PLANT RESEARCH INTERNATIONAL
WAGENINGEN UR

Report of the potato mission of the Netherlands industry and knowledge institutions to Myanmar

March 7 - 15, 2015

Mission delegates: Anton J. Haverkort, Cor van Veldhuijsen, Boudewijn Alberts, Pieter Remijn, Janny Peltjes, Joris van Waes & Peter Kooman

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Editor: Annette A. Pronk[1]

1 Plant Research International
2 Agro Food Cluster
3 Tolsma-Grisnich
4 Agrico
5 HLB
6 LTO Nederland/Agriterra
7 Aeres Groep

Plant Research International, part of Wageningen UR
Business Unit Agrosystems Research
April 2015

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Business Unit Agrosystems Research

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1. Introduction

Myanmar borders Bangladesh, India, China, Laos and Thailand (Figure 1, left). The potato production areas (Figure 1, right) and systems have the irrigated winter crops as dominate in India and Bangladesh and the highland monsoon rain fed system in Yunnan-China in common.

Potato in Myanmar is grown year round in 4 distinct seasons/regions:

- An irrigated spring crop in rice paddies from January through April. This crop is irrigated (Figure 2) and grows on peaty and clay soils in river plains in SSS and Shan State. This is a major crop with relatively high yields of 25 t/ha. The seed is derived from the August harvest of the pre-monsoon crop kept or more commonly purchased from wholesalers.
- An early monsoon crop from April through August in the higher valleys (1000-1500 m above sea level) in Shan and Chin States. This crop is rain fed and is a minor crop during this season. The seed is kept from a previous crop but usually purchased from wholesalers at 1.5 x the price of ware potatoes.
- A late monsoon crop from August through November in SSS and Chan State. This is the major potato cropping season. The seed is derived from the April harvested irrigated crop in the paddy and uphill fields.
- A (minor) winter crop from November through February in the alluvial plains, irrigated crops with seed derived from the August harvest of the early monsoon crop planted in April.

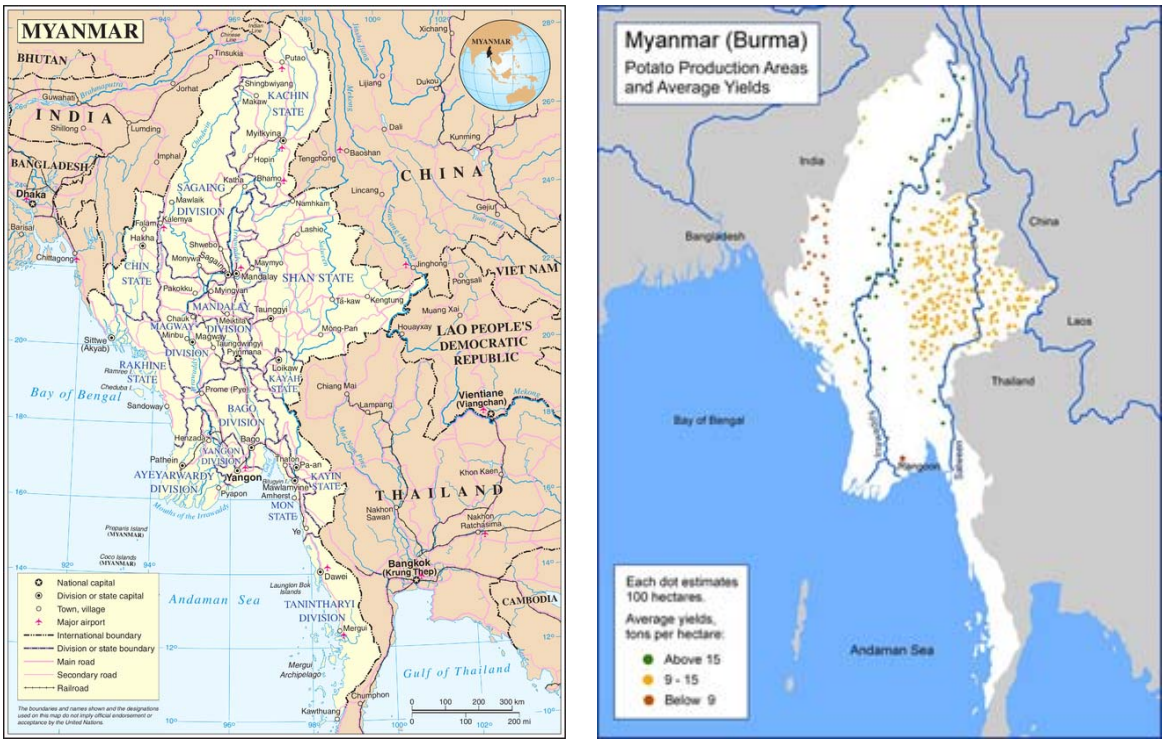

Figure 1. Geographical location of Myanmar (left, source: Wikipedia) and potato production areas (right, source: CIP World Potato Atlas): centre irrigated winter crops, East Shan plateau, irrigated too but mainly rain season crops.

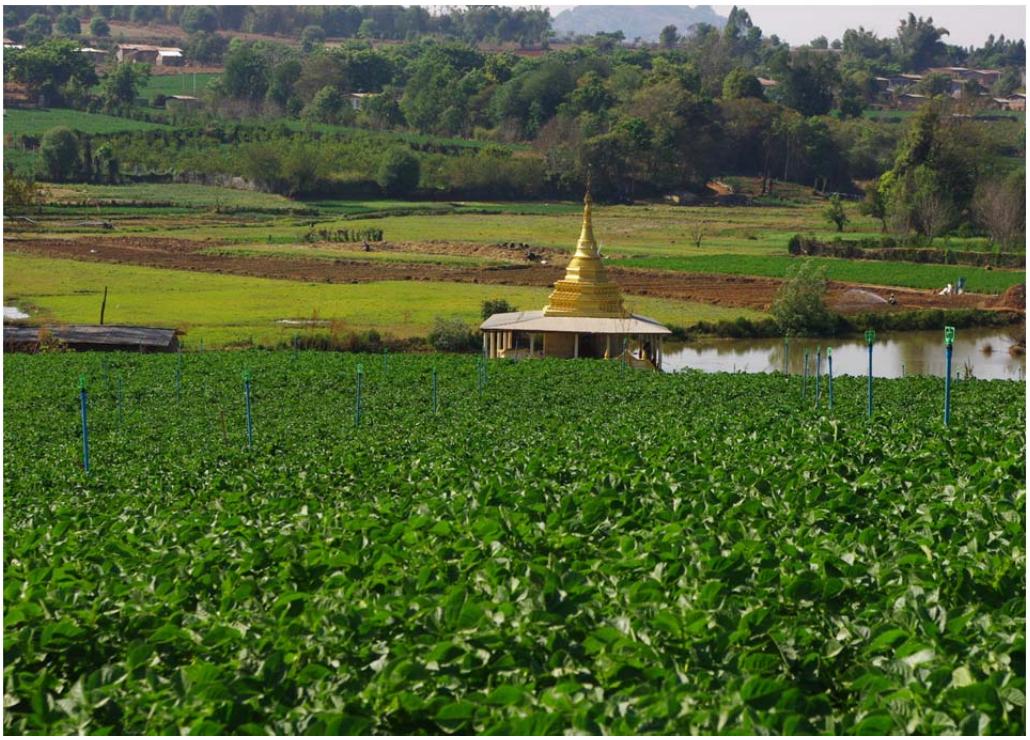

Figure 2. An irrigated spring crop in the river plains of Shan State.

There is no official seed system (Haverkort 2013). Farmers keep some late monsoon crop yield for the early monsoon crop. All seed for the winter and late monsoon crop is bought from traders that buy all ware crops, grade it, sell the large ones immediately and sell the small ones after a few months when they sprout. Growers cannot keep the seed for 8 months at ambient temperatures hence they need to buy only 4 months old seed from traders. Disadvantages: varietal mixture, uncertain health. Diseases (late blight attacks the leaves and brown rot bacteria attacks the tubers) are the main problems with potato in Myanmar.

Myanmar grows about 600,000 t potato on 40,000 ha (yield 15 t/ha, consumption 10 kg per capita). This indicates that on a nowadays population of 60 Mio production and consumption are in balance, but production and consumption grow rapidly as shown in Figure 3. For growers it is a real cash crop in which they invest seed, labour, land and chemicals.

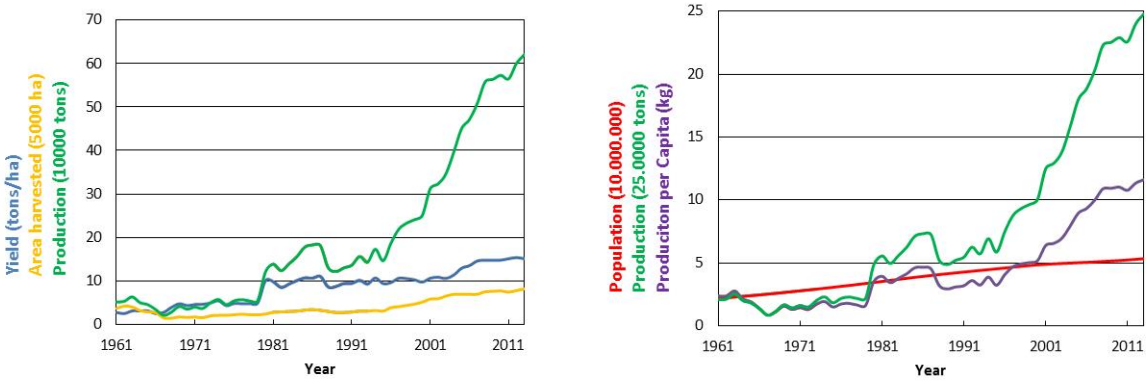

Figure 3. Development of potato yield, area and production (left) and consumption (right) in Myanmar between 1961 and 2013 (Source: FAO and UNDESA Population Division http://esa.un.org/Wpp/Excel-Data/population.htm).

2. Current situation of potato production

2.1 Ware potato production constraints

From farmers' interviews during the current and previous missions it became clear that the early monsoon crop (least popular for the obvious reason that it is least profitable) generates the lowest income and the irrigated winter crop the highest. Growing potatoes is not done for cash only, but also for food security of the growers and their families. When expressed as cash remuneration for labour is anywhere between Ks 330,000 for the early monsoon crop and Ks 1,830,000 per acre for the irrigated crop (1000Ks = 1 $ or €). Irrigation water costs are minimal: Ks 5000 per acre. The main constraints mentioned by ware potato growers are:

- No or low availability of seed of proper variety, health status and sprouted at time of planting.
- No decision support facilities for the application of chemicals (fertilizers, pesticides: types, dose, timing).
- Lack for formal credit systems.
- Labour cost is likely to increase in future and therefor there is an increasing need for or small mechanized tools.
- Limited irrigation possibilities in the dry season outside river beds.
- Absence of a structured market (storage, contracts, processing industry).
- Low degree of organization of growers into groups, cooperatives or unions making knowledge transfer and joint purchase and selling impossible.

Figure 4. The potato cultivation is labour intensive (left) and diseases like potato leaf roll symptoms are hardly recognised by farmers (right).

2.2 Seed potato production constraints

There is no formal seed potato system in the country. The main varieties are Up to Date (local name Sitbo) and Kufri Jyoti often called "Holland". From China recent introductions are Favorita, Lichu-6 and Chondare. Farmers usually use seed from a different area and seasons as tubers harvested from their own field are either too young or too old when needed for the next planting. Hence traders keep the small seeds and distribute it when growers need. Main seed constraints mentioned by ware growers:

- Seed is not healthy (bacterial wilt and viruses) and not always well sprouted.
- Seed consists of a variety mixture and is an expensive input, costing about 1.5 - 2 times the ware potato sold. It's revenue is only returned about half a year after its purchase.

The highland research station at Heho between 2004 and 2006 established a rapid multiplication laboratory with in-vitro techniques. This was aimed for the production of potato mini-tubers (Generation 0, G0) that in subsequent field multiplications would yield G1, G2 and G3 used for ware growers to produce for the market. The discontinued activity took new national initiative with Yezin University and CIP (International Potato Center) input in 2009 with the introduction of the variety L11. In 2012 CDN assisted the initiative by reinforcing the rapid multiplication techniques, construction of a screen-house and on farm introduction. Due to lack of knowledge all seed produced was diseased and in 2014 Wageningen UR with limited EU-CDN funding intervened to set up hygiene protocols and equipment (soil steamed and detached) and HACCP protocols (Holdinga *et al.* 2014). The mission found that the Project at Heho virtually ceased activities. With some remaining funds the project purchased a container of seed potatoes from the Netherlands (Markies and Carolus) to be distributed to over 100 growers. Some of it was planted in the current season and had just emerged, some of it will be planted in the pre-monsoon April – August season (and growers may decide to replant some of it next spring).

Figure 5. *The build soil steamer to disinfect substrates (left) for the mini-tuber production at Heho (right) (Holdinga* et al. *2014).*

A visit was paid to the State Agricultural Institute were the manager was met. Presently education at the school is very basic. Students learn basic practices and how to apply protocols. To improve potato production, more background knowledge, diagnostic skills an crop analytic skills would be helpful. The principal told that he would like to have a soil and crop protection laboratory and that he wanted to specialize more in maize, wheat, sunflower, potato and vegetables. The skills of the current staff should be evaluated first before an improvement programme is started. When skills are up to the desired level several trainers of this Institute can also be used to train (future) farmers.

A private firm “Prime” headed by Kenneth Shein (seconded by Johann Lüblin and Danny Bennett) was visited. The firm multiplies in a joint venture with Netafim some 20 ha of G4 Atlantic variety imported from Australia. The resulting G5 is aimed to produce Chip Stock in the subsequent growing season to feed the Pepsico crisps factory in Thailand in an off season crop when Thailand has difficulties to meet the factory requirements. The company also is constructing a seed potato store (Omnivent equipment) to hold 800 t of seed potatoes.

The main seed production constraint in Myanmar are:

- Lack of (sufficient) facilities and knowledge of in-vitro techniques, mini-tuber and basic seed production and variety selection hence too few varieties are available to cater for the several environments and market needs.
- Lack of infrastructure and adequate system of specific seed production, quality assurance storage, and distribution of seed potatoes.

Conclusions:
Farmers have no knowledge of potato diseases, seed cutting hygiene or production cycles, lack their own logistics and depend strongly on traders as they are not adequately grouped into cooperatives for joint reception of knowledge.

Figure 6. The video of the Agro Food Cluster was watched intensively at the State Agricultural Institute.

2.3 Value chain constraints

Due to year round production potato prices vary much less than in potato production regions such as in Bangladesh with only one harvest period and subsequent costly long period of cold storage. At Aungban trading centre in Shan State virtually year round daily several 30 t lorries leave for Yangon. The trade is well developed and table potato prices are only moderately higher in the cities than in the production areas. Processing only takes place by cottage industry into crisps (Figure 7 right, none into fries) that uses not more than a few thousand tons of raw material per year.

The main constraints are:

- Lack of transparent pricing and of contracts for growers.
- Poorly developed processing industry in view of rapidly urbanizing more earning population.

Although potato prices are half of that of other vegetables (tomato, union) at dry matter basis it is two times the price of rice.

3. Opportunities for the potato industry

Modern potato varieties might be potentially very promising for the Myanmar potato sector both fresh for consumption and processing (crisps/ snacks) varieties. But therefore trial fields will be needed. Healthy seed of such varieties combined with the optimization of other inputs such as fertilizers, pesticides, irrigation water, labour and machines according to the principles of good agricultural practices. This coupled to professional, technical, and theoretical potato knowledge has the potential to double potato yields per acre and decrease infection rates. The potato processing industry is likely to get interest in investing in Myanmar. This due to potential for yield and potato quality improvements, fast growing tourist industry, population growth and income.

Efficient food products that will suit the local food habits are needed, but can also play an important role in the changing food habits due to topics such as urbanisation, changes in life style and increased tourism. One of the food products that will fit in this changing food pattern are potatoes. Potatoes have a high nutrition value, are extremely suitable in the quick service restaurants chain (urbanisation) and are a very valuable cash crop for farmers. Besides, potato production contributes to employment as the potato industry (production as well as processing), including the supply business are labour intensive.

Figure 7. *Three important vegetable products in Myanmar: tomatoes, onions and potatoes sold at the market (left) and the cottage industry crisping (right).*

4. Objectives of the March 2015 Netherlands mission to Myanmar

Main objective was to prepare a Myanmar - Netherlands Public Private Partnership Programme (PPS) that aims at building a strong, sustainable and competitive potato sector in Myanmar.

Activities consisted of the potato companies members of the Agro Food Cluster (AFC) in Emmeloord, Christelijke Agrarische Hogeschool Vilentum, Dronten (Aeres Groep) and Wageningen University and Research centre (PPO and PRI) were to establish a funding request to be submitted to the Topsector TU, Agri&Food and/or international bodies such as LIFT in Myanmar.

A fact finding mission of 4 members of the Agro Food Cluster, a member of the Netherlands farmers' organization LTO/Agriterra and 2 members of the knowledge institutions (Aeres Groep and WUR) took place in March 2015. Programme of visit attached. Here relevant industrial, governmental, and institutional (Research, knowledge transfer) partners were visited and type of partners visiting the Netherlands in July 2015 were discussed. Major themes for the 2016-2019 PPS were identified. To arrive at a flying start during this mission meetings took place to start – if possible - a few concrete activities right away.

A counter visit of some 7 Myanmar officials from industry, government and institutions to similar Netherlands partners in early July to acquaint themselves with the Netherlands potato situation and to finalize ideas about the PPS is foreseen.

Writing up of a PPS for TU or Agri&Food. Officials of both Top Sectors will be approached to identify best prospects. In May 2015 a two-pager will be ready for submission and if judged positive a full-fledged PPS proposal will be submitted by September. This is when procedures of previous years are unaltered. An official agreement among partners and budget will have to be ready by then as well.

It is expected that based on the two missions and the discussion the following aspects will be part of the public-private seed sector and value development programmes:

- Developing a business driven inclusive seed potato chain (making seed production a new business).
- Upgrading farming practices (implementation of a series of integrated farmer managed trials and demonstrations; results benchmarked with practices elsewhere in Asia).
- Develop a knowledge transfer structure, a group of trainers that has access to knowledge and that can train more farmers, is in place.
- Development of support markets (e.g. input supplies, in particular seed supplies and agro-chemical supplies; financing services; equipment and technology supplies).
- Chain cooperation and realisation of end-market opportunities (awareness Myanmar as increasingly important supplier of potato; export to Asian region).

5. Mission results

This Chapter presents the results of the mission on formulation of possible projects: identification of prospects of near future interventions by Netherlands and Myanmar private and public partners.

The mission found:

1. Inefficient use of chemicals due to lack of decision systems that assist growers in application doses and timing of chemical fertilizers and crop protectants.
2. Low yields associated with degeneration of the seed stock due to many multiplications of the seed without use of disease free material and the very limited availability of varieties (mainly Up to Date and Kufri Jyoti), especially in view of the many environments (4 distinct seasons and many sites at varying altitudes).
3. Little knowledge by growers of 'what's there', so difficult for them to articulate desires like seed and variety characteristics. If you do not know what the requirements and advantages of improved seed are it is not possible to ask specific questions related to seed health, let alone certification. Similarly for improved/adapted varieties: how to ask for properties like storability, dry matter concentration, sprouting, cyst nematode resistance and so on if you do not know there are issues regarding these aspects. Currently growers ask for better seed without articulating what is wrong with the current seed stock.
4. The CDN project producing mini-tubers from in-vitro was not successful because at the start no input from a potato specialist was employed. The staff then started in-vitro multiplication and mini-tuber production without proper hygiene protocols such as the use of steamed soil for mini-tuber production in the screen house, and cutting seed tubers without disinfecting the knives. As a result all tubers of a newly introduced variety (LL60) were infected when given to farmers in on-farm trials.
5. Any new interventions should be very, very basic and not for growers but with growers and involving them from the start.
6. Farmers should buy in from the start such as pay for improved seed (new variety) to make them part of an exercise that needs investment and that a return is expected.
7. Learning by doing coupled to on station and especially coupled to on farm trials.
8. Farmers should first be able to grow ware potatoes more efficiently before the venture into the production of more complicated seed potatoes; a separate seed potato chain might be considered with Netherlands varieties if found better than Up to Date and Kufri Jioty (Holland).

Figure 8. Potato cyst nematodes (left) and the need for GAP (right).

The delegates of the mission concluded that the best options to boost potato productivity is through a combination of efforts regarding:

- Fast track demonstration of the Netherlands ability to rapidly interact with the grower's community showing commitment and continuity: not just missions but also actions,
- Healthier seed tubers by setting up a system of introduction of basic stock for at last one more multiplication by growers,
- More varieties than the current dominant Up to Date and Kufri Jyoti to satisfy the wide variety of growing seasons and environments,
- Improved use of chemical fertilizers; currently application rates are not based on soil availability and crop needs but on availability of certain compounds (15:15:15, urea) and affordability by growers,
- More judicious use of pesticides, notably fungicides and insecticides as to assure that dose, rate and type are optimal to control the diseases and pests they are used for,
- Training of trainers (of growers) through reinforcement of the Department of Agriculture Institution (Agricultural School),
- Setting up of a Public-Private-Partnership in the Netherlands (consisting of the Agro Food Cluster in the Netherlands and an as yet to be established Potato Network in Myanmar).

Therefore, the following six activities are foreseen:

A. Comparison of the local seed stock from various origins (later to be followed by multi-annual variety introduction and testing in PPS).
B. Multi-annual soil and plant analysis: basics for potato production (scoping in 2015, later embedded in PPS)
C. Training fast track 2015 (later embedded in PPS).
D. Linking with the LIFT Fund activities. The LIFT Fund shows interest in potato production and its development, especially when the private sector is involved.
E. Setting up a Myanmar – Netherlands Potato Network and preparation of a Myanmar Potato PPS (Top Sector T&U or A&F PPS).
F. A Myanmar Potato Mission (counter visit) to the Netherlands in July 2015.

A. Comparison of the local seed from various origins (fast track 2015 if funded)

Comparison of local seed from various origins.

Origins of seed potatoes (Up to Date, Kufri Jyoti, Chinese) in Myanmar potato production are from different traders, sites, growers and the objective of this activity is to collect a few dozens of such seed origins, characterize them and plant them in a field to assess their field performance. From this the range of performance quality can be established and a first roadmap to identify best sources of seed established.

The seed origins will be treated under code as not to influence the observations later on. From each origin 50 tubers are planted in a plot of 5 rows x 10 plants (possibly distributed over 2 or 3 replicates). Following observations will be recorded: days to 50% and 90% emergence, number of emerged plants per plot, number of stems per plant, growth vigour estimates, canopy development, number of virus, fungal and bacterial disease affected plants, foliar diseases at different times, date of maturity, tuber yield, size and weight of tubers (total and marketable) per plot. This activity is to be carried out by PPO (backed by PRI) and HLB (3 visits are foreseen) with local assistance of CDN/DoA Heho staff (Department of Agriculture) and possibly Fresh Studio (to be contacted). The comparison trial will serve as a demonstration field for growers with a role for Agriterra to assist in their mobilizing. The comparison trial will also play an important role in the potato production training session (fast track activity 2).

Time schedule:
April 2015 – September 2015.

- April : Collection of seed lots from growers (CDN),
- Identification of trialling field and contracting activities with grower,
- Attendances at laying out and planting of trial (PPO/HLB),
- Field observations by CDN/DoA staff throughout the season,
- Tentative mid-season visit by PPO/HLB,
- End of season attendance at harvest and reporting (PPO/HLB).

B. Multi-annual soil and plant analysis: basics for potato production

The general idea is to train farmers in collecting soil and plant samples, submitting these to an analysis lab for soil and plant diagnostics. The laboratory gives results on soil and plant health and nutrient status and suggestions for fertilization and control. Farmers then are trained in following up. Business model: growers invest and return is more efficient use of fertilizers and pesticides.

There are four phases:

1. Analysis of the current situation and type and scope of interventions needed.
2. Demonstrations of prototypes.
3. Trainers train trainers who train potato growers.
4. Institutionally embedding in Myanmar knowledge system.

Needed steps:

1. Identification of key agronomists able to be trained to perform diagnostics and interpret results
2. Identification of tools (national and international) regarding soil and plant health and nutritional status. Initially not a full-fledged lab is needed but the basic equipment to analyse N, P, K, Ca, Mg and pH.
3. Describe a subproject suitable for HAS students and identify students who work for some time to assist the Myanmar agronomists.
4. Training of trainers and growers, embedding in national institutes of learning (development of curriculum and granting certificates (partial and final).

Private parties in Netherlands: Agro Food Cluster, HLB, Agriterra.
Partners in Myanmar: a network organisation of growers and “Fresh Food” type of companies.
Public parties in Netherlands: WUR and Aeres Groep.

C. Training fast track 2015

The training fast track sets up training sessions for vegetables and potatoes. Identification of trainers (of trainers), trainees and growers, involvement of partners (PPO, HLB), involvement of Fresh Studio. In its margin identify possibilities to involve the DoA Institution (Agricultural School) and development of potato curriculum for this school by the Aeres Groep.

Recent training programmes on potatoes (Holdinga *et al.* 2014), vegetables and mung beans (2014 and 2015) carried out by WUR and Aeres Groep can best be used as basic material to build up upon.

The training programme contains the following elements:

- Registration and monitoring of potato production data,
- Analysis and comparison of potato production data,
- Organizing two training sessions on seed quality, fertilisation, crop protection,
- Setting up standards and plans for crop protection, fertilization, application techniques,
- Harvesting and storage of potatoes,
- Elements of beneficial value chain developments (value addition through grading, washing, sorting, packing and or processing into e.g. chips and crisps),
- Folders and flyers on basic best practices for educational purposes and extension.

D. Linking with the LIFT fund

When discussing with Curtis Slover (curtiss@unops.org) van LIFT (Rural Finance and Value Chains) two means of cooperation and funding in Myanmar were raised:

1. Submitting a proposal as a response to a call such as the two “Top Sector” proposals mentioned above, especially ‘diagnostics and advice’ may qualify.
2. IFDC is about to carry out a seed project in the dry zone (Figure 9), potato might become part of it producing seed in the November - March season to be used in the August planting uphill. Geert Westenbrink will provide contacts.

Note a PPS proposal with a Topsector will have a bigger chance when LIFT (co-)funds and an PPS project of a Top Sector will make a response to a LIFT call unnecessary. When co-funding is available the LIFT fund it can be approached anytime. LIFT is not much interested in working with NGO’s the more with private partners.

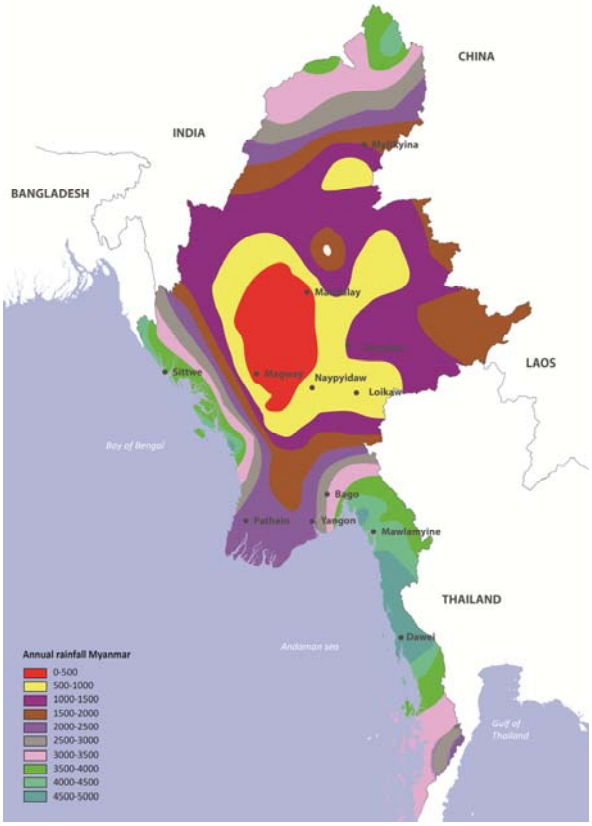

Figure 9. The red coloured area is the Dry Zone with irrigated agriculture.

E. Setting up a Myanmar – Netherlands Potato Network and preparation of a Myanmar Potato PPS (Top Sector T&U or A&F PPS).

In order to gain momentum and for an adequate preparation of a Public Private Potato Partnership a network is established starting with the Ministry of Agriculture Shan, Farmers' groups in Nauntanyar and Heho, CDN, Fresh Studio, Agro Food Cluster and its participating companies, WUR.

In May 2015 a two page pre-proposal Myanmar – Netherlands Potato Programme will be submitted for the Topsectors Agri & Food and Horticulture & Seeds. After approval a full proposal will be composed with participation of Netherlands private companies wanting to invest in doing business in the potato sector in Myanmar. Here a central role is for the Agro Food Cluster Emmeloord. After approval of the full proposal (to be submitted in September if the pre-proposal is accepted by either Top Sector) in December 2015, contracts with all the participating companies have to be worked out and signed.

F. Organizing a Myanmar Potato Mission (counter visit) to the Netherlands

As a follow up of the Netherlands Potato Mission to Myanmar in March 2015, a counter mission of Myanmar delegates will be organized in early July 2015. It is assumed that approximately 7 Myanmar representatives will visit the Netherlands Potato Sector. A program has to be worked out in detail, taking into account the interests of the Myanmar delegates as articulated by the March 2015 Netherlands Potato Mission to Myanmar.

Time Schedule: One week in early July 2015

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Haverkort A.J., 2013. Rapid appraisal of the Myanmar potato industry: Opportunities for seed production, Plant Research International, Wageningen, 24 pp.

Holdinga M., R. Wustman, A.J. Haverkort & A.A. Pronk, 2014. Improvement of basic seed potato production in Myanmar. Report CDN seed potato project Myanmar. Report number 597, Plant Research International, Wageningen, 24 pp.

Appendix I.
Delegates of the mission

Agro Food Cluster - Emmeloord

Company Activities:
The Agro Food Cluster is a collaboration of agri and food based industry in the central part of the Netherlands. The aim is to stimulate and facilitate client driven integral solution for value chain development.
The Agro Food Cluster works together closely with educational and research institutions and entrepreneurs. This lowers the threshold between research and educational institutions and small and medium enterprises (SME's). Because participants display and share their knowledge through the cluster high-quality knowledge is easier accessed.
The Agro Food Cluster is especially strong in (seed)potatoes and onions.

Delegation member: Cor van Veldhuijsen

Further information: www.agrofoodcluster.com

Tolsma-Grisnich

Company Activities:
Tolsma-Grisnich is a true specialist in intelligent storage technology and the company is renowned for automating and optimizing the transport and sorting of agricultural products. The combination of technology and advice results in the highest possible product quality. The strength of Tolsma-Grisnich lies in the company's very broad expertise and experience in storage, transport and sorting of agricultural products. This is reflected in customer-specific installations and turnkey projects for storage, sorting and packaging.

Delegation member: Boudewijn Alberts

Further information: www.tolsma.nl

Agrico

Company Activities:
A powerful, cooperative organization that sells potatoes all over the world, breeds new varieties and develops innovative solutions within the potato production chain. That sums up Agrico: from seedling to the supermarket shelf.
Their cooperative's potatoes are exported to more than 75 countries all over the world. The sales and introduction of new varieties is coordinated by the head office in the Netherlands. They work closely together with an extensive international network of subsidiaries and agents. By organizing their sales efforts as close as possible to local markets, they are able to tailor their approach and support they offer growers to local conditions.
Agrico puts a lot of its resources in R&D and develops continuously new and better varieties.

Delegation member: Pieter Remijn

Further information: www.agrico.nl

HLB

Company Activities:
HLB continuously develops new knowledge related to soil health and plant health and applies this knowledge throughout the agro-chain. By a unique combination of research and diagnostics and advice a real treasure trove of knowledge has been acquired.
HLB has its own laboratories, quarantine facilities and trial fields (including a field trial team), enabling it to perform trials efficiently and effectively.

Delegation member: Janny Peltjes

Further information: www.hlbbv.nl

Agriterra and LTO

Company Activities:
Agriterra strengthens farmers' associations and cooperatives in countries in development in their operations, as well as in their position in the chain, economy and society. To achieve this, Agriterra supplies tailor-made advice and guidance to farmers' organisations and cooperatives. The agribusiness, agricultural cooperatives and rural organizations in the Netherlands play an active role in Agriterra's work, primarily by sharing their skills, expertise and network.
Our focus on farmers' organizations derives from the vision that strong farmers' associations are indispensable in promoting democracy, creating a better distribution of income and boosting a country's economic development.

Delegation member: Joris van Waes

Further information: www.agriterra.org

Wageningen University and Research centre

Activities:
Among the top 3 agricultural universities, with over 10 000 students and with more than 7000 staff. Wageningen University and Research centre (WUR) work globally and has joint research programmes in all continents. at a time. The research centre carries out contract research for governments and private companies. Research can be published or kept confidential. WUR is currently involved in seed potato research and development in Myanmar.

Delegation member: Anton Haverkort

Further information: www.wageningenur.nl

Aeres Groep

Activities:

The Aeres Groep consists of three educational institutes:
Vilentum University of Applied Sciences and Teacher Education. The university has two faculties: CAH Vilentum (agricultural programmaes) and Stoas Vilentum (teacher education), PTC+ – Practical Training Centres, Groenhorst Colleges and Training Centres.
The Aeres Groep representative is of CAH Vilentum, which is the institute of higher education with close to 2000 students full time and part time and of which many are international students. CAH Vilentum provides professional BSc and MSc in the field of agriculture and environment. Its professors are also involved in R&D and innovation.

Delegation member: Peter Kooman

Further information: www.cahvilentum.nl

Appendix II.
Programme of mission

This programma was set up by Saw Jackson Kalipo and Geert Westenbrink of the Netherlands Diplomatic/Trade Mission in Yangon. Geert Westenbrink joined the first two days and Saw Jackson Kalipo joined and logistically supported the mission full time including explanation son settings and translations. Mr Kalipo has worked for the Department of Agriculture of Shan State for 18 years, then joined CD and now the NL Mission seconding Geert Westenbink.

Sr. No	Date	From	To	Particulars
0.	Saturday 7-Mar-2015	Amsterdam	Yangon	Air Singapore Departure: 10.30 hr. Arrival: 09:20 hr. +1 d
1.	Sunday 8-Mar-2015	Yangon	Heho	Air KBZ. Departure: 15: 30 hr. Arrival: 14: 45 hr Visit Potato Wholesale at Aung Bang. (Night stop at Kalaw Hotel, Kalaw)
2.	Monday 9-Mar-2015	Kalaw, Naung Tayar	Naungtayar Kalaw	Visit Naungtayar Township meet with Potato farmers, departmental, state holders. View the potato cultivation. Sprinkler irrigated spring potato crops. (Night stop at Kalaw Hotel)
3.	Tuesday 10-Mar-2015	Kalaw Aungban Heho Thande	Aungban Heho Thande Taunggyi	Visit- Aungban whole sale market and Heho vegetable farmers. Proceed Thande village view potato cultivation of local and Agrico (Markies and Carolus) Visit Ministry of Agriculture Potato Research station at Heho: rapid multiplication. Meeting with Prime (Potato company producing seed potato for Pepsico) staff and visit construction site of store (Omnivent equipment) (Night stop at Taunggyi Muse Hotel)
	Wednesday 11-Mar-2015	Taunggyi	Prime Company Potato fields	Visit of Prime Company production site of variety Atlantic under drip irrigation. 2 hr drive from Taunggyi at Banyin village Hse Sang township Late afternoon visit of Nakku complex of pagodes Evening dinner hosted by Prime (Night stop at Taunggyi Muse Hotel)
4.	Thursday 12-Mar-2015	Taunggyi		Visit Taunggyi market Meeting with Shan State Government, Department and Stake holders. Afternoon visiting farmers harvesting, detection of potato cyst nematodes Meeting of Mission Participants: discussion on prospects of future intervention (Night stop at Taunggyi, Muse Hotel)
6.	Friday 13-Mar-2015	Taunggyi	Nyaung Shwe	Visit - Inlay Lake - View floating - Cultivation
		Nyaung Shwe	Heho	Flight K7 – 829
		Heho	Yangon	Departure: 16:40 hr. Arrival: 17:55 hr.
				Evening dinner hosted by Geert Westenbrink at Memory House (Night stop at M-Hotel)
	Saturday 14-Mar-2015	Yangon	Amsterdam	Early morning debriefing to Geert Westenbrink, agricultural councilor Meeting Foreman of farmers' organization (Joris van Waes) Meeting Curtis Henri Slover of the Lift Fund (Anton Haverkort, Geert Westenbrink) Visit of tourists' highlight by most delegates Air Singapore: Departure: 16.40 hr.
	Sunday 15-Mar-2015			Arrival: 06:45 hr.

Appendix III.

Participants list of potato meeting at DoA on Thursday 12 March

Sr	Name	Designation
1	U Soe Nyunt	Secretary - Fruit, Flower and Vegetable association
2	U Aung Than Kyaw	Photo Association
3	U Tin Win	Photo Association
4	U Soe Win	Vegetable Association
5	U Htun Thee	Farmer
6	U Tin Win 2	Farmer
7	U Maung Htwe	Farmer
8	U Kyaw Myint Htun	Farmer
9	U Maung Maung Htun	CDN
10	Saw Eh Law Hsaw	CDN
11	Esther de Jong	CDN
12	U Pe Thaung	CDN
13	U Nyein Htun	DOA (Heho Farm)
14	Daw Khin Aye Myint	DOA (Extention)
15	Daw Mi Mi Hlaing	DOA-PPD
16	U Myint Htun	DOA - Seed farm
17	U Toe Wai	Dy Director - DOA
18	Daw Sein Sein May	DOA - Taunggyi
19	Daw Myint Myint	DOA - Seed Division
20	U Thein Win	DOA- Ext Pin daya
21	U Zaw Myat Htun	DOA- Ext Pin daya
22	U Win Hlaing	Director DOA Shan
23	U Sao Swan Waing	Assistant Director
24	U Than Lwin	DOA Extension
25	U Thein Nyunt	DOA
26	Daw Khin Lay Swe	
27	Daw Thet Mon Oo	
28	Daw Nang Htay Naing	
29	Daw Su Sandi Seint	
30	U Than Lwin 2