



Norway's International
Climate and Forest Initiative
(NICFI)

Allocation of Technical Equipment, Installation and Training at CEE-FRC/TSC and the four regional Tree Seed Centers. PATSPPO, Ethiopia

Consultancy Report

April 22, - May 31, 2019

TECHNICAL

Allocation of Technical Equipment, Installation and Training at CEE-FRC/TSC and the four Regional Tree Seed Centers. PATSPO, Ethiopia

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April 22. - May 31. 2019

By Poul Elgaard

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Introduction

The objective of this consultancy is allocation and installation and training in use of laboratory equipment, based on the findings and recommendations of the consultant Zakayo Kinyanjui ICRAF, Nairobi and Poul Elgaard , October – November 2017.

The consultants visited the TSC under FRC in Addis Ababa and the three regional tree seed centres (RTSC) in Bahir Dar, Mekele, and Sebeta in the period April 23 – May 31, 2019.

Visit to Awassa RSC has been postponed until further notice, as the Seed Center, fully is sufficiently staffed.

The consultants would like to express his sincere thanks to PATSPO and to Sime Mekdes, Samuel Hailu and Bekele Achame, Kedra Mohammed and the Regional coordinators, assigned by PATSPO project, for all the operational and logistical support received during my stay in Ethiopia.

The findings and recommendations from the visits to the centres are presented on the following pages and in the appendices. *See Terms of reference (ToR) Annex 1.*

1. April 23rd – 26th PATSPO ILRI Compound.

Counting and registration of all equipment, that have been delivered in April 2019 and allocating it to the CEEFRC/TSC in Addis Ababa and the 4 regional Tree Seed Centers. *See Program April 23. – May 31, 2019. Annex 2.*

Laying out an official PATSPO delivery notes for each of the 5 seed centers accordingly to the assessment made in October – November 2017.

2. May 2nd – 3rd CEEFRC/TSC, Addis Ababa.

Meeting with the Director of CEEFRC/TSC and head of seed procurement explaining the objective of the consultancy and discussing the program for the following days.

Official handover of the equipment to CEEFRC/TC, in Addis Ababa. *See delivery notes Annex 3.*

- a. Installation of laboratory equipment and training in use of the same. Selected 5 different spices to use for practicing standard seed testing procedures. *Acacia seligna*, *Cordia africana* and *Eucalyptus saligna*. *Acacia saligna* and *Cordia africana* seed were grained, using a 6 mm sieve. All three seed lots were tested for moisture content, using the new Stern Moisture determiner. After calibration the results were compared with the standard oven method, and the results were within the acceptable level. All 5 seed lots were within the recommended moisture content for storage and were between 7.70 – 8.90 %. Each sample tested weighed 2g and the measuring time was between 7 – 12 minutes.
- b. Using the Kern Moisture determiner is a fast and an effective equipment to measure seed moisture content. To measure the final moisture percentage before storage, the Oven method is still the official and most correct method. However, with many power cuts in Addis Ababa it is difficult to use this method as there often are several power cuts during a period of 17 hours.
- c. **General comments.**
 - Seed Lot number not yet introduced. However, the person in charge promised it will be done in near future.
 - The Lab. Technician have a good understanding for carrying out seed testing and using the installed equipment
 - Handed over 30 m² of Stainless-steel wire mesh and design according to former DFSC recommendations for constructing 30 Drying trays.

3. May 6th. – 8th. Dima Sebeta RSC (OFWE)

Meeting with the Director of Sabeta RSC (OFWE) Regional Coordinator for PATSPO project and Head of seed procurement, explaining the objective of the consultancy and discussing the program for the following days.

Official handover of the equipment to Sabeta RSC (OFWE). *See delivery notes Annex 4.*

- d. Installation of laboratory equipment and training in use of the same. Selected 7 different spices to use for practicing standard seed testing procedures. *Acacia decurenses*, *Eucalyptus globulus*, *Gravilea robusta*, *Juniperus procera*, *Prodocarpus falcutus*, *Moringa stenopetala* and *Luecenia leucosephala*. *Acacia decurenses*, *Prodocarpus falcutus* and *Luecenia leucosephala* were grinded, using the new installed UDY Cyclone Grinding mill, using a 2 mm sieve. All 7 seed lots were tested for moisture content, using the new Stern Moisture determiner. After calibration the results were compared with the standard oven method, and the results were within the acceptable level. All three seed lots were within the recommended moisture content for storage between 4.98 – 8.90 %. Each sample tested weighed 2g and the measuring time was between 3.6 – 11 minutes.
- e. Using the Kern Moisture determiner is a fast and an effective equipment to measure the seed moisture content. To measure the final moisture percentage before storage, the Oven method is still the official and most correct method. However, there are many power cuts at the moment in Sabeta therefore it is difficult to use this method as there often are several power cuts during a period of 17 hours.
- f. Balance was calibrated, and the new received Seed Counter from Seedburo was tested, and the staff was trained in how to use it.
- g. For all 7 spices, a complete standard seed test was carried out. Including Moisture test, Purity test, 1000 seed weight, No. of seed per. Kg germination. Germination tests were started in both germination boxes with sand as growing media and in Petri dishes with filter paper.
- h. **General comments:**
 - The Lab. Technician is very committed and has a good understanding for carrying out seed testing and using the installed equipment.
 - According to the Ethiopian calendar in 2010, there was carried out 120 germination tests according to the seed testing Log Book. In 2011 until the 6th of May 48 tests have been carried out. The number of seed tests carried out is relatively low, as the policy at the Seed Center is that all Seed Lot's in the Store, must be tested twice a year. A policy that is a little excessive, as most of the spices they have in store are Orthodox seed, where testing once a year or even each second year is enough.
 - The Seed Center has not yet introduced any seed lot number to clearly identify each seed lot. However, the staff in charge promised that the Seed Lot. Number system will be introduced by 1st of July 2019.

- Handed over 30 m² of Stainless-steel wire mesh and design according to former DFSC recommendations for constructing 30 Drying trays.
- Although PATSPO for several month ago have donated a 4m³ water tank, that has been delivered, it has not yet been installed. The agreement is that it is Sebeta RSC (OFWE) that is in charge of installing and connecting the water tank to the public water supply. This is important for the staff and certainly for the daily operation of the Seed Center.

4. May 12th. – 15th. Mekele RSC (Analem Tree Seed Center)

Meeting with the Director of Mekele RSC, Regional Coordinator for PATSPO project and Head of Seed procurement, explaining the objective of the consultancy and discussing the program for the following days.

As the RSC is still in the start – up phase, it is expected that it will be fully operational from the season on wards. The Director of the RSC mentioned that they expect to collect by themselves 6,500 kg and purchase 1,600 kg. Seed that will be distributed the coming season. In total for the production of 120 million plants.

Official handover the equipment to RSC . *See delivery notes Annex 5.*

- Installation of laboratory equipment and training in use of the same. Selected 5 different spices to use for practicing standard seed testing procedures. *Eucliyptus camandulensis*, *Juniperus procera*, *Moringa stenophetala*, *Fabaidherbia albida* and *Schinus molle*. Only *Fabaidherbia albida* and *Schinus molle* were grained, using the new installed UDY Cyclone Grinding mill, using a 2 mm sieve. All 5 seed lots were tested for moisture content, using the new Stern Moisture determiner. After calibration, the results were compared with the standard oven method, and the results were within the acceptable level. All five seed lots were within the recommended moisture content for storage between 6.0 – 9.5 %. Each sample tested weighed 2g and the measuring time was between 5 – 15 minutes.
- Using the Kern Moisture determiner is a fast and effective equipment, to measure seed moisture content. To measure the final moisture percentage before storage, the Oven method is still the official and most correct method. However, there are many power cuts now in Mekele RSC, only 1 – hours a day with electricity, therefore it is difficult to use this method as the often are several power cuts during a period of 17 hours.
- The balance was calibrated and the new received Seed Counter from Seedburo was tested and the Staff was trained in how to use it.
- Besides the equipment delivered by the PATSPO project, training was also given in use of the equipment, delivered by the Japanese Government in 2015.
- For the 5 spices, a complete seed test was carried out. Beside the Moisture test, Purity test, 1000 seed weight, No. of seed per. Kg germination test were started in both germination boxes with sand as growing media and in Petri dishes with filter paper.

n. General comments:

- The Lab. Technician is very committed and has a good understanding for carrying out seed testing and in using the installed equipment.
- The Seed Center has not yet introduced any seed lot number to clearly identify each seed lot. However, the staff in charge promised that the Seed Lot. Number system will be introduced immediately. A log book was handed over with marked columns for Seed Lot No., Date, Spices, Seed Source No., Provenance, No. Kg. and name of supplier.
- Designing 2 different labels, one for Seed Collection and storage and one label for seed distribution. *Seed Annex 6*
- For the Seed Processing, design for constructing a platform for the BCC Seed sizer and Cleaner was drawn. The drawing with measurements was handed over to the PATSPO
- Handed over 30 m² of Stainless-steel wire mesh and design according to former DFSC recommendations for constructing 30 Drying trays.
- The spice Schines mole has a high oil content, therefore not suitable for being grinded with the UDY Cyclone Grinding mill. However, the seed of this spices do not need to be grinded, for measuring the moisture content. The moisture content can be measured based on whole seed by using the Kern Moisture determiner or Oven method.
- Beside the problem with the power supply, there has not yet been established any water supply in the Laboratory, due to a leaking water pipe in the ground, within the compound of the Seed Center. This is certainly unsatisfactory as nearly all plumbing installations are in place including water tanks that can supply water for the whole Seed Center.

5. May 19th. – 24th. Bahirdar RSC

Meeting with the Director of Bahirdar RSC (Amhara Forest Enterprise) Regional Coordinator for PATSPO project and Head of seed procurement, explaining the objective of the consultancy and discussing the program for the following days.

Official handover of the equipment to RSC. *See delivery notes Annex 7.*

- o. Installation of laboratory equipment and training in use of the same. Selected 6 different spices to use for practicing standard seed testing procedures. *Acacia nilotica*, *Eucliyptus camaldulensis*, *Faidherbia albida*, *Olea europeae (africana)*, *Juniperus procera*. *Acacia nilotica*, *Faidherbia albida* and *Olea europeae (africana)* were grained, using the new installed UDY Cyclone Grinding mill, using a 2 mm sieve. All 5 seed lots were tested for moisture content, using the new Stern Moisture determiner. After calibration the results were compared with the standard oven method, and the results were within the acceptable level. All three seed lots were within the recommended moisture content for storage between 4.98 – 8.90 %. Each sample tested weighed 2g and the measuring time was between 3.6 – 11 minutes.
- p. Using the Kern Moisture determiner is a fast and effective equipment to measure seed moisture content. To measure the final moisture percentage before storage, the Oven method

is still the official and most correct method. However, due to many power cuts, it was difficult to use this method as there are often several power cuts during a period of 17 hours.

- q. The balance was calibrated and the new received Seed Counter from Seedbureau was tested and the Staff was trained in how to use it.
- r. For the 5 spices, a complete seed test was carried out. Beside the Moisture test, Purity test, 1000 seed weight, No. of seed per. Kg germination test were started in both germination boxes with sand as growing media and in Petri dishes with filter paper.

s. **General comments:**

- The Lab. Technician is very committed and has a good understanding for carrying out seed testing and using the installed equipment. However, documenting the test results, was for some part lacking, but expect to be improved in the future.
- The Seed Center has not yet introduced any seed lot number to clearly identify each seed lot. However, the staff in charge promised that the Seed Lot will be implemented. A log book was handed over with marked columns for Seed Lot No., Date, Spices, Seed Source No., Provenance, No. Kg. and name of supplier.
- For the Seed Processing, design for constructing a platform for the BCC Seed sizer and Cleaner was drawn. The drawing with measurements was handed over to the PATSPO
- Handed over 30 m² of Stainless-steel wire mesh and design according to former DFSC recommendations for constructing 30 Drying trays.
- After more than one year, there are still no water supply in the buildings, due to a leaking water pipe in the ground, within the compound. It will only cost a small amount of money, less than 100 USD to fix it. This is not acceptable to have a Seed Center, with laboratory facilities without water, when they all ready have water tanks installed, with considerable capacity.

6. **Hawassa RSC (SNNPR)** (*Southern Nations and Nationalities Peoples Republic.*)

The installation and training have been postponed until the Seed center has been fully staffed and is operational. Therefore, the visit to Hawassa RSC has been canceled during this consultancy, until further notice.

The equipment is at the meantime stored at the PATSPO office in the ILRI compound. See *PATSPO delivery notes Annex 8*.

7. **Final conclusion and remarks.**

The four Seed Centres will be fully equipped with the arrival of the Germination cabinets that are expected to arrive late May this year, at the ILRI compound and soon thereafter will be allocated to each of the 5 Seed centres.

However, it is of uttermost importance for the Seed Testing Labs being able to document the results, that each sample is well identified with a label, when it arrives at the Lab.

Facilities. Therefore, it is essential, that each Seed center introduce the Seed Lot No. to connect the sample to the Seed Lot.

The organisation and leadership in each Seed Center is generally weak and need to be strengthened to secure that all procedures and task's are performed correctly and in a timely manner.

8. Un-finished tasks that need to be followed up on by PATSPO

- 1) Purchase and install a new Generator at Sabeta RSC. Specifications: 15 – 20 KW. 50 HZ. 3 phase, 400V/230V. 20KW will be the optimum if it also shall support the Lab. and administration building.
- 2) Establish a new electricity line to the cold stores at Bahirdar RSC
- 3) Construct 30 Drying trays for each Center, using the Stainless-steel wire mesh and design according to former DFSC recommendations for constructing.
- 4) Construct a Steel platform according to recommendation and design for constructing a platform for the BCC Seed sizer and Cleaner. The drawing with measurements was handed over to the PATSPO
- 5) Follow up on whether the Seed Centers implement a Seed Lot No.

9. Equipment to be purchased by PATSPO

- 1) Investigate how much 5 sewing machines to close bags/sacks cost. One for each Seed Center. They can be purchased in Addis Ababa.

10. Suggestions for further Consulting work for the PATSPO project, Ethiopia by *See Annex 9.*

11. Delivery Note, Seed Collection Equipment

See Annex 10.

Annex 1.

Provision of Adequate Tree Seed Portfolios (PATSPO) in Ethiopia, 2017-2020

TERMS OF REFERENCE

Consultancy on installation and use of seed collection and laboratory equipment at the four RTSCs and CEE-FRC imported by PATSPO

April/May 2019

1. BACKGROUND

Provision of Adequate Tree Seed Portfolios (PATSPO) to enhance productivity and resilience of Forest Landscape Restoration in Ethiopia is a project supported by a grant from the Government of Norway through the Norwegian International Climate and Forest Initiative (NICFI). The project is implemented by the World Agroforestry Centre (the International Centre for Research in Agroforestry - ICRAF) in close collaboration with the Ethiopia Environment and Forest Research Institute (EEFRI) under the Ministry of Environment, Forest and Climate Change (MEFCC), and other institutions working in the tree seed sector in Ethiopia. PATSPO is a four-year project 2017 – 2020 based on an agreement between the Royal Norwegian Embassy in Ethiopia (RNE) and ICRAF.

PATSPO is designed to support Ethiopia in its ambitious programmes of forest landscape restoration with a commitment to restore more than 20 million ha of degraded forest landscapes within the next 20 years.

A major challenge of forest landscape restoration work is that it generally requires the use of planting material in large quantities of a broad spectrum of genetically diverse, healthy and productive tree species.

PATSPO addresses this major challenge by providing a multiple tree species programme able to provide:

1. organizational setup of the tree seed sector, including stakeholder identification and roles and responsibilities, based on a sector analysis;
2. species specific knowledge for most priority tree species;
3. a built up of the tree genetic resources for the future, comprising exploration, mobilisation, conservation, establishment, management and improvement; and
4. capacity to monitor and deliver quality seed and seedlings of multiple species required for large scale restoration.

The capacity-building component of PATSPO includes support provision, installation and use of seed collection- and seed laboratory equipment at the four RTSCs and CEE-FRC. PATSPO has

Provision of Adequate Tree Seed Portfolios (PATSPo), 2017-2020

General requirements and guidelines for travel and consultancy reports

The guidelines below apply to staff of PATSPo and consultants recruited by or through PATSPo unless otherwise agreed upon.

General guidelines

PATSPo consultants should submit a debriefing note to PATSPo before the end of the stay in Ethiopia, and usually also a technical report as specified in the Terms of Reference (TOR) for the consultancy.

Debriefing note

The debriefing note is a short, typically 2-4 pages note. The debriefing note should be submitted to PATSPo. Any further distribution of the report will be carried out by PATSPo and must not be done by the consultant without prior agreement.

The debriefing note should contain:

- Purpose and background of consultancy with reference to TOR in annex.
- Achievements: degree of fulfilment of TOR (outputs produced), the course of the consultancy with reference to itinerary and persons met in annexes, any problems encountered, and possible specific observations related to the consultancy.
- Follow-up: outstanding work to be done by the consultant (with reference to any deadlines in TOR), or PATSPo, and possible recommendations for additional work with relevant reference (justification) to achievements.
- General observations (optional): possible general observations and recommendations related to the project and the context of the project.

Technical reports

Technical reports can be reports covering a single well-defined technical discipline, *e.g.* infrastructure, equipment, seed source identification, seed collection/climbing, seed extraction, seed testing, seed documentation; or reports covering several disciplines, often for planning purposes, *e.g.* baseline surveys, integrated strategies, project implementation plans, seed research plans.

Reports from training courses shall include the course programme, a list of training materials used, a list of trainees, an evaluation of the achievements as considered by the participants as well as the consultant, and suggested follow-up. The evaluation should include an assessment of (i) the

performance of the trainees, (ii) the quality of the training material and (iii) the need for follow-up. If considered appropriate by the consultant, the debriefing note and the training course report may be combined into one.

The specific requirements of each technical report in terms of contents and deadlines for submission will usually be specified in the terms of reference. Reports must be submitted in hard-copy as well as electronic format. All rights to the outputs delivered will belong to PATSPO and the project unless otherwise agreed.

All sources of information and documentation shall be indicated and well described (literature, interview, etc.).

Often a draft report should be submitted to the project before the departure of the consultant from the project.

The cover of such reports should include the following information:

- Draft consultancy report
- Title of consultancy
- Period of consultancy
- Name of consultant (and other contributors)
- Title of project

The following standard phrase should be included in the colophon or the introduction of the report: The present report is a draft consultancy report prepared for the project. The draft is subject to review by PATSPO before finalisation.

Reports will be finalised (as final draft or final report) by the consultant according to comments and instructions given by PATSPO.

The final report will be published by PATSPO with a cover as above will contain the following standard phrase: The present report is a consultancy report prepared for and reviewed by PATSPO.

PATSPO, May 2018

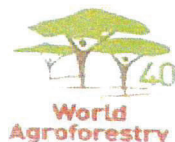
Annex 2.

Program for allocating, installation and training of Lab. equipment. 22 April - 31 Maj 2019, PATSPO Ethiopia.				
Day and time	Activity	Venue	Participants	Comments
Mon. April 22. 22.00	Arrival	ILRI		After arrival check-in at ILRI Hostel.
Tue. April 23	Introductory meeting concerning the purpose of the consultancy.	ILRI	SM, KM, PE	
Wed. April 24.	Elaborating packing list and official delivery note on the received equipment	ILRI	KM, PE	
Thu. April 25.	Elaborating of packing list and official delivery note on the received equipment elaborating the program	ILRI	KM, PE	
Fri. April 26.	Program for visiting and installing of the equipment at the Seed Centers.	ILRI	KM, PE	
Sat. April 27. – Sun. April 28.	Office	ILRI		
Mon. April 29	Preparations of user's manuals.	ILRI		
Tue. April 30. – Maj 3.	All Lab. equipment's besides equipment to HAWASA is transported to the Seed Centers.			Equipment is transported to FRC. Incl. Three sets of tree climbing gear.
Thu. April 30. – Thu. May 2.	Installing equipment and demonstrating the use of the same.	FRC Addis Ababa	KM, PE	
Fri. Maj 3.	Packing the seed collection equipment. Briefing on the current	ILRI	PE, KM PE, KM, SM	
Sat. Maj 4. – Sun. Maj 5.	Office	ILRI		
Mon. May. 6 – Wed. May 8.	Installing equipment and demonstrating the use of the same	RSC Sebeta	KM, PE	Dep. ILRI Might be changed to Mekele and visa versa.
Thu. May9.	Office			
Fri. May 10	Office			
Sat. May 11.				
Sun. May 12 – Wed May 15.	Installing equipment and demonstrating the use of the same	RSC Mekele	KM, PE	Dep. Addis..... Arrival Mekele Dep. Mekele Arrival at Addis
Thu. May 16.	Office			
Fri. May 17.	Office			

Program for allocating, installation and training of Lab. equipment. 22 April - 31 Maj 2019, PATSPO Ethiopia.				
Day and time	Activity	Venue	Participants	Comments
Sat. Maj 18. – Sun. Maj 19.				
Mon. May 20. – Wed. May 23.	Installing equipment and demonstrating the use of the same	RSC Barhirdar	PE	Might leave on Sun. 19.
Fri. May 24	Office			
Sat. Maj 25. – Sun. Maj 26.				
Mon. May 27	Office			
Tue. May 28	Office			
Wed. May 29	Elaborating debriefing note		PE, KM, SM	
Thu. May 30	Elaborating debriefing note			
Fri. May 31.	Debriefing Departure for Denmark		SM, KH, KM, PE	

KM: Kedra Muhamed, KH: Kiros Hadgu SM: Soeren Moestrup PE: Poul Elgaard

Annex 3.



Delivery Note

Date sent : May 30, 2019

Contact person: WONDWOSSEN G/TSADIK

To : CEC-FRC

Telephone: 03 12845073

Address: ADDIS ABABA
ETHIOPIA, GURD. SHOLA
P.O.B - 30708

Attention: _____

S/N	Description	Quantity
1.	Back pack Lava 110 liter for equipment	3pcs
2.	Safety belt for tree climbing, 71-299-01-1	3pcs
3.	Safety robe 35 m, 71-673/35	3pcs
4.	Lifting strap 4 m, 71-760/4,0	6pcs
5.	Splittail for tree climbing, 71-189/90	3pcs
6.	Tree climbing spurs, 71-124	6pcs
7.	Karabiner	6pcs
8.	Safety helmet, neon green	3pcs
9.	Petri dish 200 x 30 mm	8pcs
10.	Round filter - 200 mm. dia.	200pcs
11.	Petri dish 120 x 20 mm	50pcs
12.	Round filter - 100 mm. dia.	400pcs
13.	Petri dish 150 x 25 mm.	50pcs
14.	Round filter - 125 mm. dia.	400pcs
15.	Petri dish 80 x 15 mm	50pcs
16.	Round filter - 070 mm. dia.	400pcs
17.	Scalpel handle nr. 3 for blade nr. 11 & 12	1pcs
18.	Scalpel blade nr. 11, sterile	20pcs
19.	Scalpel handle nr. 4 for blade nr. 23 & 22	1pcs
20.	Scalpel blade nr. 22, sterile	20pcs

21.	Scalpel blade nr. 23, sterile	20pcs
22.	Stainless steel bowl, 110 x 55	20pcs
23.	Aluminum weighing dish	50pcs
24.	Spray bottles, white, 500 ml.	2pcs
25.	Pair of tweezers, stainless steel, pointed 145 mm. arched	4pcs
26.	Pair of tweezers, stainless steel, pointed 160 mm.	4pcs
27.	Ultra-box, polystyrene, A4/120 without lid 310 x 225 x 126 mm.	49pcs
28.	Lids for A4 box 315 x 230 x 12 mm.	49pcs
29.	Oven, Memmert UF55 universal, 53 l with Fan 300°C	1pcs
30.	Illuminated magnifier lens with articulated arm 2	1pcs
31.	Electronic balance - KB 1200-2N 1210g/0.01 g	1pcs
32.	Moisture analyzer DBS 60-3, 60gr/0.001 g/0.01%	1pcs
33.	Stainless steel wire mesh 30.0 m2, size 0.3X1m	30pcs
34.	Test sieve S/S ø200mm 0.500mm	1set
35.	Test sieve S/S ø200mm 1.0mm	1set
36.	Test sieve S/S ø200mm 2.0 mm	1set
37.	Test sieve S/S ø200mm 4.0 mm	1set
38.	Test sieve S/S ø200mm 5.0 mm	1set
39.	Secateurs for cutting test.	1pcs
40.	Sieve receiver, S/S ø200mm x 50mm	1set

Goods dispatched by in good order:

Name:

Ruth Haard

Signature:

Ruth Haard

Date:

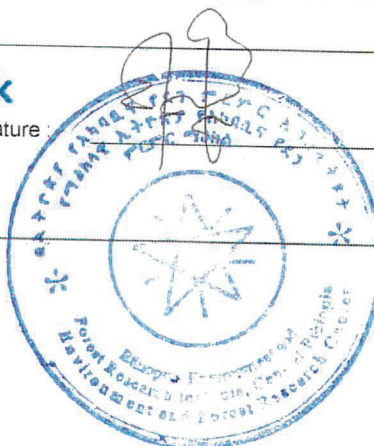
30/5-2019

Goods received in good order by:

Name:

Wondossen G/Tsadik
Center Director

Signature:



Date:

May 30, 2019

Annex. 4.



Delivery Note

Date sent : 6 May 2019

Contact person: Alemayehu H/silamie

To: Dime, Tree
Seed Center

Telephone: 0912185349

Address: Dime, Sebete

Attention: Alemayehu H/silamie

S/No	Description	Quantity
1	Petri dish 200 x 30 mm	8.00 pcs
2	Round filter - 200 mm. dia.	200.00 pcs
3	Petri dish 120 x 20 mm	50.00 pcs
4	Round filter - 100 mm. dia.	400.00 pcs
5	Petri dish 150 x 25 mm.	50.00 pcs
6	Round filter - 125 mm. dia.	400.00 pcs
7	Petri dish 80 x 15 mm	50.00 pcs
8	Round filter - 070 mm. dia.	400.00 pcs
9	Scalpel handle nr. 3 for blade nr. 11 & 12	1.00 pcs
10	Scalpel blade nr. 11, sterile	20.00 pcs
11	Scalpel handle nr. 4 for blade nr. 23 & 22	1.00 pcs
12	Scalpel blade nr. 22, sterile	20.00 pcs
13	Scalpel blade nr. 23, sterile	20.00 pcs
14	Stainless steel bowl, 110 x 55	20.00 pcs
15	Aluminium weighing dish	50.00 pcs
16	Spray bottles, white, 500 ml.	1.00 pcs
17	Pair of tweezers, stainless steel, pointed 145 mm. arched	4.00 pcs
18	Pair of tweezers, stainless steel, pointed 160 mm.	4.00 pcs
19	Ultra box, polystyrene, A4/120 without lid 310 x 225 x 126 mm.	50.00 pcs
20	Lids for A4 box 315 x 230 x 12 mm.	50.00 pcs
21	Electronic balance - KB 1200-2N 1210g/0,01 g	1pcs
22	Moisture Analyzer DBS 60-3, 60gr/0,001 g/0,01%	1pcs
23	Stainless steel wire mesh 30.0 m2, size 0.3X1m	30pcs



24	Test sieve S/S ø200mm 0.500mm	1 set
25	Test sieve S/S ø200mm 1.0mm	1 set
26	Test sieve S/S ø200mm 2.0 mm	1 set
27	Test sieve S/S ø200mm 4.0 mm	1 set
28	Test sieve S/S ø200mm 5.0 mm	1 set
29	Sieve reciever, S/S ø200mm x 50mm	1 set
30	Seed counter, electronic	1pc

Goods dispatched by in good order:

Name : Kedra Mohammed Signature : [Signature] Date : 06 May 2019

Goods received in good order by:

Name : Amara Habtamu Signature : [Signature] Date : 11/5/2011/06 May 2019

Annex 5



Delivery Note

Date sent : 13/05/19

Contact person : Ali Hadush

To : Aynalem Tree
Seed Center

Telephone : 0962682981

Address : Treekele, Stimpie

Attention : Ali Hadush

Sno	Description	Quantity
1	Petri dish 200 x 30 mm	8pcs
2	Round filter - 200 mm. dia.	200pcs
3	Petri dish 120 x 20 mm	50pcs
4	Round filter - 100 mm. dia.	400pcs
5	Petri dish 150 x 25 mm.	50pcs
6	Round filter - 125 mm. dia.	400pcs
7	Petri dish 80 x 15 mm	50pcs
8	Round filter - 070 mm. dia.	400pcs
9	Scalpel handle nr. 3 for blade nr. 11 & 12	1pcs
10	Scalpel blade nr. 11, sterile	20pcs
11	Scalpel handle nr. 4 for blade nr. 23 & 22	1pcs
12	Scalpel blade nr. 22, sterile	20pcs
13	Scalpel blade nr. 23, sterile	20pcs
14	Stainless steel bowl, 110 x 55	20pcs
15	Aluminium weighing dish	50pcs
16	Spray bottles, white, 500 ml.	1pcs
17	Pair of tweezers, stainless steel, pointed 145 mm. arched	4pcs
18	Pair of tweezers, stainless steel, pointed 160 mm.	4pcs
19	Ultra box, polystyrene, A4/120 without lid 310 x 225 x 126 mm.	50pcs
20	Lids for A4 box 315 x 230 x 12 mm.	50pcs
21	Moisture analyser DBS 60-3, 60gr/0,001 g/0,01%	1pcs
22	Stainless steel wire mesh 30.0 m2, size 0.3X1mm	30pcs
23	Test sieve S/S ø200mm 0.500mm	1set
24	Test sieve S/S ø200mm 1,0mm	1set
25	Test sieve S/S ø200mm 2,0 mm	1set



26	Test sieve S/S ø200mm 4,0 mm	1 set
27	Test sieve S/S ø200mm 5,0 mm	1 set
28	Sieve reciever, S/S ø200mm x 50mm	1 set
29	Grinding mill	1 pc
30	Pair of secateurs	1 pc

Goods dispatched by in good order:

Name: Kedra Mohammed Signature: [Signature] Date: 13/05/19

Goods received in good order by:

Name: Ali Hadush Desalegn Signature: [Signature] Date: 15/05/19

Annex 6.

Bluer colour

<u>AYNALEM TREE SEED CENTER</u> <u>SEED DISTRIBUTION LABEL</u>	
SEED LOT NO.:-	
SPECIES:-	LOCAL NAME:.....
PROVENANCE:-	SEED SOURCE NO.:.....
LOCALITY:.....	ZONE:..... WOREDA:.....
COLLECTION PERIOD:-DATE OF LATEST TEST:-.....	
QUANTITY (KG.):- NO. OF SEED /KG. :-	
PURITY (%):- MOISTURE CONTENT (%):- GERMINATION (%):-.....	
PRE-SOWING TREATMENT:-	

Yellow colour

<u>AYNALEM TREE SEED CENTER</u> <u>SEED COLLECTION AND/STORAGE LABEL</u>	
SEED LOT NO.:-	
SPECIES:-	LOCAL NAME:.....
PROVENANCE:-	SEED SOURCE NO.:.....
LOCALITY:.....	ZONE:..... WOREDA:.....
COLLECTION PERIOD:-COLLECTED BY:.....	
DATE OF ARRIVAL:-	
QUANTITY (KG.):-	
REMARK:-.....	

Annex 7



Delivery Note

Date sent : 24/5-2019

To: Amhara forest Enterprises seed Center (b/dar)

Address: B/dar
0553202261

Attention: Amhara forest Enterprise b/dar Tree seed center

S/No	Description	Quantity
1	Petri dish 200 x 30 mm	8pcs
2	Round filter - 200 mm. dia.	200pcs
3	Petri dish 120x 20 mm	50pcs
4	Round filter - 100 mm. dia.	400pcs
5	Petri dish 150 x 25 mm.	50pcs
6	Round filter - 125 mm. dia.	400pcs
7	Petri dish 80 x 15 mm	50pcs
8	Round filter - 070 mm. dia.	400pcs
9	Scalpel handle nr. 3 for blade nr. 11 & 12	1pc
10	Scalpel blade nr. 11, sterile	20pcs
11	Scalpel handle nr. 4 for blade nr. 23 & 22	1pc
12	Scalpel blade nr. 22, sterile	20pcs
13	Scalpel blade nr. 23, sterile	20pcs
14	Stainless steel bowl, 110 x 55	20pcs
15	Aluminum weighing dish	50pcs
16	Spray bottles, white, 500 ml.	2pc
17	Pair of tweezers, stainless steel, pointed 145 mm. arched	4pcs
18	Pair of tweezers, stainless steel, pointed 160 mm.	4pcs
19	Ultra-box, polystyrene, A4/120 without lid 310 x 225 x 126 mm.	50pcs
20	Lids for A4 box 315 x 230 x 12 mm.	50pcs
21	Illuminated magnifier lens with articulated arm 2	1pc
22	Electronic balance - KB 120-3N, 121g/0,001 g	1pc
23	Moisture analyzer DBS 60-3, 60gr/0,001 g/0,01%	1pc
24	Stainless steel wire mesh 30.0 m2, size 0.3X1m	30pcs

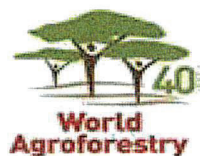
25	Test sieve S/S ø200mm 0.500mm	1 set
26	Test sieve S/S ø200mm 1.0mm	1 set
27	Test sieve S/S ø200mm 2.0 mm	1 set
28	Test sieve S/S ø200mm 4.0 mm	1 set
29	Test sieve S/S ø200mm 5.0 mm	1 set
30	Sieve reciever, S/S ø200mm x 50mm	1 set
31	Grinding mill	1 pc
32	Secateurs	1 pc

Goods dispatched by in good order:

Name: Paul Ekeada Signature: [Signature] Date: 22/5-2019

Goods received in good order by:

Name: Sefiyelem Tadesse Signature: [Signature] Date: 22/5-2019



Annex. 8

Delivery Note

Date sent : _____

To: *Delivery note, SNNPR,
Seed Center, Hawasa*

Address: _____

Attention: _____

S/No	Description	Quantity
1	Petri dish 200 x 30 mm	8pcs
2	Round filter - 200 mm. dia.	200pcs
3	Petri dish 120 x 20 mm	50pcs
4	Round filter - 100 mm. dia.	400pcs
5	Petri dish 150 x 25 mm.	50pcs
6	Round filter - 125 mm. dia.	400pcs
7	Petri dish 80 x 15 mm	50pcs
8	Round filter - 070 mm. dia.	400pcs
9	Scalpel handle nr. 3 for blade nr. 11 & 12	1pc
10	Scalpel blade nr. 11, sterile	20pcs
11	Scalpel handle nr. 4 for blade nr. 23 & 22	1pc
12	Scalpel blade nr. 22, sterile	20pcs
13	Scalpel blade nr. 23, sterile	20pcs
14	Stainless steel bowl, 110 x 55	20pcs
15	Aluminum weighing dish	50pcs
16	Spray bottles, white, 500 ml.	2pc
17	Pair of tweezers, stainless steel, pointed 145 mm. arched	4pcs
18	Pair of tweezers, stainless steel, pointed 160 mm.	4pcs
19	Ultra-box, polystyrene, A4/120 without lid 310 x 225 x 126 mm.	50pcs
20	Lids for A4 box 315 x 230 x 12 mm.	50pcs
21	Illuminated magnifier lens with articulated arm 2	1pc
22	Electronic balance - KB 1200-2N 1210g/0,01 g	1pc
23	Electronic balance - KB 120-3N, 121g/0,001 g	1pc

24	Moisture analyzer DBS 60-3, 60gr/0,001 g/0,01%	1pcs
25	Stainless steel wire mesh 30.0 m2, size 0.3X1m	30pcs
26	Test sieve S/S ø200mm 0.500mm	1set
27	Test sieve S/S ø200mm 1,0mm	1set
28	Test sieve S/S ø200mm 2,0 mm	1set
29	Test sieve S/S ø200mm 4,0 mm	1set
30	Test sieve S/S ø200mm 5,0 mm	1set
31	Sieve receiver, S/S ø200mm x 50mm	1set
32	Seed counter, electronic	1pcs
33	Grinding mill	1pc
34	Secateurs	1pc

Goods dispatched by in good order:

Name : _____ Signature : _____ Date : _____

Goods received in good order by:

Name : _____ Signature : _____ Date : _____

Suggestions for further Consulting work for the PATSPO project, Ethiopia

by Poul Elgaard

PE. Consult

May 31. 2019

Below mentioned issues, are suggestion's for training, how to strengthen the overall existing function of the forest seed sector within the PATSPO program.

1. Seed

a. Planning and preparation of seed Collection

- i. Drawing up a annual Seed Collection Plan
- ii. Estimate No. of Kg. fruit needed for 1 kg. of pure seed. to be collected.
Current stock + demand + how many years are there in-between a good crop year.
- iii. Estimate time of flowering and time of collection for different provenances/climate zones.
- iv. Calculating the Cost price pr. Kg. – Budget

b. Seed Collection, optimal handling and documentation in the field.

- i. Training of trainees and allocation and training in use of seed collection equipment that has been delivered to the PATSPO project in April 2019.
- ii. Which methods are the best for collecting the seed. What equipment is needed.
- iii. How to handle the fruit – seed before and after the collection
- iv. Seed documentation Define the borderlines of the seed source
- v. Evaluate fruit setting, including No. of seed pr. fruit, seed quality (insect damage, empty seed ect.)
- vi. Estimate next year's crop by looking for flower buds indicating if there will be a crop the following year.

It is my impression, to secure the seed documentation you need to start at the seed collection site. (Seed source). In other words, you must start with the seed collectors/farmer groups. Example in Bahirdar RSC, the Amhara Region they have 8 Seed collection stations, so called "Branches" that supervise and receive the seed from the different Farmer gropes. Therefore, it is recommended that staff at the Branches, receive adequate training and information for carrying out their work. Example correct handling of the seed, the importance of labeling each seed lot etc. It is my impression

that necessary information is not passed on, from the RSC to these groups, which is very important as it all documentation start at the collection site as mentioned earlier.

c. Seed Dormancy, recommendation on how it can be broken by different methods of pre- treatment of the.

- i. Select 25 native spices of most importance within the PATSPO frame.
- ii. Make a literature study on what is known and documented until now on an international level. It is important that the method feasible to be used on a large volume of seed, on a Nursery level.
- iii. Define the different types of dormancy
- iv. Present and make recommendation
- v. Implement the methods on both Seed Center and on a Nursery level.
- vi. Avoid recommending Sulfuric acid treatment.
- vii. It is my impression, or though the seed Lot have a high variability, there is a lack of knowledge in how to pre- treat the seed, to reach a maximal germination. This results in low number of seedlings pr. Kg. and even priority tree spices are not produced in the Nurseries because they are “just too difficult” and the yield is just too low. The consequence is that high valuable native tree spices, are not used in the reforestation program.

d. Seed Processing, training in use already installed equipment at each 5 Seed Center's.

- i. Or though most of the seed processing is done by farmer groups, I'm still convinced that there is a need for final processing and cleaning at the TSC. Now there is very little knowledge in how to use equipment that is already a variable.

e. Improve the facility's for storage of seed at ambient temperature.

- i. Seed processing facilities at the FRC, Addis Ababa, can be improved considerably, if there the TSTC can assure that the existing location for seed processing is secured for this purpose, in the foreseen future. Plans for renovating has been laid out during the Consultancy visit, October 2017.



Seed Processing area at FRC, Addis Ababa

- ii. The existing Sun Drying Hall at the 4 RSC is converted to Seed storage at ambient temperature. Until now it has not been used for its actual purpose.



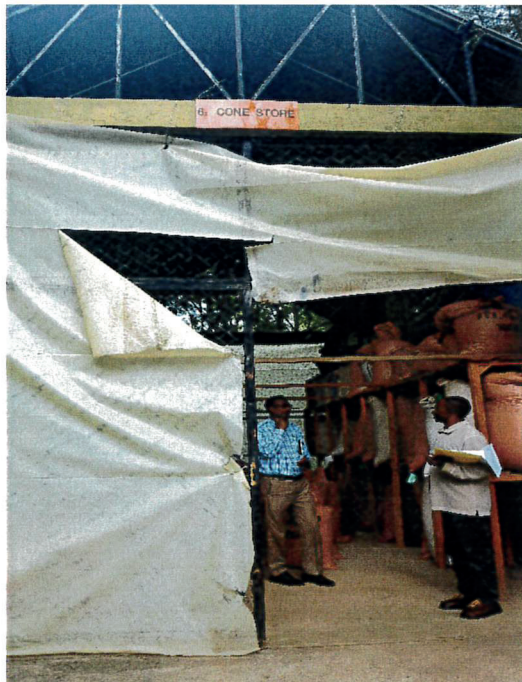
Bahirdar Seed Center

- iii. The existing Cone store can be converted to a seed storage at ambient temperature.
Until now it has only been used for storing of used tires, from an outside branch of the company.



Bahirdar Seed Center

- iv. The Cone Store in Sabeta RSC is now used as a Seed store at ambient temperature. However, as the construction is at the present time, the Seed is very exposed for pests attack (insects, mouse/rats) and moisture during the raining season.



Sabeta RSC

- f. **Allocation and installation and training of laboratory equipment in Hawasssa RSC**
 - i. The installation and training have been proponed until the Seed center has been fully staff and operational. It is expected that the coming staff will have limited experience in seed testing, and with a considerable amount of new equipment to be installed, it is expected to take 1 week of training including getting accustom to basic laboratory procedures.
- g. **Training in management of a Forest Seed Center.**
 - i. There is a strong need straightening management of the 5 TSC. How to delegate and follow-up and understanding the importance, that each function from planning of seed collection until dispatchment of the seed lot is well documented and in don in a correct way.
 - ii. One tool that could be useful could be to interduce a sort of Lean “light” management system to visualize the seed flow through the valuable chain.
- h. **Timing for possible coming consultancy by PE. Consult.**
 - i. **October - medio December 2019**
 - a. Planning and preparation of seed Collection
 - b. Seed Collection, optimal handling and documentation in the field.
 - ii. **January – March 2020**
 - c. Seed Dormancy, recommendation on how it can be broken by different forms of pre- treatment.
 - iii. **October – medio December 2020**
 - d. Improve the facility’s for storage of seed at ambient temperature.
 - iv. **January – March 2021**
 - e. Seed Processing, training in use already installed equipment at each 5 Seed Center’s.
 - v. **Allocation and installation and training of laboratory equipment in Hawassa RSC. and training in management of a Forest Seed Center will be taken at an later stage of the project period.**
 - i. *Length of each consultancy, preferable 3- 4 weeks at a time*



Annex 10.

Delivery Note

Date sent : _____

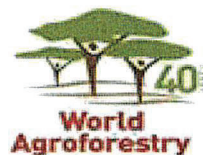
To : **Seed Collection
equipment**

Address: _____

Attention: _____

Total 7 sets where 2 are without
Backpack

S/N	Description	Quantity
1	Telescope ladders 4,10m 13 steps (40323)	2 pcs
2	Sandvik Pruning Shears P34/27A Max cut: 30 mm Ø, Heavy duty	2 pcs
3	Triwi Telescopic Handle 2,10-5,75 m	2 pcs
4	Wolf RS 22 Shears Max cut: 20 mm Ø	2 pcs
5	Sheat for Secateurs	2 pcs
6	Salter Scale, 50 kg Scale: 0-50 kg	1 pc
7	Backpack Lava 110 liter for equipment	1 pc
8	Tarpaulin	2 pcs
9	Safety belt for tree climbing, 71-299-01-1	1 pc
10	Safety robe 35 m, 71-673/35	1 pc
11	Lifting strap 4 m, 71-760/4,0	2 pcs
12	Splittail for tree climbing,71-189/90	1 pc
13	Tree climbing spurs, 71-124	2 pcs
14	Karabiner	2 pcs
15	Leather Belt Length: 12.5 cm, Width: 4 cm	2 pcs
16	Safety helmet, neon green	1 pc



Goods dispatched by in good order:

Name: _____ Signature: _____ Date: _____

Goods received in good order by:

Name: _____ Signature: _____ Date: _____



PATSPPO/ICRAF Office
c/o ILRI Campus, Gurd
Shola, P.O. Box 5689,
Addis Ababa, Ethiopia

Phone: 251-116172000
ext. 2491
Email: K.Hadgu@cgiar.org

Website: <https://www.worldagroforestry.org/project/provision-adequate-tree-seed-portfolio-ethiopia>