



Learning Workshops Summary Report

By

Pulses and Oilseeds Working Group

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Rationale

Myanmar is an agro-based country and its economy relies on the agriculture sector. Myanmar is a leading country in pulses among ASEAN countries. It is the second largest sown area after rice (4.45 million ha), occupying 21% of total crop sown area. Among them mung bean is one of the most important crops for exporting in Myanmar. It also has great potential to export due to high demand. However, indiscriminate apply of numerous pesticides create un-readiness to catch up this opportunity. Lack of or poor knowledge of farmers also makes unsafe of mung bean and other pulses products for consumers so that some foreign countries restrict pulses importation from Myanmar. As a result, Myanmar's pulses industry especially mung bean is not moving forward and it is also difficult to access premium price at the premium market.

Nowadays, food safety is the critical issue to discuss for everybody in today. Awareness raising for public, in particular, producers, consumer, authorities and all the stakeholder who are involved along the food chain is crucial and fundamental task to move forward In particularly for premium market. All stakeholders in the supply chain are crucial and have responsible to tackle this issues properly. In 2017, Pulses and Oilseeds working group members elected the ICCO Cooperation and Pyae Phyo Aung Co, Ltd to lead the working group and decided to hold regular meetings and learning event to raise awareness of the all stakeholders in the pulses and oilseeds industry. Among the 13 working groups of MAN, Pulses & Oilseeds working group is one of the most active and interested by members. During the working group members meeting, all members have identified the key issues in the pulses and oilseeds sector such as seeds, pesticides, food safety, climate change and value-added processing. After that, learning events were organized to share and open discussion to move forward including all key stakeholders. We strongly believe that we can bring Myanmar's Agricultural strength back if we work together.

The objective of this summary report is that the results from all three learning events of Pulses and Oil Seed Working Group will be combined as a summarised report and submitted to government (MOALI &MOC) and MAN's members as a white paper.

First Event 1: Pulses and Oilseeds working group Learning and Sharing event on “Seeds related policy and challenges, current situation of trade and market, Sharing information on findings of the P4 assessment on DRR/CSA/environmental protection results in the project areas”



In total of 75 participants (Male 47, Female 28) from a variety of organizations and companies : FSWG, GIZ, FDAs from 4 townships, Pyae Phyo Aung Co. Ltd., Shan Maw Myay, NAG, Syngenta, BASF, Awba, etc. The objective of workshop was to share updates among farmers, public and private stakeholders about pulses and oilseeds sector related policies, issues and practices.

Venue: People Park, Yangon, 30 May-2018

Second Event 2: Pulses and Oilseeds working group Learning and Sharing event on “Discussion on Issues of Pesticides & Fertilizer Law and Procedures”



In total of 74 participants including (50 male and 24 female) attended. The participants discussed related issues and explored how to tackle the problems through effective collaboration.

Different stakeholders such as government department officials, 9 Companies (Inputs and export), INGOs and LNGOs, CSOs and mung bean farmers from Yangon and Magway region participated and shared the experiences, possible solutions and recommendations.

Venue: Seed Division Hall, Gyogone, Yangon, 5th of October 2018

Third Event (3). Pulses and Oil seeds working group Learning and Sharing event on “Food Safety Compliance for Premium Market and the Prospect of the Value Added Products”



In total of 87 participants took part in the workshop, 54 male and 33 including from government, private sector and CSOs. From government the regional Minister of Agriculture of Bago Region , Yangon Regional Director of Agriculture, DoA Deputy Director, District Officers, and Directors from FDA, Consumer affairs are attended KMSS Yangon, CESD, NAG, FSWG, RDA,. Magway RFDA farmers and Yangon P4 farmers attended. The aim was to provide an overview of food safety issues and requirements for export to premium markets and domestic markets along the value chain in pulses and oilseeds industry.

Venue: Seed Division Hall, Gyogone, Yangon, 27th of February-2019.

In these events, in total of 236 participants (151 male, 85 female) were attended and discussed in three big events. The participants are from the different variety of organization, companies and government departments.

Objectives

The objectives of the workshops are;

1. To share the updated information about issues, practices and policies among farmers, public and private sector related to pulses and oilseeds industry
2. To provide an overview of food safety issues and compliance for export to premium markets and domestic markets along the value chain in pulses and oilseeds industry.
3. To raise the aware of all stakeholders and highlight the issues of pulses and oilseeds sector that needs to be addressed by policy makers and concerned departments through recommendation and suggestions

About Pulses and Oilseeds Working Group

Myanmar Agriculture Network (MAN) is non- profit local organization which is supported by Grow Asia, cooperate with Ministry of Agriculture, Livestock and Irrigation, Ministry of Commerce and private sector for Myanmar agriculture sector sustainable development, value chain development and the international market share for Myanmar Agricultural products. There were (8) crop oriented working groups and (5) supporting and cross-cutting working groups. MAN is coordination and networking among government, farmers and private sector to improve international market for Myanmar products, promote value-added products and to benefit the smallholder farmers by promoting access to quality inputs including seeds, fertilizer, a pesticide with proper price and knowledge for right apply these inputs. In 2017, Pulses and Oilseeds working group members elected the ICCO Cooperation and Pyae Phyo Aung Co, Ltd to lead the working group and holding meetings quarterly. Members are multi-stakeholders of pulses and oilseeds sector entrepreneur, companies, farmer associations, NGOs, Export& Import companies, Edible oil millers etc. Working Group has been set the sectoral challenges, solutions, set objectives, way forward to implement. There were three workshops and learning events within one year as outcomes and now, planning to develop and submit “National pulse and oilseeds strategy” in 2019.

About ICCO Cooperation and P4 Project

ICCO Cooperation is a Dutch organization with 51 years of experience and global presence of five regional offices. The regional office in South East Asia implements projects and programs in Myanmar, Indonesia, Philippines, Cambodia and Vietnam. Together with our partners from the public and private sector, ICCO works towards a just and dignified life for all, by promoting opportunities for economic empowerment and inclusive development.

The P4 project is jointly implemented by ICCO South East Asia, The Myanmar NGO Network Activities Group (NAG) and private sector partner East-West Seed (EWS).Each partner brings the added value of their knowledge,expertise and experience to the project team.The main oblective of

P4 project is increase the income for 10000 smallholder mung bean farmers, of which 20% are landless female farm labourers, in four townships in the Yangon and Magway Regions through increasing productivity and quality of produce by enhancing access to support services and good quality mung bean seeds. In addition, to improve the enabling environment for the mung bean value chain in Myanmar by proposing policy and regulatory reform is also another main objective of the P4 project. ICCO, P4 project combines various approaches and methods, such as value chain development, market for the poor and Public-Private Partnerships.

By collaborating with the government (Department of Agriculture) and private company Myint Myat Taw Win and the project, the project's farmers have been benefited in terms of the price and access to resources. For example, in Minbuu township, 265 farmers received GAP certificate for mung bean crop. This is the first ever certificate for mung bean crop in Myanmar.

Discussions related to Export, Sales and Market (Downstream)

Trade and Market

Pulses and Oilseeds are the second priority of Myanmar after Rice. India is the main buyer and market for Myanmar Beans and Pulses. Due to import restriction of India from 500,000 MT to 200,000 MT in 2017, the price was considerably down in particular for Pigeon pea and Black gram. Myanmar has been formed beans and pulses export coordination committee to solve the problem of low export volume and price, and negotiate to export 150K MT for Matpe, 150K MT for Mung Bean (Petisane) and 200K MT for Pesingon in 2018. India has banned the import for a while to the higher local market price to protect their local farmers/ growers benefit. Trade limitation might be more and more in future. Relying only market is so risky and should explore the new markets in the future. Quality assurance is the key factor and practicing business ethic is also important in quality assurance.

Farmers used to sell immediately after harvest since they do have to pay back to money lenders. At that time, mostly the price is not good and when the price goes up, they do not have any products in their hands.

Recently, Myanmar has a new market (EU) for mung bean and it was exported around 5000 MT. This amount is still small volume and it account for only 1% of total production of the country. However, the price is higher than other market like India. However, in order to export to EU market, the requirement for food safety standards is high and the product has to be aligned with this standards. For example, EU market prefer to buy Mung bean (Shwe War variety), from 3.4 to 5 millimeter size and white color, need to hard, brittle and long. Shelf-life and germination are also vital. Myanmar's mung bean sprout rate is 95% and shelf-life is also short compared to China's mung bean. Likewise, Japan market also requires not only quality but also good hygienic practices. American also buys the mung bean for sprout. In China, pulses market price is going down in this year due to increased production under favourable weather condition and less demand of EU. For pulses industry, G to G agreement with trade partners' countries should be established to get a guarantee, however, the main issue is that there is no guarantee for the price. In fact, pulses sector has an advantage in Myanmar and needs to have a clear strategy. The government should have the

policy to analyse market situation, to practice as bulk purchasing/ group buying and selling to reduce cost of inputs.

Ministry of Commerce is supporting for development of trade centres, creating a source to share information on time, Myantrade website which can learn the protocol and procedures for export and can search export volume of each crop. Nowadays, products can be exported to EU except weapons. Due to the political situation, some discussions have been in 2017 to withdrawal trade sanction to import EU but it might not possible immediately. Usually, it takes time to five years to open or close the sanction. It is no need to worry it will take many years and also Netherlands is promoting on food products at the moment. Myanmar has a limitation on laboratory testing and needs to sustain the control system on pesticide residual.

There is important to develop the Trade Centre system and upgrade the storage system and facility. Private sector needs to invest more to do that. Finance and investment are also important for more effective production and overcome the burdens. The more improvement in product quality, the better supporting in market competition. Logistic and transportation are also important factor for goods and final products. Export and Import for agriculture products can be applied on line at MACCS system under Custom department, Ministry of Planning and Finance. There is needed to have a licence for export/import. No need to pay tax for export of agricultural products but import need to pay 20% as commercial tax, 3% for seed custom duty, 20% for fresh goods and fruits. The custom duty rate is changed and update every four years.

Summary of the key points,

- Major export countries of Mung Bean are India and China.
- Until 2017, there are a lot of export quantity of Mung Bean
- However after 2017, export quantity was reduced.
- Bean production is very import for Myanmar and can earn a lot of money from exporting of bean. Therefore government should focus on it.
- Collective selling and marketing, promoting mechnery activities, consideraton markets situation should be enhanced through government policy.
- And Market center should be developed in dry zone region.
- Farmer organizations should be encouraged for collective selling and buying activities.
- Government should support and promote farmers organizations.
- Quality infrastructure should be developed
- Research and development needed to be developed by Government.
- Government should prioritize for finding market opportunities and value chain approach.

Sharing of Food Safety compliance of EU premium market,

- Although Mung Bean can be produced in Dry Zone, Bago and Yangon region, mung bean from Bago and Yangon are qualified to export.
- For food safety, all of standards and regulations should be followed by EU guidelines including for irrigation water.
- For EU export, official control system is needed for food safety and Plant Protection Department is currently working for it.
- Mung bean export become 4 times greater than before however in 2017, export quantity was reduced.
- For EU export, all kinds of exports should be aligned with EU General Food Law.
- Farmers and producers must be followed GAP, GHP and HACCP.
- Need to develop traceability system.
- Groundnut cannot be exported to EU yet.
- There are many steps that need to develop to export groundnut to EU.

Discussions related to Production and Processing (Midstream)

Findings of Climate Smart Agriculture Research

P4 project has been researched on “climate-smart agriculture” with Mung Bean (Petisane) grower farmers on March, April 2018. Learning on crop pattern changing and production practice.

Like many other countries in the world, climate change impact is one of the major challenges for crop production in Myanmar. Under the climate change scenario, rains and cyclones occur with more frequency and intensity in recent years. Due to the irregular and unseasonal rainfalls, drought and heavy rains often happen during the crop seasons, creating extremely low yields to the crops. Generally, mung bean farmers in both study regions have encountered more serious impacts of rains than droughts. When heavy rains come during the time of early crop establishment and flowering, it damages the crops, leading to a significantly reduced production.

There were needed to search new technologies to climate change adaptation agriculture, which can reduce greenhouse gases. Need to announce the type of crops which are climate-smart and marketable. Pulses required low water consumption, improve soil quality, low nitrogen fertilizer. Mung Bean (Petisane) grows in paddy field (Lal Myay) in Yangon and cultivate in Yar Myay in Magwe Region. Lighting and temperature are important and climate adopted, resistant on high temperature that depending on soil moisture. It might be low yield if wet and raining in fruiting time before harvesting. Only 10% are for consumption and 90% of products for sale. There were not enough finance for invest because production cost is about 200,000 MMK/ acre but only received 50,000 MMK/ acre from government (MADB) loan. It will be a profit when weather-based crop insurance system in Myanmar.

If more rainfall in later monsoon, needed to dig drainage to protect wet, prepare water outlet system and arrange tubewell for when water needed. If cannot control the water system, should consider other crops like that corn or sesame. Farmers need to solve the problem of soil management and labour shortage and scarcity.

It was recorded that in Khayan and Thonegwa Townships heavy rains fell in November and December in 2012; mung bean fields were water-logged and yields were noticeably decreased. Consequently, sowing time of mung bean was later than the normal, resulting in poor yields. Furthermore, because of the continuous rains in post monsoon, in November 2017, sowing time of mung bean reached to December; the crops did not grow well and yields were highly affected. Most farmers of in Khayan and Thonegwa Townships said that the yield of mung bean in 2018 (harvested in March) was the worst year of production they had ever encountered.

In the case of Minbu and Magway area, since mung bean is cultivated during the monsoon season, rains can affect any time during the crop cycle. When it comes at the proper stage of vegetative growth, it favors the yield. However, intense rains or drizzling long days can damage the crop at any stage. More irregular rains fell in Myanmar in previous years; the rains were highly fluctuated in time and space, particularly in central dry zone, including Minbu and Magway Townships. When rains occur during the flowering time, the yields are affected; if it rains during the pod maturing and harvest time, the qualities of the seeds such as color, moisture, etc., are damaged and the market price becomes low.

Recommendation; As for CSA practices to follow,

- The suitable climate change adaptation technologies should be applied, with the support and cooperation of the concerned government departments, local and international NGOs local stakeholders and technicians.
- To save the time of land preparation, zero tillage or relay cropping system of mung bean can be initiated. The zero tillage technology of chick pea and black gram production after the rice harvest has been successful in many parts of the country; some related research should be undertaken in mung bean areas.
- Besides, proper soil and water management technologies should be promoted for improvement of soil fertility and soil structure. It has been well documented that the use of organic fertilizers and composts favors the better crop establishment and resilience to the climate change impacts.
- For the Minbu and Magway Townships, droughts as well as the rains are limiting factors for the successful mung bean production. The supplementary irrigation with tube wells may be a potential solution for drought. The proper soil fertility management needs to be initiated in mung bean production to encourage the crop resilience to drought and flood. In both study areas, GAP approach should be incorporated into the CSA system. Mung bean GAP includes use of good quality seeds, use of pest and disease resistant varieties, proper soil and water management practices. For the timely sowing use of agriculture farm machinery is necessary.
- IPM packages in pulses production should be implemented to mung bean farmers as a low-cost and environmentally- friendly measure to control pests.

Pesticides and the application of pesticides and its Residual Effects

According to Sayama Daw Aye Aye Mar who is a lead researcher on “Application of Pesticide Patterns and its Residual Effects on the Crop and Cultivated Soil in Mung bean Growing Areas of Thonegwa and Khayan Townships, Yangon, Myanmar” This research is funded by FSWG.

There were challenges over the world are increasing population, reducing on agriculture, and produced food required the quality and safety. Organic farming is only 5% of food production and pesticide are still using to cover food production for high population. Local and international consumers are more and more focusing on food safety issues and countries are trying to control more. The following are the recommendations of consultant;

1. The pesticide law should be enacted and mentioned that pesticide selling companies and wholesalers have to provide Personal Protective Equipment (PPE) for the farmers
2. According to the research findings, it is indicated that farmers tend to apply overdose of pesticides, it may be due to resistance or poor efficacy of the chemical components so that this issue should be sorted it out straightaway by PPD and pesticide dealers.
3. There must be law enforcement and regulatory measures on illegal pesticides since the surveys showed that 12.91% of farmers use illegal pesticides. Otherwise, it may have enormous consequences in mung bean industry. Thus, DoA extension staff should be well trained to be able to exercise regulatory and inspection activities for law enforcement on the input suppliers.
4. Awareness and educational campaign for safe uses of pesticides should be conducted at village level directing to all farming communities.
5. DOA should consider to recruit or assign more staff for this mung bean special growing areas in which extension staff is few. Moreover, DOA should be considered to provide transportation and other facilities so that they can reach and organize travel agricultural training and extension activities
6. Billboards should be stand in the villages that can raise public awareness on the effect of misuse of pesticides on human health and environment since there are only pesticides advertisements in all villages. Proper IEC materials should also be distributed to farmers and farming communities.
7. Farmers should be well trained in the effective and safe use of pesticides. At the same time, exchange trip and study tours should be organized to get exposures and increase awareness of the farmers.
8. Alternative methods of pest control should be researched and then discoveries should be dispersed to farmers thru demo-plots (Including ICM and IPM demo-plots)

9. All stakeholders and farmers organization including (MPs, Township Health Officer, village and township administrators) should also start participating and campaigning to improve enforcement and awareness raising of the risk of pesticides among farmers and consumers.
10. In order to increase the productivity and quality of agricultural produces, proper pesticides application and handling are critical along the food supply chain. It is often succeeded by a combination of intensive apply of agro-chemicals. Nowadays, the most challenge is to produce an adequate amount of food with food safety standards. Thus, keeping the chemical residues under the minimum limit in food crops and grains become a distinctly vital issue. Mung bean is not only an important crop for the study areas but also vital export crop for the country. According to one of the senior government official, mung bean is now exported to 55 countries so we do not need to worry for the market if we can produce the quality mung bean and meet the requirements. However, it would be a long journey to go if we do not have a concrete strategy and plan.
- 11 According to the survey, it is clear comprehended that the concerned organization have conducted training for farmers especially DOA, they are now providing GAP training. However, in order to produce safe and quality mung bean production, it is an inevitable showed that there are an urgent work to be done. Close collaboration efforts among concerned departments, inputs suppliers, farmers, local collectors and traders are needed. For example, farmers have to be educated and trained to ensure to produce good produce in the whole supply chain from farm to table. To achieve this, the main concerned department, the department of agriculture (DOA) itself needs to fulfil in terms of staff capacity and strength, transportation and other facilities arrangement for extension staffs.

Food Safety standard requirements and certificates.

Department of Consumer Affairs is prioritized on food safety and food producers and processors have to comply in accord with the Instructions. In regards to food safety, in peanuts, aflatoxin is important and oil-contamination rate and acid level are for oilseeds. Food safety is not only residual effects but also include heavy metal and microbe. ASEAN countries are following and working on Maximum Residue Limit (MRLs). If MRL is over 0.5, food will be restricted to import to other countries. Japan found three types of residual from Myanmar exported pulses in the last year. To calculate the MRLs, it is needed to cooperate with department of health (DOH) and other organizations. For example, we need to calculate daily consumption rate. Myanmar Department of Science and Technology is trying to adopt codex standard. To standardize the National MRLs, it needs to inform to World Trade Organization (WTO) for the major crops which is mostly consumed.

At the moment, there are only 30 types of chemical residues can be tested in Yangon Plant Protection Department (PPD), even though there is a limitation, however, it is expected to increase up to 70 types of chemical residues can be tested in the future. Poor equipments and lack of skillful

person are the main obstacles to expand. More researches have been doing due to the interest of vice president and some machines are bought by World Bank support.

Even Indonesia is now asking the food safety certificate for imported pulses so that we need to fulfill their requirements. If we want to export to Indonesia and laboratories must follow their rules and the inspection will be done by Indonesia government. They do not accept third party like OMIC. Proper traceability system, post-harvest handling method and controlling Aflatoxin are important issues. Food Safety is important along the value chain from Farm to Fork. It means that from farmers to exporters and processor level have to follow the required steps. The main weakness is to issue the laboratory certificate and it is no mandate for government departments. On the other hand, the private sector cannot invest for the laboratory because of low return. For import, it is difficult to control the border trade because some companies are using many different names. PPD cannot cover the test for all imported products and very rare testing from border trade. PPD can test only plant pests and diseases, but cannot test other contaminated products for food safety. Sometimes buyers are requested for the test, for example, City Mart. Even EU countries can test only 2% of total trade volume.

Food Safety Requirements of EU market

- If MRLs limit is over 0.5, export license can be banned.
- In Myanmar, Science and Technology Department is trying to approve national codex standard, but it is on process.
- Currently PP can check over 30 chemicals and in future PP can do for over 70 chemicals and heavy metals.
- Main constraints are weak on machines and lack of skilled labours.
- PP is working to approve Elfra toxin to Thailand export products.
- GIZ is supporting and PP is working for Mung bean as per EU GAP guidelines.
- Presently PP is working for 15 crops to approve and provide GAP certificates.
- For chemical residue checking, sample should be represent to population.

In some cases, there are contaminations due to poor storage condition.

For EU export, the official control system is needed for food safety and Plant protection department is currently working for it. Mung bean export is increased 4 times greater than before however in 2017, but the export volume is decreased in 2018 because of the lower quality of Mung Bean (Petisane). For food safety, all standards and regulations should be followed by EU guidelines including for irrigation water. For EU export, all kinds of exports should be aligned with EU General Food Law. Traceability system is needed to develop. E-coli and salmonella can be tested at a laboratory of Yangon Region Fishery department. Groundnut is not exported yet to EU. There are many steps remaining to develop to be able to export groundnut to EU. International Trade Center (ITC) is providing the training related to food safety standards and practices.

Good Agriculture Practice (GAP)

GAP (Good Agricultural Practise) is a practice that is comprised of all food safety measure to produce safe foods and vegetables. Nowadays, GAP is practicing globally including Myanmar. There is a need to expend GAP Zones in the future. DoA developed the GAP protocol and provides training and gives GAP certificate.

Myanmar is implementing with four pillars for GAP, 225 standards in detail and summarized as 16 standards and already announced GAP standards for 15 priority crops. There was no cost to apply the Myanmar GAP certificate. Individual certificate can be applied at relevant township/disctrict/ state/ region for a decimal acre to thousands of acre. Sample of soil, water and crops/fruits/ grain will be testing and issue the certificate when in line with standards.

Group certificate can be applied to save the time and cost for the test. If the same crop in continuous land, 9 to 25 farmers can be applied for group certificate. It can be accepted up to 3 different varieties in the same crops. QR code is being using to trace back of the crop. Department can help to apply the Global GAP. There is a good market potential for GAP products.

The protocol and procedure to apply the GAP are as follow;

First, the farmers have to apply for GAP certificate and process at the DOA in township level where will check 13 facts and it will be submitted to District DOA. State/ Region and District level check together and field inspection has to be done by the district and and union level. Soil and water must be tested in the first year and no need to test in later years, however, pesticide residual is needed to test every year. There is no internal control management system in Myanmar GAP because of lack of staff/ certified inspector. Enabling environment is vital to develop GAP through supportive policy and regulation, aware of both producers and consumer and stable market etc. For the time being, GAP coverage is just under 5% of all crops the country.

Summary;

- By following GAP, good market potential and production safe foods are achieved.
- Planning GAP protocol, training to staffs and providing GAP certificates to farmers activities are implemented currently by DOA.
- In Myanmar GAP, there are overall 16 rules that needed to follow and currently 15 crops are mainly focused to produce.
- GAP can be applied from small land up to large acres.
- For group GAP, there can be 9 to 25 farmers who are growing same crops in continuous within large lands.
- Can accept up to 3 different varieties within same crop.
- With group GAP certificate, farmers can save money for soil and water test.
- In 2018, GAP certificates are provided for 8500 acres.
- For traceability, there is QR code to be easy check.
- There are total 85 farmers for Sesame, 1 farmer for groundnut and 30 farmers for mung bean that GAP certificates are already provided.

Famers Groups Collective Selling and Buying System

Under the P4 project, farmers are formed as a group such as FDC (farmer development committee) in village level, FDA (farmer development association) in township level and RFDA in regional level. Now it's become over 10,000 members of farmers. The objective is to better and sustainable market through farmer groups' collective production. They are practicing GAP and try to keep the records, keep 2% of an acid level, post-harvest technology, piling up-right system, manage to low acid level, residue test at OMIT laboratory in Thailand etc. As a result of group farming, received 55,000 MMK/ basket more than other normal sesame farmers. Farmer groups are using participatory guarantee system (PGS) which means to take accountability and transparency each other among members. PGS is different from Internal control system, group certificate etc. It is just working together for low cost and inspector might be farmer itself. Some farmers are aware of the benefit of being a farmer group member but cannot follow the protocol of GAP system. Farmers to farmer education is the key to achieve of mobilization and awareness raising for farmers. NGOs should help more in establishing of farmer groups and collective hiring the farm machines, technical extension, basic economic/ business training etc.

Summary;

- If farmers are well organized, they will become more empower, increase negotiation capacity and bargaining power.
- In 2017, farmer group produced 71 ton of sesame and in 2018 they produce 88 tons.
- By GAP, farmers have to follow GAP methods from soil preparation stage to post harvest handling stage.
- In GAP, record keeping, maintaining acid level up to 2%, following post harvest technique and other guidelines are needed to follow.
- By cultivation with GAP, farmers got 4500 kyats per basket higher than other other sesame that are growing with conventional ways.
- Currently farmers who practices GAP got 5500 kyats per basket higher than other farmers who are using conventional ways.

Discussion on Inputs Related Issues (Upstream)

Seeds

According to figure, government seed division can supply only 1.7% of the whole country seed requirement. Majority of pulses farmers are using the poor quality and their owned seed. The seed rate is also different in location. For instance, in Yangon region, mung bean farmers used to apply 1 basket per acre, on the onther hand the seed rate per acre for Magway region's farmer is 4-6 pyi per acre. It also depends on the way they grow like broadcasting system in Yangon and line sowing in Magway.

To produce quality seeds, government should form farmers groups and support them to do so. Some farmers are still not understanding the difference of grain and seed so that re-growing the grain. Seed production is a profitable for growers. Some private sector distributed seeds are not reached

to the quality standard character. Farmer has difficult to access the seeds, for example, market price of mung bean seed is over 80,000 MMK/ basket. DOA encourages farmers to become seed farmers, however, some company breach the contract and agreement, they did not buy back so that farmers have to sell it with grain price.

Magway Farmer Development Association produce mung bean seeds in 100 acre that can be distributed for 3000 acres. Similarly, growing 52 acres of sesame seeds and distribute to farmers with lower price. Government seed division is working for the development of seed banks for farmers and buying the seeds after quality inspection. Seed division should conduct more trainings on seeds production training and post-harvest handling practices. Seed division is ready to reform if law, regulations and policies are burden and private sector needs to follow it.

EU, Japan and international market prefer Pedi shwe war variety but also accept the Yezin variety. Shwe Toe variety is still being testing whether suitable for bean sprout or not. In general, we need to pay attention more on what buyers want to buy and market-oriented production should be done.

For the time being, Pedi Shwe war variety is popular and more demand, but it has less climate adaptation capability and seed is also de-generating. Thus, it might need to take three to four years to right back normal variety of its seed quality. To protect seed sector business, seeds law enacted in 2011 and regulations in 2016. National Seeds Committee and Seeds Technology Committee are implementing to protect farmers regarding the poor quality seed. If farmer lost by seeds, producers and traders have accountability to pay back the losses and fine that mentioned in Seeds Law. When farmer have lost, need to sue at the court and seed division will be checking and inspection to the field. Currently 90% of seeds are imported and seeds price of Myanmar is higher than other countries. Government encourages the private sectors to invest in seeds sector. There are 39 government owned seeds farms producing quality seeds 803 variety and 58 parental lines that including pulses seeds. Government has only three laboratories so that the private sector business can apply to establish the private lab if they want to invest in it. Seeds and post-harvest technology difficulties can be reduced when the contract farming system is adopted in Myanmar's agriculture sector.

Soil and Fertilizer issues

As old saying goes, not feed to crops but just feed to soil. To get the profit for farmers, it is not enough only higher price for the produce but also need to get the high productivity with the low cost for inputs. In this regards, farmers should apply more biofertilizers and farm yard manure. They do need to re-use by products of plants and plant materials to enrich the soil fertility. Compared to neighbourines countries, the fertilizers price in Myanmar is higher than others. Fertilizer law has been enacted in 2012 and amended in 2015 . Regulations and procedure has been enacted in 2017. Register needed for fertilizer importing, producing and distribution. To apply the register, it needs to ingredient labeling on the bag, and minimum NPK ratio and laboratory test in line with standard. If urea, potash, T-super etc importing by port, no need to send to lab, and only need to submit a quality recommendation for the imported country and produced company guarantee. It can be imported with the remark of the Chairman of Fertilizer Committee and register with laboratory test after arrived to

port. Local production and import from border trade can be applied registration for selling allowed after laboratory test. If not enough with lab result, need to grow demo farm for one season. Usage, ingredient, caution, registration no, importer or producer name must be printed in Myanmar Language on the bags. Fertilizer committee and technical committee meetings tend to hold every three months. Application for registration can be approved by Fertilizer committee after getting technical committee recommendation. Ammonium Nitrate and Super Phosphate are not allowed to import. It can be applied the import licence at Ministry of Commerce after getting DOA recommendation for import which can get after getting registration and storage licence. DOA field staff inspect to the whole seller and retailer every month. At the field inspection, DOA staff together land used department and other departments are taking 3 samples of the farmers' complaints brand, and check whether similar with the registered sample. The main challenge is that the shop owner do not want to allow to open the fertilizer bags for inspection.

Fertilizer companies should give service for farmers such as free soil testing, quality assurance, research on the soil of farmers who used their fertilizer, distribute the fertilizer without mixing with any non fertilizer raw materials, and should take responsibility and accountability and should not focus for higher sale of the products in technical discussions and promotion events.

Farmer development associations should be trained the technical trainings to collaborate with the quality control inspection team. There is a need to implement when company breach the law, strong penalty as force to stop their operations, grab the properties for public/ government. Need to review the laws, some of penalties for farmers are heavier than penalties for companies.

Pesticides

Proper pesticides application is crucial to ensure quality and safe products. If we can control inputs quality and illegal pesticides in the market, it will help a lot for farmers to reduce costs and improve the quality. Pesticides residues has huge affect on the export. Agri commodities in particular pulses are not qualified if they are not free chemical residues. For instance, to export sesame to japan, the product will be rejected if farmer used weedicide in sesame. The main problem in Chilli is Aflatoxin that need to inspect the problem in whose handling time such as farmers, storage warehouses, processors, exporters.

Although in the GAP guidance, it mention to destory the waste bottle/ bag of pesticides and fertilizers but majority of farmers do not comply and practise due to lack of knowledge. It is not realistic that in pesticide law mentioned that users have to destory systematically and district officers have to manage and take action. Even though, DOA, NGOs and companies provide awareness but some are still throwing anywhere. If sellers are re-buying the empty bottle/ bags, that might be reached to collective point. It is needed to consider how to reduce the illegal brands because some farmers are still using those. They think that as a legal.

However, pesticides and fertilizer are at high risk so that they need to be handled properly. Farmers tend to apply pesticides before pest infestation so they should change the way they do. They should learn on it. They also need to read the label carefully and try to understand and follow the instructions. If the pesticides are not effected to pest or disease, they need to re-check the quality, usage, and ratio, manufacture date, expired date, whether package seal was opened etc. Farmers

need to apply Personal Protection Equipments (PPE) and how to protect themselves and environment as well.

Summary of Suggestions and Recommendations from three events;

- Proper information sharing should be done for farmers to aware of pulses/ oilseeds market situation
- Should prepare to be ready to substitute the new crops instead of black gram and pigeonpea
- Should promote domestic consumption
- To implement Contract Farming System which can be benefited both farmers and business
- To produce quality and safety products both domestic and international market through GAP
- Try to seal as “Made in Myanmar” for long term quality market
- Need to think of how to reduce production costs per acre in particular to reduce the price of pesticides and fertilizers
- Government intervention is needed when the price is going down
- Need to explore the new market opportunity in stead of relying single market
- To develop value added processing sector, so more investment should be committed.
- Farmers should consider another profitable crops apart from pulses
- Collecting purchasing and selling system should be practiced and implemented by the farmers groups
- Both exporter and processor should follow GMP and HACCP to comply food safety standards
- Private sector should consider to invest more in agriculture sector in particular in the establishing of lab and seed sector
- To be able to become seed producer farmer, DOA and DAR need to give more technical extension in particular seed production training.
- Agri business companies should pay more attention to give more services to farmers in terms of extension services and financial assistance
- Government should invite the private sector to invest more in seed development sector
- Strong penalty should be apply for illegal pesticides import and distribution
- Introduce IPM / proper control measures should be introduced more for farmers to manage pest and disease problems
- The existing pesticides and fertilizer law need to be reviewed and amended in accordance with the current situation especially in Chapter 3,4 and 6.