed below:

List of equipments & concerned manpower

Following is the list of manpower at each office:

Office	Post	Number
Biratnagar	Senior Veterinarian	1
	Veterinarian	4
	Fish Development Officer	1
	Animal Health Technician	5
	Associate Animal Health Technician	-
Birgunj	Senior Veterinarian	1
	Veterinarian	4
	Fish Development Officer	1
	Animal Health Technician	7
	Associate Animal Health Technician	-
Bhairahawa	Senior Veterinarian	1
	Veterinarian	4
	Fish Development Officer	1
	Animal Health Technician	7
	Associate Animal Health Technician	1
Janakpur	Senior Veterinarian	1
	Veterinarian	4
	Fish Development Officer	0
	Animal Health Technician	6
	Associate Animal Health Technician	-
Jhapa	Senior Veterinarian	1
	Veterinarian	4
	Fish Development Officer	1
	Animal Health Technician	8
	Associate Animal Health Technician	-
Kanchanpur	Senior Veterinarian	1
	Veterinarian	4
	Fish Development Officer	0
	Animal Health Technician	8
	Associate Animal Health Technician	1
Kathmandu	Senior Veterinarian	1
	Veterinarian	3
	Fish Development Officer	1
	Animal Health Technician	7
	Associate Animal Health Technician	-
Nepalgunj	Senior Veterinarian	1
	Veterinarian	3
	Fish Development Officer	0
	Animal Health Technician	4
	Associate Animal Health Technician	1

Despite the presence of these staffs, these offices don't have even basic quality lab of their own. The veterinaries there only have basic tools like gloves, masks, syringes (for collecting blood samples), etc . They don't even have weighing machine there. Therefore, it is not a surprise that these officers are not involved in any kind of lab testing. Generally, these officers are involved in the verification process of the products such as checking the certificates of origin etc. When actual testing is required, there are a few so called "recommended labs" where goods are sent.

The list of recommended labs are listed below. Their Nepali names are in the parenthesis:

Recommended Labs:	Used by following posts:
Regional Animal Disease Investigation Laboratory, BiratNagar (Kshetriya Pashu Rog Anweshan Prayogshala)	Animal Quarantine Office Kakarvitta Animal Quarantine Office, Biratnagar
Regional Animal Disease Investigation Laboratory, Janakpur	Animal Quarantine Office, Birgunj Animal Quarantine Office, Janakpur
Regional Animal Disease Investigation Laboratory , Pokhara	Animal Quarantine Office, Bhairahawa
Regional Animal Disease Investigation Laboratory, Dhangadhi	Animal Quarantine Office, Dhangadi
Regional Animal Disease Investigation Laboratory, Surkhet	Animal Quarantine Office, Nepalgunj
Central Animal Disease Investigation Laboratory, Kathmandu (Kendriya Pashu Rog Anweshan Prayogshala)	Animal Quarantine Office, Kathmandu

The *Regional Laboratories* send the specimens for tests to *Central Laboratory* for tests which they don't have the technical capabilities. The *Central Lab* sends the specimens for tests to *"Central/ National Lab"* (at Tripureshor) for tests whenever it doesn't have the technical capabilities. Furthermore, the *National Lab (at Tripureshor)* sends the specimens to *O.I.E. referred laboratory* (at UK and Australia) when it doesn't have the technical capabilities. In addition to the above listed labs, the following labs are also referred by the Animal Quarantine Labs: National Avian Disease Investigation Laboratory (Chitwan), and National Epidemic Laboratory (Kendriya Khore tatha Mahamari Prayogshala) in Budhanilakantha.

When testing involves potential police cases (for e.g. animals suspected of dying due to poisoning or, chemicals, etc.), *Nepal Forensic Science (NFS) Laboratory, Kathmandu* is used. For the purpose, *NFS* uses *Gas Chromatography–Mass Spectrometry (GCMS) equipment*. There are 2 GCMS equipment at NFS. The laboratory in *Nepal Academy of Science and Technology (NAST)* also has 1 GCMS equipment. But generally, NFS is involved in such testing. There are in average 30-35 cases of animals being referred to NFS lab in a year.

During our conversation with the NFS officials, they revealed that Animal Quarantine offices have never formally sent any sample to them for testing purpose. They generally receive samples of dead animals from other agencies such as national parks, etc. However, they allow that many of samples they receive may have come from Animal Quaratine Offices via other channels.

The other important lab used by Department of Livestock Services is Central Veterinary Laboratory (CVL), located in Tripureshwor. From its appearance, it resembles a human hospital, and an exhaustive list of equipments is difficult to get.

There are 5 Regional Labs and 1 National Avian lab under CVL.

Locations of Regional Labs:	
1)	Regional Veterinary Laboratory, Biratnagar
2)	Regional Veterinary Laboratory, Janakpur
3)	Regional Veterinary Laboratory, Pokhara
4)	Regional Veterinary Laboratory, Surkhet
5)	Regional Veterinary Laboratory, Dhangadi
6)	National Avian Disease Investigation Laboratory, Chitwan

The sections/units of Central Veterinary Laboratory (involved in animal related tests) are:

1. Micro-biology Section: it has two units, namely Bacteriology & Mycology Unit and Virology Unit
2. Molecular Biology Section
3. Pathology Section: It has Postmortem Unit, Haematology/Biochemistry Unit, and Histopathology Unit.
4. Parasitology Section
5. Serology Section

The CVL is currently involved in examinations of various diseases in animals, such as Avian Influenza Type A Antibody detection, Avian Encephalomyelitis Investigation, Brucellosis investigation, Salmonella investigation etc.

SECTION 2

The examination procedures at the Plant Quarantine

The importers of any plants, plant related products, biological control agents, beneficial organism or plant growing means such as soil, moss and peat must apply to the Chief of plant quarantine office. Currently, the application fee is two hundred Rupees (about 2 US Dollars). The following documents should be submitted with their application:

1. Copy of the citizenship or the passport of the applicant
2. If the importer is a firm, the firm's registration certificate, and PAN/VAT numbers should be submitted.
3. Copy of Pro forma invoice mentioning the detail of the articles
4. Recommendation letter of Seeds Quality Control Centre
5. If the applicant is a researcher, a request letter from the researcher and recommendation letter of Nepal Agriculture Research Council(NARC) should be submitted to the concerned authority.

After the examination of the documents, the Chief of Office may issue the permit. At this stage, the importer pays the permit fee of Rupees 1,000.

When the goods are at the entry point and the importer applies for the entry permit, the importer is responsible for making arrangements for taking necessary measurements of the imported goods. To that end, he fills the declaration form in the prescribed format along with other documents. After the examination of submitted documents and objectives of import, the plant quarantine office takes required sample of goods and sends them to the laboratory for phyto-sanitary test. If these goods are not infected by pests and in no way violate related import rules, the presiding officer issues the clearance slip in the specified format permitting the entry of such goods. If the goods are found to be infected by pests, they are destroyed. If they are found unsafe due to reasons other than quarantine pests, the consignments are ordered to be treated and the cost of the treatment is borne by the importer. Post treatment, the goods are inspected again and, if they are found to be thoroughly treated, the clearance slip is provided to the importer. If they are found unsafe even after the treatment, they are either destroyed or returned to the respective country with a letter specifying the reasons of returning.

When articles are exported, the exporter submits the following documents to get the export clearance:

1. The certificate of origin of the goods to be exported
2. The clearance slip issued by the Department of Forests if the exported good is a forest product
3. A recommendation letter of the Department of Archaeology if the exported good is of archaeological importance.
4. Import permit issued by the importing country in case of goods to be re-exported
5. A copy of the phyto-sanitary certificate submitted while importing into Nepal for goods that are re-exported

6. Official identity card of the exporter or a copy of the registration of the organization and a letter of assignment.
7. Application fee of Rupees 100 for export, and Rupees 200 for reexport.

For these goods also, required sample is taken randomly and inspected. If they are found suitable from the point of view of health, Chief of Office shall issue the phyto-sanitary certificate in case of export. But if the examination shows that the articles are not appropriate from the point view of health, the reason for not giving the certificate should be given to the concerned party within seven days from the application date.

If articles are carried to other countries via Nepal, permit for carriage of consignment should be obtained from the quarantine. The person/firm should apply with the following documents in order to get the permit:

1. Import permit by importing country
2. Phyto-sanitary certificate issued by the exporting country
3. Invoice of the consignments
4. Means and mode of transport and the route to be taken
5. Certificate of origin of the goods in consignment

The documents/consignments are checked to find out whether the consignments are in order and proper condition. The permit is issued in a prespecified, standard format.

If pests come out and spread inside Nepalese border (say, for example, due to issues in packaging), the importer should immediately inform nearby office or District Agriculture Development Office or Agriculture Service Centre. The concerned staff should immediately inspect the consignment and make an arrangement to stop the spread of the pest or disease. The staff should also notify the higher authority. The cost involved in this process should be borne by the concerned person.

For all the articles in consignment, besides the bags, pouches or packets, as well as containers, means of transport containing such articles are also checked thoroughly. If there is soil or any kind of residues of plants or weeds or live organisms , the importer is asked to treat the vehicle. If this process leads to the discovery of any symptom of disease in the articles, the importer is ordered to treat the articles, using the procedures already described.

Plant Quarantine Offices and list of entry points in Nepal
Currently, there are *five* regional Plant Quarantine offices and *ten* other smaller quarantine check points (called Plant Quarantine Check posts and Sub-check posts). Three of these check posts are along Nepal China border, one is at Tribhuvan International Airport in Kathmandu and the remaining are along Indo-Nepal border. National Plant Quarantine Program, located at Harihar Bhawan in Lalitpur district, functions as a plant quarantine governing office within the Plant Protection Directorate of Ministry of Agriculture.

Five Regional Plant Quarantine Offices are located in Indian boarder and are as follows:

1. Regional Plant Quarantine Office, Kakad Bhitta, Jhapa District in the Easter Region of Nepal.
2. Regional Plant Quarantine Office, Birgunj, Parsa District in the Central Region of Nepal.
3. Regional Plant Quarantine Office, Bhairawa, Rupendehi District in Western Region of Nepal.
4. Regional Plant Quarantine Office, Nepalgunj, Banke District in the Mid Western Region of Nepal.

5. Regional Plant Quarantine Office, Gadda Chuki, Kanchanpur District in Far Western Region of Nepal.

Other small check posts and sub check posts are as follows:

1. Biratnagar, Morang, Eastern Region
2. Bhantabar, Sunsari, Eastern Region
3. Jaleshwar, Mahottari District, Central Region
4. Malangawa, sarlahi, Central Region
5. International Airport at Kathmandu, Central Region
6. Tatopani, Sindhupalchowk, Central Region
7. Kerung, Rasuwa, Central Region
8. Krishna Nagar, Kapilbastu, Western Region
9. Lomangthang, Mustang, Western Region
10. Jhulaghat, Baitadi, Far Western

Three of the check points , located at Tatopani, Kurung and Lomanthang, are in Northern side bordering China.Phytosanitary Certificates & Import Permit (IP) is issued through these entry points.

Inspection Process in Plant Quarantine

Quarantine methods are indicated in Plant Protection Rules, 2066 (2010)], section 12 & 13 (In Nepali: Biruwa Samrakshan Niyamawali).Upon the receipt of the sample of consignment, taken pursuant to Sub-rule (3) or Rule 11 of the Plant Protection Rules, test is to be carried out using one or more of the following methods:

a. Normal test: This test is carried out by visualizing through eyes in order to find out whether the consignment is infected from pests.
b. Washing test: This test is carried out by washing sample in clean water and mixing it with required chemical. In general, it is carried out in order to find out whether the consignment is infected by any fungi.
c. Test by filtering: This test is carried out by taking the sample from the consignment and using funnel and filter paper along with clean water to find out whether the consignment contains any nematode or not.
d. Microscopic test: This test involves use of microscope, and is done mainly for the identification of pests.
e. X-ray test: This test involves use of an x-ray machine in order to find out possible internal infection in grains.
f. Incubation test: This test involves keeping sample in an incubation machine with appropriate means for a required time in order to find out fungi or bacteria, if any.
g. Sowing test: This test involves sowing grains and plants in post entry quarantine sites in order to find out whether such grains and plants contain any hidden infection. This is rarely carried out in practice, as Nepal currently has no technical facility for carrying out such test.

According to the concerned authorities, methods (a), (b), (c) & (d) are mainly in practice.

For articles whose tests needed to be carried out, but such tests are not guided pursuant to subrule(1), the authorities may use normal test.If it is deemed necessary to treat any plants, plant products, biological control agents, beneficial organisms or other articles, the inspector may use any of the following methods:

a. Fumigation treatment: Self explanatory.
b. Physical treatment: This involves physical method (for example subjecting the sample to cold, heat, ray)
c. Chemical treatment: This involves treatment using chemical pesticides (for example dust, grains, liquid etc.).

According to the source, only methods (a) & (b) are in practice.

So far, quarantine has not developed any particular 'plant specific' testing requirement. The treatment and testing methods are general, and inspectors seem to have leeway in determining the appropriate method. Furthermore, while importing goods, the standard practice has been to accept the test certificates of India. Nepal in general accepts phytosanitary certificate issued by India, especially related to the pests that are in Indian's own list. Once in a while, the sample is sent to the testing centers like (i) Nepal Agricultural Research Center (NARC), Khumaltar, Lalitpur and (ii) Laboratories of Plant Protection Directorate(PPD).

Plant quarantine has "*plant quarantine pest list"* for some pests. But the list is quite small and is in the process of being declared in Nepal government gazette. Till these will be declared, these pests can't be officially considered threat.

Nepal's lack of sophisticated specific testing mechanisms means that there have been cases when health certificates issued by the Plant Quarantine have been rejected abroad.

The major player in plant protection is Plant Protection Directorate (PPD). This is an apex body for coordinating all the offices in the country that are involved in plant protection, including Pesticide Registration and Management Unit.

PPD is responsible for four national level programs:

1. the Office of the Registrar of Pesticides,
2. the Plant Quarantine Program: the 15 posts listed above are under Plant Quarantine Program.
3. Regional Plant Protection Laboratories for implementation of the program.

There are 5 Regional Plant Protection Laboratories (RPPLs) in different Development Regions. The list of the facilities available in these labs is given below.

List of equipments
Following is the list of lab equipments used at different labs of Plant Quarantine. Most of the equipments are funded by either government of Nepal or Food and Agriculture Organization(FAO) or PACT. All listed equipments are in working condition.

#	Laboratory	Equipment
1	Central PQ Office (Kathmandu)	No central laboratory is established yet
2	E. Regional PQ Office (Kakarvitta)	Incubator
		Autoclave
		Glassesware/ Plasticware set
		Blender
		Thermometer
		Deep Freezer (9° - 20° C)
		Digital Camera
		Microscope
		Electronic Balance
		Twisers
3	C. Regional PQ Office (Birgunj)	Incubator
		Autoclave
		PH meter
		Blender
		Deep Freezer (9° - 20° C)
		Digital Camera
		Microscope
		Electronic Balance
		Trirods
4	W. Regional PQ Office (Bhairahawa)	Incubator
		Autoclave
		PH meter
		Blender
		Deep Freezer (9° - 20° C)
		Digital Camera
		Microscope
		Electronic Balance
		Trirods
5	MW. Regional PQ Office (Nepalgunj)	Autoclave
		PH meter
		Blender
		Thermometer
		Deep Freezer (9° - 20° C)
		Digital Camera
		Microscope
		Electronic Balance
		Trirods
6	FW Regional PQ Office (Gadda Chauki)	Incubator
		Autoclave
		Blender
		Digital Camera
		Microscope
		Electronic Balance
		Trirods

Furthermore, following lab equipments and furniture are in the process of being installed at the labs within next year:

#	Laboratory	Equipment	Quantity	Furniture	Quantity
1	Central PQ Office (Kathmandu)	Plan for Training Centre			
2	E. Regional PQ Office (Kakarvitta)	Microwave Oven	1	Stool	5
		Hot Air Oven	1	Chemical Rack	1
		Laminar Flow	1	Lab table	1
		Digital Compound Microscope	1	chair	2
		Autoclave	1	Glassware stand	1
		Digital Camera	1	-	
3	C. Regional PQ Office (Birgunj)	Power Backup Battery	1	Stool	5
		Microwave Oven	1	Chemical Rack	1
		Hot Air Oven	1	Lab table	1
		Laminar Flow	1	chair	2
		Digital Compound Microscope	1	Glassware stand	1
		Autoclave	1	-	
		Digital Camera	1	-	
4	W. Regional PQ Office (Bhairahawa)	Incubator	1	Stool	5
		Compound Microscope	1	Lab table	1
		Laminar Flow	1	chair	2
		Autoclave	1	Glassware stand	1
		Freeze	1	-	
		Generator	1	-	
		Digital Camera	1	-	
5	MW. Regional PQ Office (Nepalgunj)	Power Backup Battery	1	Stool	5
		Incubator	1	Chemical Rack	1
		Microwave Oven	1	Lab table	1
		Hot Air Oven	1	chair	2
		Laminar Flow	1	Glassware stand	1
		Compound Microscope	1	-	
		Autoclave	1	-	
6	FW Regional PQ Office (Gadda Chauki)	Power Backup Battery	1	Stool	5
		Incubator	1	Chemical Rack	1
		Microwave Oven	1	Lab table	1
		Hot Air Oven	1	chair	2
		Laminar Flow	1	Glassware stand	1
		Compound Microscope	1	-	
		Autoclave	1	-	
7	PQ Checkpost (Biratnagar)	Power Backup Battery	1	Lab table	1
		Microwave Oven	1	chair	2
		Microscope	1	Glassware stand	1
		Hot Air Oven	1	-	
		Laminar Flow	1	-	
		Autoclave	1	-	
8	PQ Checkpost (Tatopani)	Power Backup Battery	1	-	
		Incubator	1	-	
		Microwave Oven	1	-	
		Hot Air Oven	1	-	
		Laminar Flow	1	-	
		Digital Compound Microscope	1	-	

#	Laboratory	Equipment	Quantity	Furniture	Quantity
		Autoclave	1	-	

Following is the list of total technical manpower working at different Plant Quarantine Offices:

Description	Number
1st Class Gazetted Technical Officer	1
2nd Class Gazetted Technical Officer	6
3rd Class Gazetted Technical Officer	12
3rd Class Gazetted Technical Officer	1
Junior Technician (J.T.)	26
Junior Technician Assistant (J.T.A)	23

Lately, a technical issue has arisen because of the decision to promote J.T. and J.T.A. into officer level based on their experience. However, they are said to posses no undergraduate level education, leading to many officers at the ministry wondering whether new officers will be competent enough to assume their responsibilities.

As mentioned above, Seed Quality Control Center (SQCC) is a major resource center for plant quarantine. It is used in testing seeds (Nepal imports 93% of its total seed requirements) The testing is done in its own ISTA certified lab. SQCC has provision of 13 technical staffs in its lab. And following is the list of lab equipments at SQCC:

#	Machine	Qty.	Remarks
1)	Conductivity Meter	1	
2)	Dessicator	1	
3)	Digital Moisture Tester	1	
4)	Digital Weighing Balance	1	max capacity= 2 kg
5)	Digital Weighing Balance	1	max capacity= 200 g
6)	Digital Weighing Balance	1	max capacity= 210 g
7)	Digital Weighing Balance	1	max capacity= 150 g
8)	Digital Weighing Balance	1	
9)	Distilled Water Heater	1	
10)	Dole Moisture Tester	1	
11)	Germinator	2	each unit consists a heating & cooling chamber
	Accelerated Ageing Chamber	1	
	Seed Germinator	1	
	Growth Chamber	1	
	Germinator	1	is not in working condition
12)	Home Grinder	1	normal grinder used in home type
13)	Hot Water Bath	1	
14)	Illuminated Purity Work Board	1	used for magnifying purpose
15)	Laboratory Mill	1	Model: *"Perten 3303"*
16)	Magnetic Stirrer	1	
17)	Manual Weighing Balance	1	max capacity= 1.59 kg
18)	Oven/ Incubator	4	
19)	Seed Divider (Boerner Type)	2	
20)	Seed Divider (Centrifugal Type)	1	
21)	Seed Divider (Soil Type)	1	
22)	Air Conditioner	1	for maintaining required lab room temperature
23)	Biological Oxygen Demand (BOD) Incubator	1	
24)	Compound Microscope	2	
25)	Deep Freeze	1	for maintaining temperature -20°C

#	Machine	Qty.	Remarks
26)	Glasswares	-	implies normal glasswares used in lab
27)	Stereo Binocular	1	

SQCC also occasionally sends sample to laboratories owned by Department of Agriculture, National Agricultural Research Council(NARC) or even private labs when necessary.

Following is the seed testing laboratories in Nepal altogether.

#	Name of Laboratories	Remarks
1	Regional Seed Testing Laboratories, Jhumka	Under Department of Agriculture
2	Regional Seed Testing Laboratories, Hetauda	Under Department of Agriculture
3	Regional Seed Testing Laboratories, Bhairahawa	Under Department of Agriculture
4	Regional Seed Testing Laboratories, Nepalgunj	Under Department of Agriculture
5	Regional Seed Testing Laboratories Sundarpur	Under Department of Agriculture
6	National Seed Company Limited, IQCL Itahari	Under NSCL
7	Central Seed Testing Laboratory, Hariharbhawan	-
8	Centre for Environmental and Agricultural Policy Research, Extension and Development	Private
9	Regional Agriculture Research Station, Pakhribas	not in function
10	Regional Agriculture Research Station, Lumle	not in function
11	National Seed Company,IQCL Bhairahawa	Under NSCL
12	Sean Seed Service Centre, Thankot	Private
13	Agriculture Techonology Centre, Pulchowk	not in function
14	Seed Science and Technology Division, Khumaltar	Under NARC
15	Rhizobium Laboratory, Janakpur	Under Livestock Department
16	National Agriculture Genetic Resource Centre, Khumaltar (Seed Laboratory)	-
17	Sub-tropical Vegetable Seed Production Centre, Rukum (Seed Testing Laboratory)	Under Department of Agriculture

SECTION 3

Examination of food items

The main role in examining food items is played by the department of Food Technology and Quality Control(DFTQC). DFTQC's role is not only in testing imported and exported food items, but also in maintaining over all quality standards of food items sold and consumed in Nepal. It has 1 central office and 5 regional offices. Each regional office has tentatively 4-5 technical staffs, and 1-2 staffs in quarantine offices that it maintans. Its central lab has 4 chemists, 4 food technologists, 2 botanists, 2 microbiologists and 2 others from biological science.

The regional laboratories are involved in proximate analysis (such as moisture, fat, carbohydrate), and labeling studies. The central laboratory is utilized for all other types of analysis. The list of commodities analyzed in the central labs are : Food and Feed (such as Biscuit, wheat flour, bakery products, sugar and honey, noodles, cheese), tea and coffee, fruit and beverages,oil and ghee, milk and milk products, ketchup and other sauces, spices, feed and feed products, table salt, Rice and grains, water, nutrients analysis in food products, cereals and grains, and all other microbiological analysis in food and feed.

DFTQC has a total of 231 staffs: 1 Director General, 3 Deputy Director General,18 senior food research officers, 54 food research officers including plant quarantine officers, veterinary officers and other nontechnical officers, 90 technical assistants, and 65 other staffs. It controls Food Quality Control Division, Central Food Labaratory and Food Technology Training division. The list of technical staffs working in labs has already been given above.

Equipment	*Quantity*	*Remarks*
Atomic Absorption Spectroscopy	1	
Autoclave	3	
Becquerel Monitor	1	
Bomb Calorimeter	1	Not in operation
Bottle washer	1	
Distillation Set	1	Not in operation
Fluorometer	1	Not yet operated
Furnace	5	
Gas Liquid Chromatography	1	
Hot Air Oven	8	
HPLC	2	One is not in operation
Incubator	3	One is not in operation
Microscope	5	Two are not in operation
Spectrophotometer	1	
UV Chamber	1	

Table 1 Main Laboratory Equipments in the department

We found that several donor agencies were helping DFTQC. The by no mean exhaustive list of agencies that are supporting DFTQC are as follows:

a. Nonproject Grant Aid (NPGA) Japan: Nonproject Grant Aid of Japan was used to construct central lab building and purchase some lab equipment.
b. KR 1 Japan: Is assisting to meet obligation under WTO.
c. Food and Agriculture Organization (FAO): Provided assistant in formulating Food Acts that are consistent with the requirement of WTO.
d. World Health Organization (WHO): WHO has supported in drafting guidelines for dairy process, meat processing industries, and noodle industry. Additionally it has also supported in purchasing laboratory chemicals, computers, and multimedia equipments.
e. Micronutrient Initiatives (MI): It has supported in capacity enhancements in terms of lab equipment and software for data networking in analyzing micronutrients.

DFTQC is now focused in enhancing its capacity so that it can accredit the agricultural products that are prepared for export, and it can address all the concerns raised by international regulatory agencies. We found that they were actively seeking assistance with government as well as foreign agencies. They actually have prepared a list of equipments they would like to have at present. (We have that , but have not included with this report).