



The status of Post-Harvest and Transport Technologies for Horticulture produces in Ethiopia

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Introduction

Ethiopia has an area of 1.22 million square kilometers with great variety of climatic and soil types which can grow crops for home consumption and foreign markets. Agriculture as the main branch of Ethiopian economy, has 50 % share in the GDP. Share of agriculture in employment is 85%. About 75% of Ethiopia's industry is engaged in processing of farm products. About 12,000 hectares of fruit plantation is surveyed in the peasant and state farms. From the total area of fruit plantation about 70% is cultivated by individual peasant farmers. The total annual volume of fresh fruit production of the state sector agriculture contribution is less than 20%.

As to the area of vegetable crops, cultivated land of the peasant farms is not well known. Based on the surveyed percapita consumption and estimated loss between production and consumption, the annual fresh production of assorted vegetables is about 2.86 million tons. From the total volume of horticultural products 95% is fresh vegetable production. The major vegetable production is from the peasant farms.

There is no processing of fruit and vegetables in the peasant sub sector. Production of canned and bottled fruit and vegetables is mainly in the Ministry of Industry (MIO) and Ministry of State Farm (MSF). The main sources of

horticultural raw materials for the processing plants are the state farms.

Assorted vegetables, cutflowers, fruits and triple concentrate tomato paste are the main exportable horticultural commodities. Ethiopia imports a very limited amount of fresh and canned fruits and vegetables. But there was no import of cutflowers for the last few years.

The horticulture industry in Ethiopia has been grown significantly during the past six years due to the encouraging investment policy, favorable agro-climatic and other conducive socio-economic situation in the country.

In order to provide a one-window service to the booming horticulture sector, the Ethiopian Horticulture Development Agency has been established in the year 2008. The Agency is now exerting over all effort to strengthen the development of the sector- emphasizing the areas of investment, capacity building, and market and promotion supports.

As cool chain management plays a significant role to maintain the quality of the horticulture produce and to better exploit market opportunity, stakeholders' task force comprising relevant actors in the industry has been organized and engaged in practical implementation since the past 10 months of the year. The Taskforce follows the cool chain management at all levels, i.e. farm level, cold trucks and at the air port cargo terminal and it identifies problems that negatively affect the cool chain and taking corrective measures accordingly. Besides it initiates awareness creating trainings to the pack house workers,

operators and in the future all actors involved in the value chain.

Despite the on going efforts exerted by the Stakeholders' taskforce spearhead by the agency, there are still many constraints need to be addressed.

Pack-House Operations

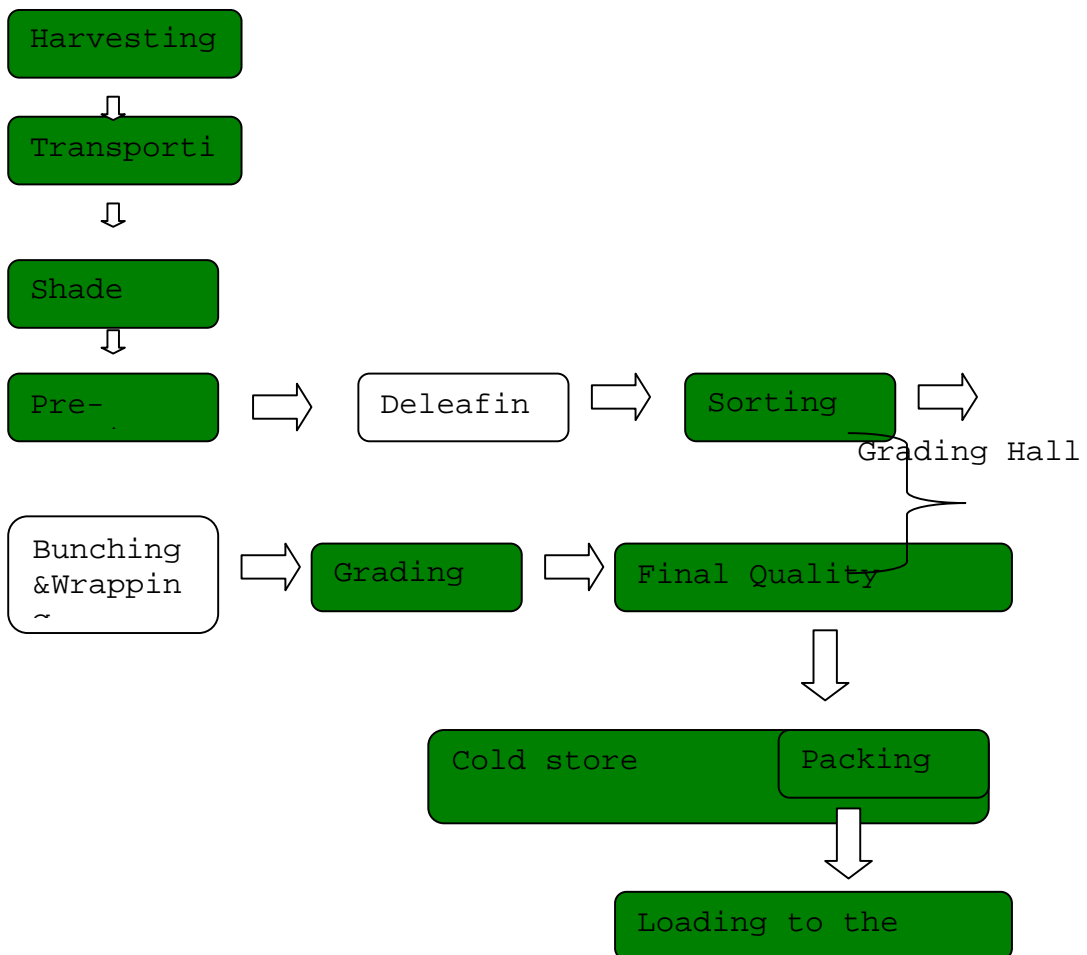
Currently there are over 120 companies engaged in the horticulture industry among which over 100 are active exporters. All companies are having pre-and main-cooling facilities though some of them have failed to have adequate facilities.

Besides, the time stay of the produce in the pre-cooling and cold store varies from company to company depending on the frequency of shipments, amount of produce, cold truck loading capacity, knowledge of employees and the variety of the produce. Though the pack house, pre-cooling and cold store which are being used across the horticulture industry shows similarity, the activities carried out by the vegetable and fruit farms are different from that of floriculture. However, both Veg-Fru and flowers pass through cooling, sorting, grading, packing and loading process.

As it can be seen from the diagram below, the flow with the shaded part is applicable both for Veg-fru and flowers whereas the unshaded one is mainly for floriculture. The main activities being undertaken around and/or within the pack house are as follows:

- After the cut flower is transported from the green house/field to the pack house with care, it will be

- placed in the pre-cooling minimum for three hours in order for the produce to release field heat and sometimes to let it stay there up until they harvest adequate produce,
- Removal of the leaf follows to facilitate handling as well as to minimize cost of air freight,
 - Sorting of flowers by their length, color, opening stage, size... and make it ready for bunching,



- The already sorted flower will then be bunched and wrapped carefully,

- After the flower is bunched and wrapped, it will be ready for final quality control,
- Once the quality controller checks the bunched and wrapped flowers, it will be placed in the cold store minimum for 12 hours,
- Being properly cooled, the wrapped flower will be packed and be ready for loading,
- Finally, the packed produce will be loaded to cold truck.

Transportation to the cargo terminal

The already packed (for flower) or palletized boxes (for vegetable and fruits) are then loaded to the cold truck either in a temperature controlled docks or in some farms in ambient temperature. Temperature is the most important factor in the cool chain and cold trucks play a significant role in maintaining the temperature of the produce from the company to the port.

In the Ethiopian horticulture sector, there are around 96 trucks currently transporting fresh produce from the farm to air port cargo terminal. Among which 91 of them are inspected by the Transport Authority to check whether they are equipped with the right cooling facilities.

Ideally, any perishable produce has to be transported with well equipped cold trucks. The inspected cold trucks are being certified with Green (those out of any defect), Yellow (those with minor defects) and Red (those with major defects) certificates. A random and regular inspection is being conducted by the Authority to check whether the trucks with defects have shown any improvement and if it is

so, to revise their respective certificate to the next level.

As there is no well organized and specialized logistics provider, most of the farms engaged in the horticulture sector transport their produce using own cold trucks with the carrying capacity of ranging from 150 to 800 boxes. As few farms do not have own cold trucks and few others do not want to use their cold trucks due to different reasons, they transport their produce using rented cold trucks mainly from two cold truck providers (Ethiopian Perishable Logistics company and meskel- which was flower farm). These two logistics providers own and rent only 11 cold trucks.

Most of the farms are concentrated in the radius of the Addis Ababa city though some of them are established as far as the Southern Region. The trucks transporting horticulture produce are travelling then to the air port cargo terminal ranging from the nearby Sebeta farms (Minimum 30 minutes) to that of Awassa (around six hours).

The EHDA is closely working with the Transport Authority to have one National Standard and Specification for the cold trucks to enhance their hauling capacity as well as to maintain quality of the produce. So far 10 modern cold trucks which can meet the standard are being imported by a private company (Flower Port Cargo Plc).

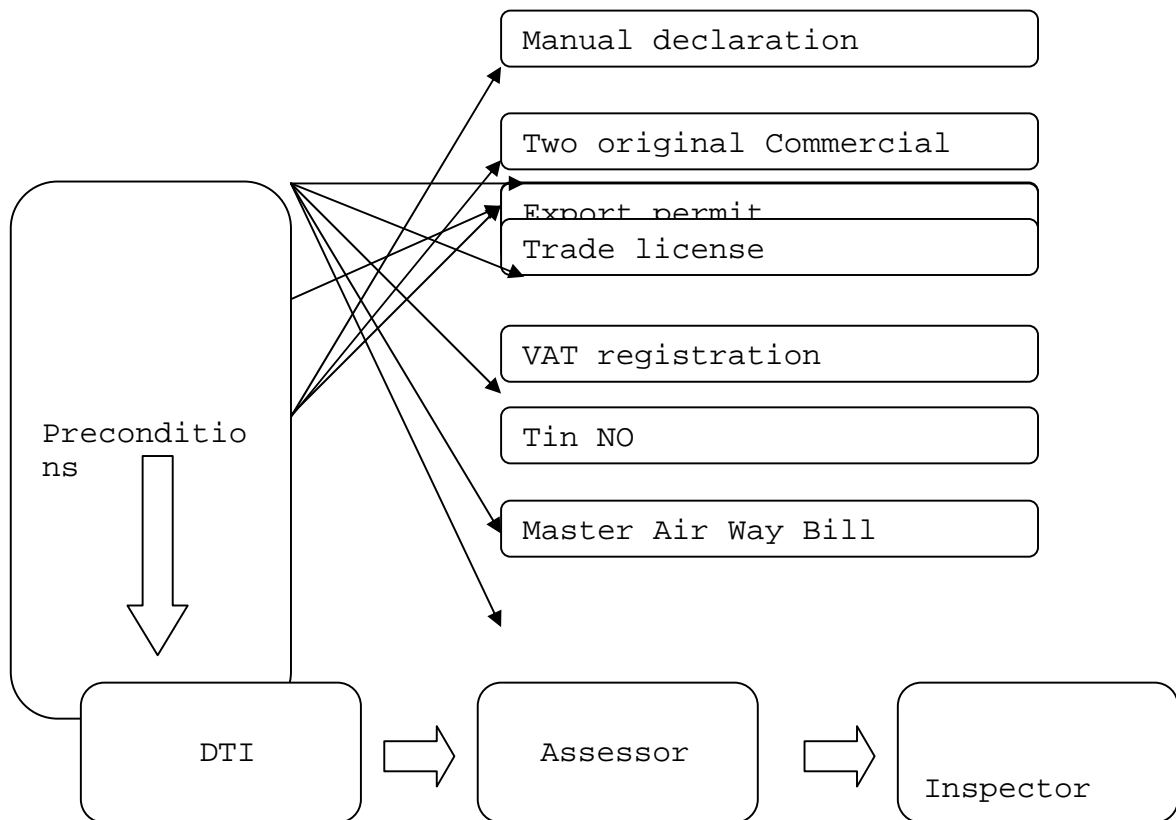
Handling at cargo terminal

After hours of driving from the farm, the cold trucks arrive and stop at the air port cargo terminal for unloading. However, before unloading, all the necessary documents such as custom clearance procedure have to be fulfilled. Before the transitor (delegated person by the

exporting company) approaches the Custom people (Assessor), he/she has to make sure that:

- the farm possesses trade license from the delegated government office (MTI),
- the farm is VAT registered and is having the TIN number,
- Export Permit from the government office (MTI),
- Bank Permit from National Bank of Ethiopia is secured,
- Two original Commercial Invoice and Packing List is hold,
- Manual declaration is prepared and
- Master Air Way Bill is already obtained.

The transitor can then go to DTI (Data Trade Input Office) where the manual declaration is inserted to the ASICUDA System. The next step is approval of the declaration by the assessor.



However, sometimes if the system has failed, the clearance procedure takes time which ultimately affects the unloading process at the air port cargo terminal. So many trucks are being forced then to make a long queue and stays for hours to be unloaded.

As the space of the air port cargo terminal is small and the number of docks is very few, it is very common to see the unloading area congested by trucks. Some of the trucks cooling system is not properly working and if normally equipped may not be turned on by the drivers due to the reason of fuel consumption and lack of awareness.

Being fulfilled all the procedures, the unloading process is taken place and after the produce gets inspected by the security people, it will enter to the palletisation room where the temperature is around 11°C (which is high).

The cold store at the air port was initially sought to accommodate the horticulture industry fully. However, the development of the sector was remarkable that the palletisation room did not able to serve the produce at a time. This is for one thing the room is small and the other the working stations are very few (only two) and the rest is being palletized at the fixed ones and this takes time which hinders the unloading process.

Taking into account the existing situation and the future development of the sector currently there is an effort to construct a modern cold store at the air port cargo terminal and for the short term to improve the existing

facilities by promoting additional cooling facilities to bring down the temperature of the palletisation room to 4°C.

Freight Forwarding Companies

The time the horticulture sector in Ethiopia started to boom, one Logistics Company (Ethio-Hortisher) came into being as the only freight forwarding company in the year 2004 and was serving for about five years alone by providing chartered aircraft to its customers. Last year (March, 2009) Flower Port Cargo Plc was founded as the second freight forwarding company to meet the demand of the growing sector.

Currently third logistics company is under the process of establishment which is being organized by growers in a cooperative basis so as to serve them at a reasonable cost and to play its own role satisfy the ever growing horticulture industry.

Sea Transport

Till now, no horticulture produce has been transported using reefer or other containers by sea except one farm (Gitu Horticulture) which has taken the initiation to send vegetables by sea using reefer container though it was unsuccessful due to the clearance procedure problems at Jeddah.

Currently, to study the possibility and feasibility of sea transport and to exploit the best out of it, a study team has been formulated comprising members from Gitu farm (Vegetable & Fruit producer), AQ roses (Flower Producer), Shipping Lines and the Ethiopian Horticulture Development Agency.

AQ roses has taken the responsibility to study the feasibility of PRS containers where as Gitu the reefer

container, then finally to be evaluated by the team. If it is proved to be feasible, the whole farms especially of those engaged in the production of Vegetables and Fruits will strongly be beneficial.

Who is exporting...?

All horticulture farms in Ethiopia are producer-exporters. However, till last year, some non grower exporters were engaged in exporting of flowers. But as the export of perishable produce needs uninterrupted follow up through out the chain; as handling of the fresh produce needs great care; as the perishable produce has to be kept cool while sorting, grading, packing, loading and transporting, the unorganized non-producer exporters are now restricted to do so. In the City one can see few flower shops but none of them are equipped with the right preparation and cooling facilities.

Putting this condition under consideration, the Ethiopian Horticulture Development Agency is recently exerting tremendous effort to organize companies wanting to export value-added produce. The companies are expected to fulfill the requirements set by the Agency in accordance with the export regulation of the country. Among the requirements to be met, having pack house equipped with cold store and cold trucks are the major ones.

Ethiopian Vegetable and Fruit export crops and destinations

The most common vegetables being exported from Ethiopia are Peas, Beans, Fine beans, Garlic, tomato, and Chili, which

are mainly exported to United Arab Emirates, UK, Saudi Arabia, Belgium, and Netherlands.

On the other hand, Strawberry is the main fruit export crop and sometimes Banana, Avocado, Melon, Grape, and Orange are also being exported to such countries as United Arab Emirates, Russia Federation, Saudi Arabia, UK, Netherlands, Yemen and Djibouti.

Both the vegetables and fruits are being transported to their respective market destinations via air transport though transportation to the neighboring countries (Sudan and Djibouti) is mainly by non-refrigerated trucks.

Main challenges of the sector

- Absence of specialized cold truck service provider company,
- Shortage of cold store at nearby and at cargo terminal,
- Knowledge gap in the investors about the importance of cool chain management to promote quality of export produce,

Areas of interventions

- Establishment of logistics companies specialized in cold trucks,
- Establishment of cold store at the point where Veg-Fru are exported to Djibouti,
- Spare parts suppliers for cold trucks,
- Manufacturing of import-substitution materials,

- Export of value-added horticulture produce.