

*Appendix 3.11-1  
Report on Group Meetings Conducted  
with Farmer Organisations (FOs)*

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## **Appendix 3.11-1: Report on Group Meetings Conducted with Farmer Organizations (FOs)**

### **1. General**

A series of group meetings with representative farmers in each of the 6 model cascades was planned and conducted as a major component in the process of collecting relevant data and information for:

- a) Confirmation/updating the data on present condition of the farming operations presented in the CSDP under North Central Province Canal Project (2017)
- b) Gather farmer response (opinion and willingness) and the necessary support required for enhancing profitability of farming operations without supplementary irrigation water from the diversion under the NCPC Project.

Accordingly, 3 group meetings were organized for each of the six model cascades and the participants consisted of office bearers of the FOs and 6 – 7 representative members. (3 Meetings x 6 Model Cascades = Total 18 meetings). In conformity with the health regulations imposed following spread of Corona pandemic, each group was limited to approximately 10 farmer participants. Where applicable, at least one farmer engaged in dairy/poultry farming was included as participants.

### **2. Meeting Schedule**

The initial meeting was held with the Deputy and Assistant Commissioners of the Department of Agrarian Development, Anuradhapura and Vavunia. The purpose of the FO meetings was explained and they in-turn informed the Development Officers (DOs) in-charge of the relevant Agrarian Service Centers (ASCs) and advised them to cooperate with the Study Team members in organizing and conducting the meetings.

The meeting schedule is prepared in consultation with the DOs of ASCs and the Agriculture Research and Production Assistants (ARPAs) in the respective areas. An attempt was made to complete the meeting schedule at the earliest due to the forthcoming General Elections set for the 5<sup>th</sup> August.

### **3. Introductory Sessions**

At the commencement of each meeting session, the participants were briefed on the expected delay in the augmentation of the irrigation water supply to cascade systems under the NCPC Project. The main component of the present Study is rehabilitation of tanks and irrigation facilities in the existing tank systems as the Phase 1 of the total project. Without such rehabilitation, the systems may deteriorate and become dysfunctional in the near future. Under these circumstances, it is proposed to collect farmer's views on how the productivity of the farmlands could be increased following system improvement through enhanced crop, livestock, and fishery production as well as the post-harvesting processing and market development.

### **4. Conduct of the Sessions**

A format was used that included the areas of inquiry in a sequence covering the 4 sub-sectors a) crop production, b) cattle farming & poultry rearing, c) inland fisheries and d) storage, processing and marketing of farm produce. In each sub-sector, an attempt was made to identify the current problems and issues affecting productivity and profitability of farmers as well as probable solutions that needed attention to rectify the situation. Particular attention was made to ascertain the farmer interest in crop diversification and undertake new production approaches to boost the household income and the general wellbeing of the community.

Subject-wise inquiries were opened up in a sequence for discussion and the notes were recorded by appointed Study Team recorders for later analysis.

At all the sessions the sanitary guidelines, set forth by the health authorities, were adhered to. The participants were served with light refreshments during the meetings.

## 5. Meeting and Reporting Schedule

The meeting schedule specifying the date and time, prepared in consultation with the relevant officers of DAD is given in the Table below. Some changes were made on dates and times in the original schedules to accommodate DOA officer's requests and available transport logistics.

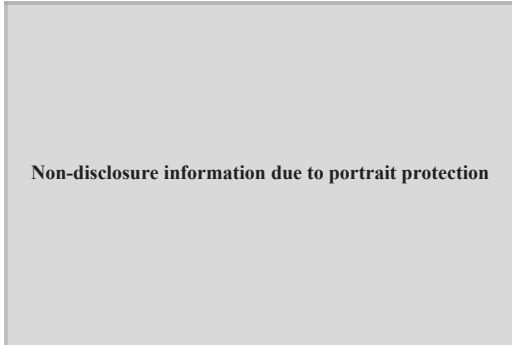
## 6. Notes of Discussions

Notes made at the discussions, prepared in draft form, are grouped separately under each of the 6 cascades in this presentation for easy reference. An attempt will be made to comply with dates of completion of the Draft Notes in accordance with the dates set in the schedule.

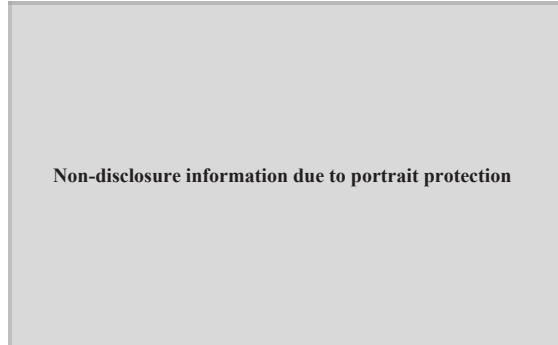
No.	Date	Time	Cascade	Farmer Organization	Meeting Status	Date Sending Draft Notes	Remarks
June 22 to 26							
1	Jun 23 (Thu)	9.30 AM	Siyambalagaswewa 1	Dilena Tharu	Completed	Jul 18	Test meeting
June 29 to July 3							
2	Jun 30 (Mon)	9.30 AM	Kiulekada - 1	Gonahathdenawa/Ganga	Completed	Jul 25	
3	Jun 30 (Tues)	2.00 PM	Kiulekada - 2	Parakum/Ekamuthu	Completed	Jul 25	
4	Jul 1 (Wed)	9.30 AM	Ichchankulama - 1	Ambagahawewa	Completed	Jul 18	
5	Jul 2 (Thu)	P.30 AM	Siyambalagaswewa 2	Parakum	Completed	Jul 18	
July 6 to 10							
6	Jul 6 (Mon)	9.30 AM	Kiulekada - 3	Goviudana	Completed	Jul 25	
7	Jul 7 (Tue)	9.30 AM	Ichchankulama - 2	Pahala Kainattama	Completed	Jul 18	
8	Jul 8 (Wed)	9.30 AM	Siyambalagaswewa 3	Shakthi	Completed	Jul 18	
9	Jul 9 (Thu)	10.00 AM	Neveli Kulam - 1	Arasan Kulam	Completed	Jul 25	
10	Jul 9 (Thu)	2.00 PM	Neveli Kulam - 2	Mahilan Kulam	Completed	Jul 25	
July 13 to 17							
11	Jul 13 (Mon)	9.30 AM	Ichchankulama - 3	Ihala Kainattama	Completed	Jul 18	
12	Jul 14 (Tue)	10.00 AM	Neveli Kulam - 3	Welasinna Kulam	Completed	Jul 25	
13	Jul 16 (Thu)	10.00 AM	Alagalla - 1	Alagalla	Completed	Jul 31	
14	Jul 16 (Thu)	2.00 PM	Alagalla - 2	Thiruwegama Ekamuthu	Completed	Jul 31	
July 20 to 24							
15	Jul 20 (Mon)	10.00 AM	Alagalla - 3	Kovil Kulam	Scheduled	Jul 31	
16	Jul 21 (Tue)	9.30 AM	Rathmalawewa - 1	Isuru/Minimuthu	Scheduled	Jul 31	
17	Jul 21 (Tue)	2.00 PM	Rathmalawewa - 2	Dutugemunu/Olugaskada	Scheduled	Jul 31	
18	Jul 23 (Thu)	9.30 AM	Rathmalawewa - 3	Weliwewa/Gurupaswela	Scheduled	Jul 31	

Source: Study Team

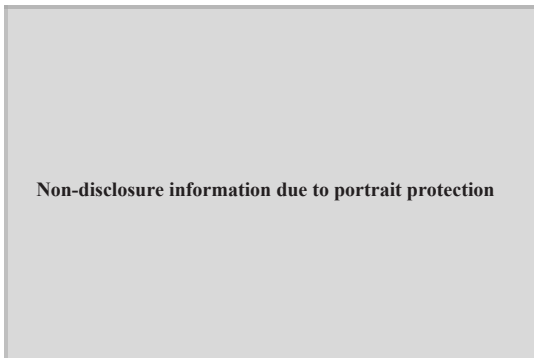
## Photographs from FOs Meetings



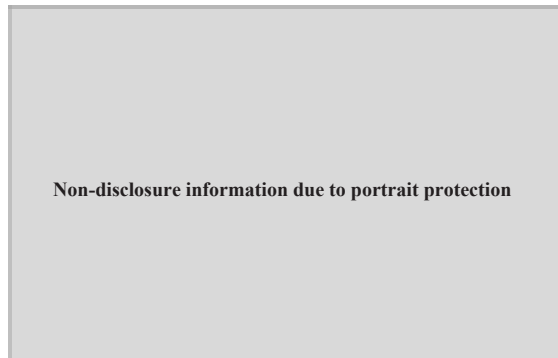
**Cascade - Siyambalagaswewa  
FO - Dilenatharu wewa**



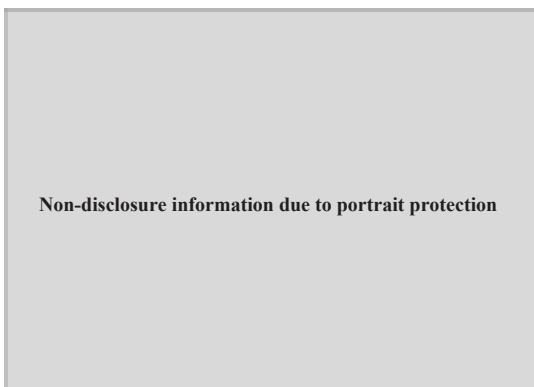
**Cascade - Siyambalagaswewa  
FO - Shakthi**



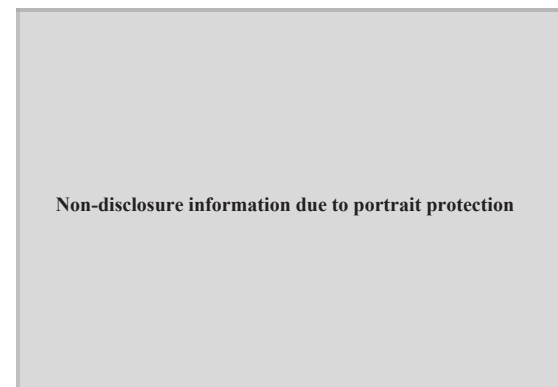
**Cascade - Kiulekada  
FO - Govi Udana**



**Cascade - Kiulekada  
FO - Parakum**

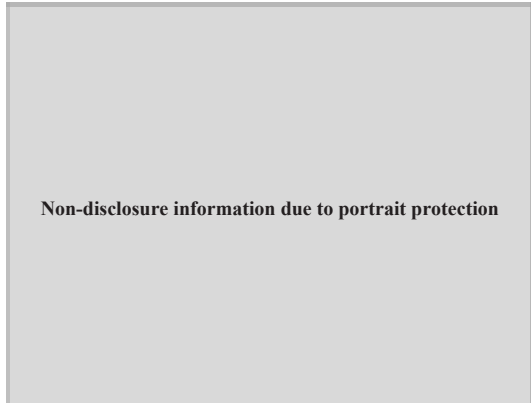


**Cascade - Kiulekada  
FO - Gonahathdenawa**



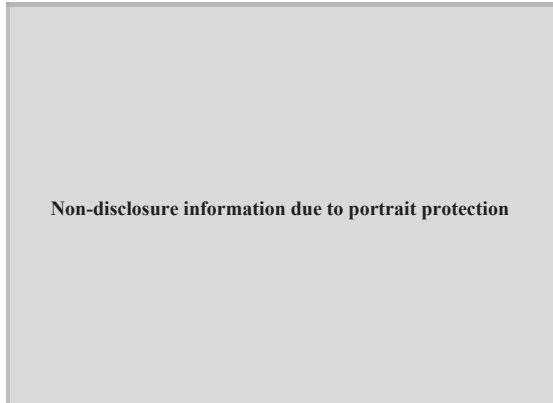
**Cascade - Ichcankulama  
FO - Karakolawewa**





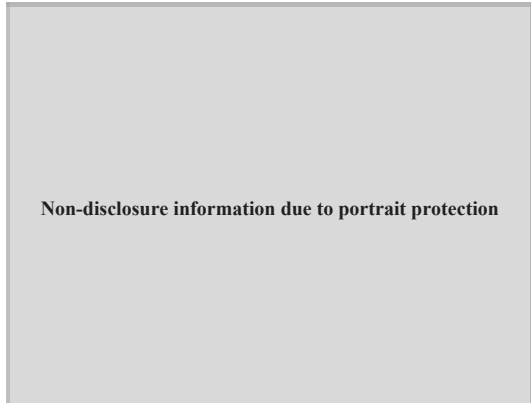
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**Cascade - Ichchankulama  
FO - Ambagaswewa**



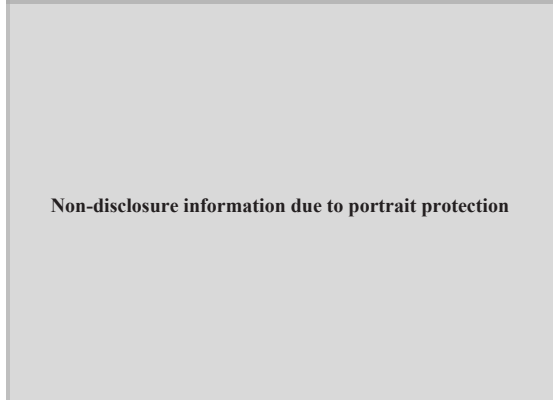
Non-disclosure information due to portrait protection

**Cascade - Ichchankulama  
FO - Kainaththama**



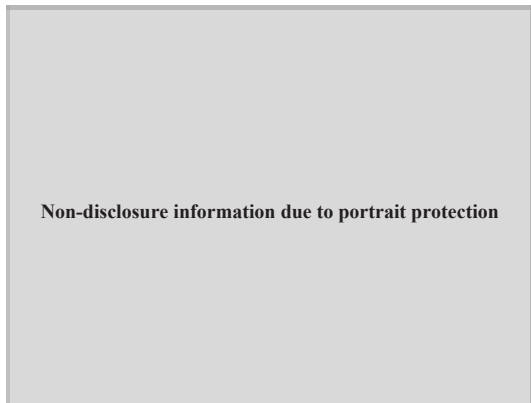
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**Cascade - Nevilkulam  
FO - Mahilankulam**



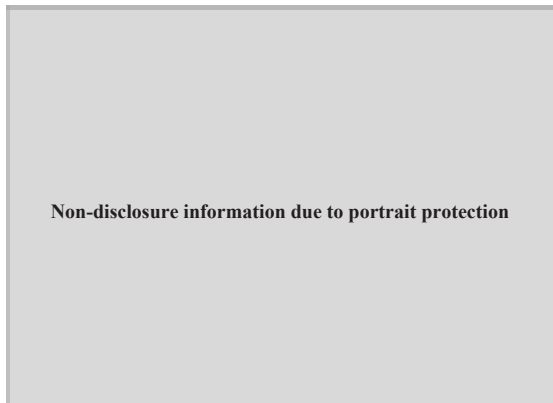
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**Cascade - Nevilkulam  
FO - Arasankulam**



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**Cascade - Alagalla  
FO - Periyakomasankulam**



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**Cascade - Alagalla  
FO - Theeruwegama**

## Notes of FOs Meetings for Alagalla Cascade

### 1. Schedule of Meetings

No.	ASC Area	Cascade	FO	Date & Time	Participants
1)	Kovil Kulam	Alagalla	Priyakomasan Kulam	10:00am, 20 <sup>th</sup> July 2020	11
2)	Kovil Kulam	Alagalla	Ekamuthu Theeruwegama	14:00pm, 16 <sup>th</sup> July 2020	15
3)	Kovil Kulam	Alagalla	Alagalla	14:00pm, 16 <sup>th</sup> July 2020	5

### 2. Notes of Meetings

#### 1) FO: Priyakomasan Kulam (Alagalla Cas.)

Crop Production	
General	<ul style="list-style-type: none"> <li>No. of FO members: 245 cultivating under 5 tanks.</li> <li>Katkulam: 30 Ac, Priyakoomasan Kulam: 140 Ac, Periyakalliya: 46 Ac, Thamara kulam: 36 Ac, Sinnakalliveran Kulam 21 Ac.</li> <li>Main income source: farm and livestock</li> <li>In Maha, command area is cultivated in full. In Yala, cultivation is totally dependent on the rainfall received in April.</li> <li>Farmers were able to cultivate part of command area in Yala only twice in the last 5 years.</li> <li>Some land area, about 15 – 20 Ac in extent, has developed salinity.</li> <li>Farmers add paddy husk and cow dung to affected areas to reduce the salinity</li> </ul>
Paddy in Command area	<ul style="list-style-type: none"> <li>In 19/20 Maha, 273 were cultivated with 3 and 3 ½ month paddy varieties, Seed paddy for sowing is usually purchased from the DAD.</li> <li>Average yield of 2,000 kg/Ac is reached.</li> <li>Farmers have previous experience in growing of traditional paddy varieties. It is not practiced any more as the profit margin is less.</li> <li>Maha cultivation commences with the onset of rains. If rainfall is not adequate for land preparation, supplementary irrigation is provided with water issues from the tanks.</li> <li>Annually, about 70 Ac of the paddy crop is irrigated with water issues from the upper sluice of the tank.</li> <li>Weedicides applied at the recommended dosages is not effective. Farmers are often advised by traders to use the weedicide in higher concentrations. This practice caused severe damage to crop. Farmers are eager to learn how paddy crop yields could be increased further.</li> </ul>
Crop diversification in command area	<ul style="list-style-type: none"> <li>Only paddy is grown in command area in both seasons. OFCs are not grown.</li> <li>If water is available, farmers are willing to grow crops such as groundnut, green gram and black gram. Groundnut is the preferred crop by farmers because: Lower incidence of pest and disease, need less water and fertilizer, Enjoys a good market</li> <li>Improves soil conditions and fertility leading to higher yields in subsequent crops</li> </ul>
Highland cultivation	<ul style="list-style-type: none"> <li>About 75 Ac of highland area available for cultivation</li> <li>Land holding size of individual farmer is averages around 0.25 Ac.</li> <li>In January, at end of Maha, when soil moisture is still adequate, crops such as chilli and red onion are established. Supplementary irrigation is provided from agro-wells.</li> <li>Five farmers who had been given micro-irrigation systems by NGO, but are currently non-operational due to clogging of lines with salt deposits.</li> </ul>
Crop damage	<ul style="list-style-type: none"> <li>Crop damage caused by cattle, birds and monkey remains high.</li> <li>Cattle damage is minimized by working in accordance with collective decisions made at pre-seasonal 'Kanna Meetings.</li> </ul>
Technology	<ul style="list-style-type: none"> <li>Hardly any new information or technology on crop production reaches the farmers.</li> </ul>
Livestock	

Cattle	<ul style="list-style-type: none"> <li>• 20% of farmers keep cattle, predominantly in traditional form with indigenous cattle.</li> <li>• Average herd size per farmer is 10 heads of different age groups.</li> <li>• All consume milk regularly.</li> <li>• One typical cattle farmer participating in the discussion, has 10 heads with only 3 in milk at present.</li> <li>• The total daily milk yield is 9 l of which 7 l are sold at Rs. 75/l and the balance consumed by the family.</li> <li>• Most farmers are interested in cattle rearing as an additional source of income.</li> </ul>
Cattle feeding	<ul style="list-style-type: none"> <li>• Free grazing under the supervision of a herder and tethered grazing is normal systems.</li> <li>• Limited stall feeding is practiced.</li> <li>• In Yala, a significant land area is left fallow and is available for free grazing.</li> <li>• Natural breeding is allowed with same type of indigenous animals though farmers are aware that increased production is possible through upgrading.</li> <li>• Feeding the cattle during Maha is a major problem.</li> </ul>
Silage making	<ul style="list-style-type: none"> <li>• No silage making or feeding is practiced in the area</li> <li>• Silage making material is available in the area. This includes the invasive aquatic water weeds in the tanks.</li> </ul>
Record keeping	<ul style="list-style-type: none"> <li>• Except for the records maintained at institutional level, farmers do not maintain farm records on livestock production.</li> <li>• At institutional level, cattle heads are registered and numbered as well as insemination records are being maintained by the Dept. of Animal production.</li> <li>• Records of milk sold to collectors are maintained by some farmers.</li> </ul>
Poultry	<ul style="list-style-type: none"> <li>• Nearly all farmers have Free Range Chicken (FRC) in small manageable numbers.</li> <li>• Causes crop damage in the neighborhood.</li> </ul>
Poultry feeding	<ul style="list-style-type: none"> <li>• Scavenging and feeding</li> <li>• FRC is kept in very small number per farmer as the land area of homestead offers a limited area for scavenging.</li> <li>• Kitchen refuse and waste grains are other feed stuff available for feeding</li> <li>• Processed feeds are not available and not used</li> </ul>
Replacement stock	<ul style="list-style-type: none"> <li>• Only indigenous birds, produced by the farmers.</li> </ul>
<b>Post-harvesting and Marketing</b>	
Post-harvesting Operations of Paddy	<ul style="list-style-type: none"> <li>• All farmers hire combine harvesters that combine harvesting, threshing and winnowing operations. Hire charge Rs. 9,000 - 10,000/Ac.</li> <li>• Drying of harvested crop isn't done as most of the crop is sold to buyers at farm gate.</li> <li>• The buyers transport the paddy off the field in trucks and tractors.</li> <li>• Farmers hire combine harvesters from owners outside the area.</li> <li>• 20% of harvest is dried to 14% moisture.</li> <li>• Drying is restricted due to lack of a proper drying yard for the members.</li> <li>• Farmers expressed their desire to have their own drying yard under the control of FO.</li> </ul>
Marketing of Paddy	<ul style="list-style-type: none"> <li>• 80% of the total paddy harvest is sold to buyers at farm-gate at Rs. 40 – 45 /kg.</li> <li>• Of the balance 20% which is dried, part is sold at different times to meet the cost of domestic needs at an average price of Rs. 60.00/kg.</li> <li>• Farmers observed that they could get better off season market prices if the paddy can be dried (drying yard) and storage facility are made available to them.</li> <li>• Framers plan to grow traditional paddy in Yala. Under a project of ASC, Kovilkulam, cultivation of five selected traditional paddy varieties are promoted. Seed paddy is issued to farmers and the produce is purchased by the ASC at Rs. 70/kg. Rice after milling at the Cooperative Mill are sold in Colombo through identified retailers.</li> </ul>

Storage period and losses of paddy	<ul style="list-style-type: none"> <li>• 20% of harvested and dried paddy is stored in the farm house. Besides what is sold, the remaining paddy is for home consumption and to use as seed for the next season.</li> <li>• The dried paddy can be kept in storage for 4 – 9 months.</li> <li>• Losses of 2 – 4% storage losses from insects and rodents are reported.</li> <li>• Farmers are compelled to limit the quantity of paddy they can store due to inadequacy of storage space in their farm houses.</li> <li>• Poly-sacks are used to pack the paddy for domestic storage.</li> </ul>
Market Channel	Producer → Collector → Rice Millers
Local processing of paddy	<ul style="list-style-type: none"> <li>• 3 small scale rice mills and 2 small scale flour mill operate in the area. (Milling cost Rs. 2/kg).</li> <li>• Milling out-tern of raw paddy is about 60%.</li> <li>• Rice consumption- Raw Rice 80% and parboiled 20%.</li> <li>• Farmers don't parboil rice, instead they purchase it when need from the local grocer.</li> <li>• Raw rice is used for flour processing.</li> <li>• No regular pattern in the consumption of raw and parboiled rice.</li> </ul>
Other crops	<ul style="list-style-type: none"> <li>• Not produced in commercial quantities</li> </ul>
<b>Inland Fisheries</b>	
Inland fisheries	<ul style="list-style-type: none"> <li>• All tanks were stocked with fingerlings in January and is ready for harvesting in July.</li> <li>• DAD and the National Aquaculture Development Authority (NAQDA) coordinated the program of stocking the fingerlings.</li> <li>• FO is responsible for managing the fish farming activities.</li> <li>• The tank is leased out to a contractor by FO for harvesting.</li> <li>• FO members retain the right to catch fish from the tanks using fishing rods for home consumption.</li> </ul>

2) FO: Ekamuthu Theeruwegama (Alagalla Cas.)

<b>Crop Production</b>	
General	<ul style="list-style-type: none"> <li>• Number of members in FO: 44</li> <li>• Crop production is main income sources of 90% of farmers.</li> <li>• Only one tank, Theeruwegama wewa, with a command area of 68 Ac is under FO management.</li> <li>• Framers observed that only 46 out of the total 68 Ac in the command area can be cultivated during Maha.</li> <li>• This according to them is due to heading up of water in Alagalla tank by elevating the spill level some time back.</li> <li>• Some lands in the uncultivated 22 Ac are cultivated in Yala.</li> </ul>
Paddy in Command area	<ul style="list-style-type: none"> <li>• Total land extent cultivated in the 19/20 Maha was 46 Ac.</li> <li>• In Yala, 15 Ac have been cultivated.</li> <li>• All farmers grow 3 ½ month paddy varieties in Maha and 3 month paddy in Yala.</li> <li>• Average yield of paddy ranged between 1,600 and 2,000 kg/Ac.</li> <li>• All farmers use certified seed paddy from PDOA Vavunia.</li> <li>• High incidence of pests and diseases are a main problem faced in paddy cultivation.</li> <li>• Agrochemicals available in the local market are not effective against them.</li> <li>• Farmers believe that the present yield level can be increased further if new paddy varieties are introduced and organic manure is incorporated into the soil.</li> </ul>
Crop diversification in command area	<ul style="list-style-type: none"> <li>• OFCs are cultivated in the command area.</li> <li>• There exist about 20 Ac of land which suits growing of annuals other than paddy.</li> </ul>

	<ul style="list-style-type: none"> <li>• Farmers are willing to cultivate these lands with crops like groundnut, onion and green gram if adequate water is available.</li> </ul>
Highland cultivation	<ul style="list-style-type: none"> <li>• 30 Ac of highlands are available for cultivation.</li> <li>• In Maha, crops like kurakkan, maize, black gram, vegetables grown in small extents.</li> <li>• There are 6 agro-wells in highland area</li> <li>• A sprinkler unit installed by one farmer about 10 seasons ago is still operational because of good maintenance such as regular cleaning and attending to repairs.</li> <li>• Profuse weed growth in the lift irrigated area is a problem faced by the farmers.</li> </ul>
Crop damage	<ul style="list-style-type: none"> <li>• Extensive crop damage caused by monkeys, cattle and birds is reported.</li> </ul>
Technology	<ul style="list-style-type: none"> <li>• Farmers still apply their own traditional methods in crop production.</li> <li>• Farmers note the lack of a reliable and authentic way to access information on new technologies.</li> </ul>
<b>Livestock</b>	
Cattle	<ul style="list-style-type: none"> <li>• 10% Of the farmers in FO reared cattle and buffaloes.</li> <li>• The herd consisted predominantly of indigenous animals.</li> <li>• Farmers recall that earlier generations reared livestock in large scale. With time the practice declined and is confined to a few.</li> <li>• However, the majority of the farmers are willing to restart livestock rearing.</li> </ul>
Cattle feeding	<ul style="list-style-type: none"> <li>• Free grazing and tethered grazing is the normal system practiced.</li> <li>• Limited stall feeding is practiced</li> </ul>
Silage making	<ul style="list-style-type: none"> <li>• Silage making is not practiced</li> <li>• Farmers lacked the technology of making silage</li> </ul>
Record keeping	<ul style="list-style-type: none"> <li>• Not practiced by the farmers.</li> <li>• At institutional level, cattle heads are registered and records of AIs done are maintained by Dept. of Animal production.</li> </ul>
Poultry	<ul style="list-style-type: none"> <li>• Almost all farmers raised free range chicken. All are indigenous chicken.</li> <li>• Flock size is usually less than 5.</li> <li>• Home garden premises of individual farmers are too small for increasing the flock.</li> <li>• Eggs are usually for home consumption.</li> </ul>
Poultry feeding	<ul style="list-style-type: none"> <li>• Scavenging. Kitchen refuse and waste grains are other feed stuff available for feeding.</li> </ul>
Replacement stock	<ul style="list-style-type: none"> <li>• Only indigenous birds are raised, Raised locally</li> </ul>
<b>Post-harvesting and Marketing</b>	
Post-harvesting Operations of Paddy	<ul style="list-style-type: none"> <li>• All farmers use combine harvesters to harvest, thresh and cleaning of paddy.</li> <li>• Farmers do not practice paddy drying prior to selling 60% of the total produce as the transaction is made at the farm gate.</li> <li>• The balance 40% is dried by spreading on tarpaulin and drying under sun shade.</li> <li>• Hiring cost of combine harvester is Rs. 9,000 - 10,000 per Ac.</li> <li>• Farmers observe that the cut straw released from the combine harvester and added to the paddy field directly is beneficial in improving the soil organic matter after decomposition.</li> </ul>
Marketing of Paddy	<ul style="list-style-type: none"> <li>• Farmers sell the paddy to buyers at a farm gate price of Rs. 40/kg.</li> <li>• 20% of the dried paddy is sold later at Rs52/kg</li> <li>• Farmers wish to have a common drying yard so that they can sell the dried paddy (14% moisture content) at Rs 50 /kg soon after drying</li> </ul>
Storage period and losses of paddy	<ul style="list-style-type: none"> <li>• The remaining 20% of the sried paddy srored in the farmhouse is used for consumption of farm family and for seed paddy in the next season.</li> <li>• Harvested and well dried paddy may be kept in storage for 4 to 9 months at farm house level.</li> <li>• 2 - 3% of the paddy is lost during storage due to insects and rodent damage.</li> </ul>

	<ul style="list-style-type: none"> <li>• Poly sacks are used to pack dried paddy for storage.</li> <li>• Farmers wish to store a larger quantity of paddy in the farmhouse to take the advantage of higher prices operating in off season period.</li> <li>• However, the available space in the farmhouse storage purpose is limited.</li> </ul>
Market Channel	Producer → Collectors → Rice Millers
Local processing of paddy	<ul style="list-style-type: none"> <li>• 1 small scale rice mill functions in the area and the milling cost is Rs.2/kg.</li> <li>• Raw rice is consumed by 75% of the families.</li> <li>• Raw rice is used for making flour.</li> <li>• Domestic level parboiling is not practiced. When needed, they purchase it from the local grocery shops.</li> <li>• No regular consumption pattern with regard to raw and parboiled rice.</li> </ul>
<b>Inland Fisheries</b>	
Inland fisheries	<ul style="list-style-type: none"> <li>• At present no commercial inland fishing activity.</li> <li>• Last year, the tank was stocked with 15,000 fingerlings.</li> <li>• Fish harvesting had to be completed before the correct harvesting time because the tank went dry. The catch, though not fully mature was sold out at Rs. 50,000.</li> </ul>

### 3) FO: Alagalla (Alagalla Cas.)

<b>Crop Production</b>	
General	<ul style="list-style-type: none"> <li>• Number of members in the AO is 120</li> <li>• About 80% of the members derive their income from farming.</li> <li>• There are 4 tanks and 1 anicut under FO management.</li> <li>• The tanks are: Alagallawewa 58 Ac, Puliyankulamawewa 27 Ac, Aluthgamawewa 32 Ac, Hirandagolleawawewa 15 Ac and Boo Oya Anicut (70 Ac)</li> <li>• In Maha, total command area under all the tanks is cultivated.</li> <li>• However, in many seasons, sufficient water is not available at the tail end of the season to support the maturity stage of the crop.</li> <li>• Although the tank gets filled, its water retention is low due to heavy silting.</li> <li>• The full extent that was cultivated successfully in the past is facing water shortage at the tail end of the season</li> </ul>
Paddy in Command area	<ul style="list-style-type: none"> <li>• In 19/20 Maha, 203 Ac of paddy were cultivated with 2 ½ month varieties.</li> <li>• During 2020 Yala, only 25 Ac of paddy is cultivated with 3 month varieties.</li> <li>• Few farmers cultivated traditional paddy varieties in small extents.</li> <li>• Replacement seed paddy is purchased from the PDOA, Vavunia.</li> <li>• Average yield is around 2,000 kg/Ac.</li> <li>• Farmers are willing to extend the land area cultivated with traditional rice varieties if there is a steady market demand and a stable price.</li> <li>• High incidence of pest and diseases is a major problem in rice cultivation.</li> <li>• Farmers do not have an idea of Integrated Pest and weed Management</li> </ul>
Crop diversification in command area	<ul style="list-style-type: none"> <li>• There is no crop diversification during Maha. In Yala, 3 – 4 Ac of the command area is cultivated with other crops, predominantly black gram.</li> <li>• During the season, small extents of land are cultivated with lift irrigation off agro-wells constructed in the paddy fields.</li> <li>• There are 4 agro-wells located in the paddy fields. They are used for lift irrigating OFCs in Yala.</li> <li>• There is about 25 Ac of lands suitable for diversified cropping if water is available and farmers are willing to cultivate OFCs instead of paddy if water is available.</li> </ul>
Highland cultivation	<ul style="list-style-type: none"> <li>• Available land extent for cultivation in the highlands is about 25 Ac.</li> <li>• In Maha, crops such as Kurakkan, maize and black gram is cultivated.</li> </ul>

	<ul style="list-style-type: none"> <li>• Four agro-wells constructed in the highlands are used to irrigate minor extent of land during the Yala.</li> <li>• All seed materials, except for maize, are produced by farmers themselves. Hybrid seeds of maize are usually purchased from the outside markets.</li> </ul>
Crop damage	<ul style="list-style-type: none"> <li>• Crop damage from monkeys, birds and cattle is a serious issue.</li> <li>• No effective solution has been found as yet.</li> </ul>
Technology	<ul style="list-style-type: none"> <li>• Weed and pest control are the main areas where farmers lack the technology and skills.</li> <li>• Farmers are keen to acquire new knowledge and skills on crop cultivation.</li> </ul>
<b>Livestock</b>	
Cattle	<ul style="list-style-type: none"> <li>• About 15% of FO members rear cattle and buffaloes.</li> <li>• Farmers observed that cattle rearing used to be a commonly practice among nearly all householders. However, the practice declined rapidly due to reduction in the pasture lands for free grazing and mechanization of the field operations.</li> <li>• Majority of the farmers express their willingness to recommence cattle rearing if adequate pasture lands are released for free grazing the animals.</li> <li>• Farmers also highlighted the usefulness of organic fertilizers to complement the inorganic fertilizer added to the crops.</li> </ul>
Cattle feeding	<ul style="list-style-type: none"> <li>• Free grazing and tethered grazing is the normal system practiced.</li> <li>• Limited stall feeding is practiced</li> <li>• In Yala, a significant area in the command area is not cultivated and is available for free grazing of cattle. Further, the tank bed is also available with the receding water level.</li> </ul>
Silage making	<ul style="list-style-type: none"> <li>• Silage (forage) making or feeding is practiced in the area</li> <li>• Farmers do not have little or no knowledge on silage making and feeding the animals with silage.</li> </ul>
Record keeping	<ul style="list-style-type: none"> <li>• Not practiced by the farmers.</li> <li>• At institutional level, cattle heads are registered and records of AIs done are maintained by Dept. of Animal production.</li> </ul>
Poultry	<ul style="list-style-type: none"> <li>• Almost all farmers reared free range Chicken farming system.</li> <li>• The number of chicken per farmer is small and is usually less than 10.</li> </ul>
Poultry feeding	<ul style="list-style-type: none"> <li>• Controlled scavenging is practiced.</li> <li>• Kitchen refuse and waste grains are other feed stuff are made available for chicken.</li> </ul>
Replacement stock	<ul style="list-style-type: none"> <li>• Only indigenous birds are raised</li> <li>• Chicks are produced locally.</li> </ul>
<b>Post-harvesting and Marketing</b>	
Post-harvesting Operations of Paddy	<ul style="list-style-type: none"> <li>• All farmers hired combine harvesters at Rs. 9,000 - 10,000/Ac to carry out the basic Post-harvesting operations.</li> <li>• 50% of their total production is dried to the desired moisture level for storage at farm house level.</li> <li>• A drying yard, 3,000 ft<sup>2</sup> planned by the Pradeshiya Sabha of the area is under construction.</li> <li>• One member of FO owned a combine harvester which he hires out to other farmers.</li> <li>• However, farmers need to hire outside harvesters during harvesting period because of the high demand.</li> <li>• Drying of the paddy is done by spreading the seed on tarpaulin sheets placed in sunshade over 2 days.</li> <li>• Farmers are happy to have the drying yard as the dried paddy fetches a higher market price.</li> </ul>

Marketing of Paddy	<ul style="list-style-type: none"> <li>• Farmers usually sell 50% of the produce to collectors soon after harvesting without drying.</li> <li>• 30% of well dried paddy is stored in the farmhouse for later sale as and when funds are required to meet the costs of domestic needs.</li> <li>• The price they get for wet paddy is as low as Rs. 40/kg.</li> <li>• Farmers are confident that they can get a good price for dried paddy when the drying flow is completed.</li> <li>• Farmers are able to sell their dried and stored paddy at Rs. 52/kg.</li> </ul>
Storage, period and losses of paddy	<ul style="list-style-type: none"> <li>• About 20% of the total dried produce is kept in storage at farmhouse level is reserved for family consumption and for use as seed paddy in the next season.</li> <li>• Harvested and well dried paddy may be kept in storage for 4 to 9 months at farm house level.</li> <li>• 2 - 4% of the paddy is lost during storage due to insects and rodent damage.</li> <li>• Paddy is packed in poly sacks for storage.</li> <li>• Farmers are unable to store more since available space for domestic storage is limited.</li> </ul>
Market Channel	Producer → Collectors → Rice Millers
Local processing of paddy	<ul style="list-style-type: none"> <li>• 2 small scale rice mills, one owned by a farm woman, operate in the area.</li> <li>• Milling cost Rs.2.0/kg without destoning and additional charge of Rs. 0.5/kg for destoning.</li> <li>• For parboiling, paddy is soaked in water followed by steaming and sun drying on mats.</li> <li>• Consumption pattern: 60% raw and 40% parboiled.</li> <li>• Raw rice is used for making flour.</li> <li>• Milling outturn of raw and parboiled rice are 60% and 65%, respectively.</li> <li>• Farmers are aware of the correct parboiling method which they learned from the Institute of Post-harvesting Technology (IPHT).</li> </ul>
<b>Inland Fisheries</b>	
Inland fisheries	<ul style="list-style-type: none"> <li>• FO earns an income from selling the local fish naturally found in the tank.</li> <li>• Local fish come down the streams flowing into the tank.</li> <li>• It is doubtful if fingerlings could be introduced as the local fish are of predatory species.</li> </ul>



## Notes of FOs Meetings for Ichchankulama Cascade

### 1. Schedule of Meetings

No.	ASC Area	Cascade	FO	Date & Time	Participants
1)	Galenbindunuwewa	Ichchankulama	Ambagahawewa	1 <sup>st</sup> July 2020	11
2)	Galenbindunuwewa	Ichchankulama	Pahala Kainaththama	7 <sup>th</sup> July 2020	7
3)	Galenbindunuwewa	Ichchankulama	Karakolawewa	13 <sup>th</sup> July 2020	10

### 2. Notes of Meetings

#### 1) FO: Ambagahawewa (Ichchankulama Cas.)

Crop Production	
General	<ul style="list-style-type: none"> <li>Number of FO members 67. 90% of farmers derive their income from farming.</li> <li>Total land extent of command area is 87Ac. Land holding size is from 0.5 to 3 Ac.</li> <li>During 19/20 Maha, command area was cultivated in full. In Yala 2020, cultivation was limited to 30 Ac.</li> <li>Farmers raise spill level of the tank by placing sand bags to retain more water in the tank for Yala cultivation. Water issues in rotation among farmers are practiced to help save water.</li> </ul>
Paddy in Command area	<ul style="list-style-type: none"> <li>Majority of farmers cultivate paddy of 3 month duration. Average yield of paddy is about 1,400/Ac.</li> <li>Farmers are convinced that their paddy yield can be improved by improving soil fertility, preventing frequent floods that erode the soil, reducing salinity development in paddy field and using long aged paddy varieties with adequate water availability.</li> </ul>
Crop diversification in command area	<ul style="list-style-type: none"> <li>Only paddy is grown in the command area in both the seasons.</li> <li>Farmers have little or no experience in cultivating other field crops in paddy lands. However, the expressed willingness to try growing other crops with proper technical guidance and input supply. Preferred crops are watermelon, chilli, maize and onions.</li> <li>Observed that 50 Ac. of land in command area could be diversified to other crops.</li> </ul>
Highland cultivation	<ul style="list-style-type: none"> <li>Crops such as maize, cowpea and green gram are cultivated in Maha under rainfed conditions. Yala cultivation is limited to lands irrigated from agro-wells.</li> <li>There are about 16 operational agro-wells in FO area.</li> <li>In the open market, seed prices are increasing during the season.</li> <li>Compost application is difficult as the prices and application costs are high.</li> </ul>
Crop damage	<ul style="list-style-type: none"> <li>Crop damage caused by elephants, peacock, wild boar and monkey remains high.</li> <li>Peacocks population in the recent years has increased.</li> <li>Farmers observed that decline/extinction of the predator population is the main cause.</li> </ul>
Technology	<ul style="list-style-type: none"> <li>Farmers are compelled to seek technical advice from local input dealers to solve their crop related problems.</li> <li>Agricultural Instructors (AIs) of PDOA attend to major issues such as sudden outbreaks of pest and diseases.</li> <li>There are no programs to transfer new technologies to farmers for upgrade farmers knowledge and skills on a regular basis.</li> </ul>
Livestock	
Cattle	<ul style="list-style-type: none"> <li>90% of farmers keep cattle.</li> <li>The farming system is predominantly in the traditional form with indigenous cattle</li> <li>Most farmers expressed their willingness to upgrade their stock.</li> <li>Main income sources from cattle farming are from sale of milk and culled animals.</li> </ul>
Cattle feeding	<ul style="list-style-type: none"> <li>Free grazing and tethered grazing is the normal system. Limited stall feeding is practiced.</li> <li>In Yala, a significant land area is left fallow.</li> <li>Grazing density is 900 kg of grass per day over the fallow period.</li> </ul>

	<ul style="list-style-type: none"> <li>• Farmers were of the view that cattle movement in fallow lands is beneficial as they add organic matter leading to prevention of land degradation and development of salinity.</li> </ul>
Silage making	<ul style="list-style-type: none"> <li>• No silage making or feeding is practiced in the area</li> <li>• Introduction of silage making and stall feeding the animals will allow farmers to devote more time to crop cultivation during Maha.</li> </ul>
Record keeping	<ul style="list-style-type: none"> <li>• No record keeping is practiced by the farmers.</li> <li>• At institutional level, cattle heads are registered and numbered as well as insemination records are being maintained by the Dept. of Animal production.</li> <li>• Records of milk purchased from farmers are maintained by the milk collectors.</li> </ul>
Poultry	<ul style="list-style-type: none"> <li>• 10% of the farmers in FO keep Chicken (FRC)</li> <li>• Exclusively indigenous chicken are raised in small numbers.</li> </ul>
Poultry feeding	<ul style="list-style-type: none"> <li>• Scavenging and feeding</li> <li>• FRC is kept in very small number per farmer as the land area of homestead offers a limited area for scavenging</li> <li>• Kitchen refuse and waste grains are other feed stuff available for feeding</li> <li>• Processed feeds are not available and not used</li> </ul>
Replacement stock	<ul style="list-style-type: none"> <li>• Only indigenous birds</li> <li>• Improved sock not available</li> </ul>
<b>Post-harvesting and Marketing</b>	
Post-harvesting Operations of Paddy	<ul style="list-style-type: none"> <li>• All farmers hire combine harvesters that combine the harvesting, threshing and winnowing operations.</li> <li>• Drying of the harvested crop is not done and most of the crop is sold to buyers at the farm gate.</li> <li>• The buyers transport the paddy off the field in trucks and tractors.</li> <li>• Farmers preferred the combine harvester as efficient in terms of time and labor saved. The hiring charge is Rs. 10,000/Ac.</li> <li>• Farmers lack appropriate drying yards or dryers to carry out drying of the total harvest.</li> <li>• 25% of the crop is dried to about 14% moisture level for storage and later use.</li> </ul>
Marketing of Paddy	<ul style="list-style-type: none"> <li>• 75% of the total paddy harvest is sold to buyers at farm-gate. The current price is Rs. 41/kg.</li> <li>• Of the remaining portion of dried paddy 10% is sold from time to time to cover the cost of purchasing home needs.</li> <li>• Farmers are compelled to sell major quantity of paddy immediately after the harvest because : <ul style="list-style-type: none"> <li>• They do not possess proper drying equipment,</li> <li>• Inadequacy of storage space at individual household level</li> <li>• Need to immediate settlement of loans obtained for cultivation, usually from the collectors and shop keepers.</li> </ul> </li> <li>• Prices are low in keeping with the peak harvesting period and the high moisture content of the paddy.</li> <li>• About 10% is sold during off season time at Rs. 52/kg for cover the cost of household needs.</li> </ul>
Storage period and losses of paddy	<ul style="list-style-type: none"> <li>• Harvested paddy may be kept in storage for 6 – 9 months.</li> <li>• 2 - 3% of the paddy is lost during storage due to insects and rodent damage</li> <li>• The balance 15% is reserved for family consumption and for use as seed paddy in the next season.</li> <li>• Paddy is packed in poly sacks for storage.</li> </ul>
Market Channel	Producer → Collector → Rice Millers
Local processing of paddy	<ul style="list-style-type: none"> <li>• 2 small scale rice mills and 1 small scale flour mill operate in the area. (Milling cost Rs. 2/kg)</li> <li>• Rice consumption- Raw Rice 40% and parboiled 60%</li> <li>• Cottage level parboiling is adopted by boiling of soaked paddy.</li> </ul>

	<ul style="list-style-type: none"> <li>• Farmers use the local small rice mills to process paddy to rice.</li> <li>• Raw rice is used for consumption, mainly breakfast and to make flour and the parboiled rice for the main meals.</li> </ul>
<b>Inland Fisheries</b>	
Inland fisheries	<ul style="list-style-type: none"> <li>• At present no fishing activity.</li> <li>• Several years ago, Pahala Puliyankulama tank has been stocked with 25,000 fingerlings. The population has been drastically reduced due to predatory local fish found in the tank. Few people engage in fishing of the local indigenous fish and the introduced Thilapia fish.</li> </ul>

2) FO: Pahala Kainaththama (Ichchankulama Cas.)

<b>Crop Production</b>	
General	<ul style="list-style-type: none"> <li>• FO covered 3 tanks and had a membership of 125. The tanks and command areas are as follows.</li> <li>• Pahalawewa 225 Ac, Kudawewa 18Ac and Palugaswewa 12 Ac.</li> <li>• The land holding size in the command area ranged between 0.5 and 2.5 Ac.</li> <li>• 'Attam' or mutual labor sharing among the neighboring farmers for crop production is a system widely practiced in the area. This traditional method has helped the farmers to minimize the use of hired labor.</li> <li>• Current cost of hired labor is Rs. 1,500 per day plus lunch and light refreshments and is increasing by the season.</li> </ul>
Paddy in Command area	<ul style="list-style-type: none"> <li>• Total command area is cultivated with paddy during Maha.</li> <li>• Majority of the farmers (90%) use 3 ½ month old varieties while a few use 3 month varieties.</li> <li>• In Yala, cultivation is limited to Pahalawewa tan. 60 Ac. is cultivated in 20 Yala.</li> <li>• Paddy yield averages to about 2,000 kg/Ac in Maha and 1,200 kg/Ac. in Yala.</li> <li>• There is a high demand for certified seed paddy produced by the DOA.</li> <li>• Seed paddy made available to farmers at ASCs is usually of private sector origin.</li> <li>• Many farmers expressed their desire to shift over to 4 and 4 &amp; ½ month varieties to improve yields, if adequate water is made available.</li> </ul>
Crop diversification in command area	<ul style="list-style-type: none"> <li>• Only paddy is grown in the command area in both Maha and Yalas.</li> <li>• Crop diversification may not be possible as the soils are poorly drained and not suitable for growing of other crops.</li> </ul>
Highland cultivation	<ul style="list-style-type: none"> <li>• 425 Ac of highlands are cultivated in FO area in Maha under rain-fed conditions.</li> <li>• Maize is main crop grown at commercial scale. Average yield is about 2,000 kg/Ac</li> <li>• Farmers use imported hybrid seeds to raise the crop.</li> </ul>
Crop damage	<ul style="list-style-type: none"> <li>• Losses due to crop damage by elephants and peacocks are most serious.</li> <li>• No effective strategy to protect the crop has been implemented.</li> </ul>
Technology	<ul style="list-style-type: none"> <li>• Farmers have to travel long distance to meet the Agricultural Instructor (AI) of PDOA. There are no regular field visit programs in place.</li> <li>• Majority of the AIs are stationed in the ASCs. Some are newly recruited officers and lack adequate training or experience to handle farmers problems effectively.</li> </ul>
<b>Livestock</b>	
Cattle	<ul style="list-style-type: none"> <li>• 75% Of the farmers in FO reared cattle.</li> <li>• The herd consisted predominantly of crossbreds.</li> <li>• Most farmers expressed their willingness to upgrade and/or start dairy farming if external support is available to purchase stock.</li> <li>• Compost is made with cattle dung for sale. Around 5,000 kg are in the final stages of processing</li> </ul>
Cattle feeding	<ul style="list-style-type: none"> <li>• Free grazing and tethered grazing is the normal system practiced.</li> <li>• Limited stall feeding is practiced</li> </ul>

	<ul style="list-style-type: none"> <li>Grazing density is 10,125 kg/day</li> <li>Cut and feeding is practiced</li> </ul>
Silage making	<ul style="list-style-type: none"> <li>Little silage (forage) making or feeding is practiced in the area</li> <li>Practiced by few cattle farmers to whom the method was introduced and basic cottage level silage making equipment provided under the verification program of NCPC Project.</li> </ul>
Record keeping	<ul style="list-style-type: none"> <li>Not practiced by the farmers.</li> <li>At institutional level, cattle heads are registered and numbered and records of AIs done are maintained by the Dept. of Animal production.</li> <li>Records of milk purchased from farmers are maintained by the milk collectors.</li> </ul>
Poultry	<ul style="list-style-type: none"> <li>Number of farmers engaged in poultry farming is insignificant.</li> <li>Interest in poultry keeping is variable.</li> <li>However, farmers believe that up to 50% of the farm families will take up to poultry farming if stocks are supplied.</li> <li>Home garden premises of individual farmers are too small for increasing the flock.</li> <li>Eggs are usually for home consumption.</li> </ul>
Poultry feeding	<ul style="list-style-type: none"> <li>Scavenging . Kitchen refuse and waste grains are other feed stuff available for feeding.</li> </ul>
Replacement stock	<ul style="list-style-type: none"> <li>Only indigenous birds are raised. Improved sock not available</li> </ul>
<b>Post-harvesting and Marketing</b>	
Post-harvesting Operations of Paddy	<ul style="list-style-type: none"> <li>All farmers used combine harvesters to harvest, thresh and cleaning of paddy.</li> <li>Drying of seeds is done by spreading on tarpaulin under sun shade for about 2 days.</li> <li>When direct farm-gate transactions are made, the buyers transport the paddy in trucks and tractors.</li> <li>Hiring cost of combine harvester is Rs. 10,000 per Ac.</li> <li>Farmers are of the view that use of harvester is much more efficient as well as economical than the traditional systems which required more labor and time.</li> <li>10' x 15' tarpaulin sheets (Rs. 2,500 – 3,000 each and usable over 3 years) are used to spread the seeds to sun dry. Moisture contents of less than 14% are reached in 2 – 3 days. Farmers determine the moisture level by experience by experience by cracking seeds between the teeth.</li> <li>Nearly all farmers dry their paddy before selling.</li> </ul>
Marketing of Paddy	<ul style="list-style-type: none"> <li>In marketing, farmers follow one or more of FOLlowing methods:</li> <li>-50% of the farmers sell 75% of their dried paddy (14%) to collectors at Rs. 50/kg.</li> <li>-Remaining 50% of the farmers do not sell their paddy immediately, but store it at the Grain Protection Warehouse (GPW) located at Upuldeniya for later sale when the paddy prices increase.</li> <li>-All farmers retain 25% of the produce stored in their homesteads for later use.</li> <li>All farmers are able to get a higher price for the paddy (Rs. 50/kg) since it is well dried at the time of selling.</li> <li>Farmers who store their paddy in GPW are able to sell the produce at higher price (Rs. 54/kg) during the off season period.</li> <li>The farmers are eligible to obtain a loan from the Regional Development Bank amounting to 70% of the value of the stored quantity.</li> <li>The operation of paddy storage system in GPW is examined in detail in a separate paper (attached)</li> </ul>
Storage period and losses of paddy	<ul style="list-style-type: none"> <li>Harvested and well dried paddy may be kept in storage for 4 to 5 months at farm house level.</li> <li>2 - 4% of the paddy is lost during storage due to insects and rodent damage.</li> <li>For storage of paddy at the GPW, the farmer has to meet the quality parameters set by the management.</li> </ul>

	<ul style="list-style-type: none"> <li>The paddy stored in the household is used as seed paddy for the next season cultivation, selling as needed to cover the costs of household needs and for home consumption.</li> <li>Paddy is packed in poly sacks for storage</li> </ul>
Market Channel	<p>Producer <math>\xrightarrow{\quad}</math> Collectors <math>\xrightarrow{\quad}</math> Rice Millers</p> <p style="text-align: center;"><math>\searrow</math> GPW <math>\swarrow</math></p> <ul style="list-style-type: none"> <li>GPW refer to Grain Protection Warehouse located in Upuldeniya, owned and managed by the Regional Development Banl.</li> </ul>
Local processing of paddy	<ul style="list-style-type: none"> <li>3 small scale rice mills and 2 small scale flour mill operate. Milling cost Rs.2/kg.</li> <li>For parboiling, paddy is soaked in water followed by boiling and sun drying on mats.</li> <li>Raw rice is used for making flour.</li> </ul>
<b>Inland Fisheries</b>	
Inland fisheries	<ul style="list-style-type: none"> <li>At present no commercial inland fishing activity in the area.</li> <li>Several years ago, 100,000 fingerlings were released to the tank. The stocked population rapidly declined due to predation by indigenous fish in the tank. Few individuals are engaged in catching the local fish and thilapia that comes down from the upper tanks and streams.</li> </ul>

3) FO: P Karakolawewa (Ichchankulama Cas.)

<b>Crop Production</b>	
General	<ul style="list-style-type: none"> <li>There are 89 registered members in FO. Command area is 145 Ac.</li> <li>Crop production serves as the main source of income for about 95% of the member farmers.</li> <li>Land holding size varied between half to 5 Ac per farmer.</li> <li>In Maha, it is possible to cultivate only about 105 Ac of the total command area of 145 Ac. This is due to low retention of water in the tank due to outflow of water from damaged sluice gate.</li> <li>Farmers have little or no hope for Yala cultivation due to non availability of water.</li> <li>In their experience, water for a good cultivation is received only once in 5 years.</li> </ul>
Paddy in Command area	<ul style="list-style-type: none"> <li>During 19/20 Maha, 105 Ac of land was cultivated under paddy.</li> <li>About 70% of the farmers grow 3 ½ Month varieties while the balance grow 3 month varieties.</li> <li>Average yield of paddy is in the range of 1,500 kg/Ac.</li> <li>About 30% of the farmers renew their seed paddy after several years of using self seed and they are mostly the holder of small land extents.</li> <li>Farmers holding larger land areas usually use their own seed paddy or seeds obtained from a fellow farmer because of the high cost.</li> <li>Fertilizers are not available at the correct time. During the last Maha, the basal dressing need for field application at the time of crop establishment was delayed by 2 – 3 weeks.</li> <li>Farmers are of the view that they could increase the present yield level by planting 4 to 4 ½ month varieties if the tank can retain more water.</li> </ul>
Crop diversification in command area	<ul style="list-style-type: none"> <li>Only paddy is grown in the command area.</li> <li>High rainfall during the month of December and the water logged conditions causes serious damage to OFCs.</li> <li>However, there remains a land area, 50 Ac in extent within the command area that can be diversified into OFCs, if water is available.</li> <li>The preferred crops are maize, green gram and vegetables.</li> <li>OFC seeds available in the market are of poor quality with very low germination percent.</li> </ul>
Highland cultivation	<ul style="list-style-type: none"> <li>About 80 Ac of the highlands are cultivated in Maha under rain-fed conditions.</li> </ul>

	<ul style="list-style-type: none"> <li>The main crops are maize, traditional rice, chilli and vegetables.</li> <li>In Yala, watermelon and chilli are grown under lift irrigation off the 20 agro-wells.</li> <li>Traditional rice was introduced the area by a private sector Company few years ago and farmers continue to cultivate them.</li> <li>Popular varieties are Suvandel and Kalu Heeneti.</li> <li>The average yield of traditional rice varieties is low at 800 kg/Ac. but the farm-gate price is significantly high at Rs. 70/kg.</li> <li>The lower income from growing traditional rice does not encourage the farmers to grow them in the tank command area.</li> </ul>
Crop damage	<ul style="list-style-type: none"> <li>Losses due to crop damage by elephants, wild boar and peacocks are most serious.</li> <li>Farmers observed that the elephant damage is controllable but there is no solution against peacocks and wild boar damage.</li> </ul>
Technology	<ul style="list-style-type: none"> <li>Farmers often consult the private input dealers operating at the village level.</li> <li>Farmers expressed a negative attitude to the present extension services provided by the Government sector.</li> </ul>
<b>Livestock</b>	
Cattle	<ul style="list-style-type: none"> <li>90% of the farmers in the Karakolawewa area keep cattle.</li> <li>The herds predominantly consisted of crossbreds.</li> <li>Farmers recognize the value of cattle farming in combination with crop farming which adds to improvement of farm income on a daily basis.</li> <li>Most farmers are willing to upgrade their herds</li> </ul>
Cattle feeding	<ul style="list-style-type: none"> <li>Free grazing and tethered grazing is the normal system practiced.</li> <li>Limited stall feeding is practiced</li> <li>In Yala, a significant area is not cultivated and the grazing density of grass is about 6,000 kg/day</li> </ul>
Silage making	<ul style="list-style-type: none"> <li>No silage making is practiced at present</li> <li>Farmers are willing to learn the technique</li> </ul>
Record keeping	<ul style="list-style-type: none"> <li>Not practiced by the farmers.</li> <li>At institutional level, cattle heads are registered and numbered and records of AIs done are maintained by the Dept. of Animal production.</li> <li>Receipts of milk sold to collectors are maintained by some farmers.</li> </ul>
Poultry	<ul style="list-style-type: none"> <li>Number of farmers engaged in poultry farming is about 10%.</li> <li>Free range Chicken farming system is practiced.</li> <li>A poultry building used in the past for production of broilers under a buyback contract system operated by a private sector investor now remains abandoned.</li> <li>Interest in poultry keeping is variable.</li> </ul>
Poultry feeding	<ul style="list-style-type: none"> <li>Controlled scavenging is practiced.</li> <li>Kitchen refuse and waste grains are other feed stuff are made available for chicken.</li> </ul>
Replacement stock	<ul style="list-style-type: none"> <li>Only indigenous birds are raised</li> <li>Not available to purchase</li> </ul>
<b>Post-harvesting and Marketing</b>	
Post-harvesting Operations of Paddy	<ul style="list-style-type: none"> <li>All farmers hired combine harvesters at Rs. 10,000/Ac to carry out the basic post-harvest operations</li> <li>Drying of harvested paddy is carried out under sunshade over 2 – 3 days.</li> <li>Farmers are well aware of the advantage of drying the paddy before selling.</li> <li>Farmers spread the paddy on tarpaulin sheets for drying to 14% moisture content.</li> <li>The correct moisture level is determined by cracking the seeds between the teeth, a system they have mastered over the years.</li> </ul>
Marketing of Paddy	<ul style="list-style-type: none"> <li>About 75% of the paddy harvest is sold to buyers after drying at the Government guaranteed price of Rs. 50/kg.</li> <li>5% of the paddy is stored in the farm house for later sale, to meet the miscellaneous household expenses, at Rs. 52/kg.</li> </ul>

	<ul style="list-style-type: none"> <li>All farmers are able to get a higher price for the paddy (Rs. 50/kg) since it is well dried at the time of selling.</li> </ul>
Storage, period and losses of paddy	<ul style="list-style-type: none"> <li>The remaining 20% of the harvest stored in the farmhouse is reserved for home consumption and for use as seed paddy in the next season.</li> <li>Harvested and well dried paddy may be kept in storage for 6 to 9 months at farm house level.</li> <li>2 - 4% of the paddy is lost during storage due to insects and rodent damage.</li> <li>Poly-sacks are used to pack the paddy for storage.</li> <li>Due to the limited availability of storage space, farmers are unable to stock more than 20% of their total paddy production.</li> </ul>
Market Channel	Producer → Collectors → Rice Millers
Local processing of paddy	<ul style="list-style-type: none"> <li>6 small scale rice mills and 1 small scale flour mills operate. Milling cost Rs.1.50 - 2/kg.</li> <li>For parboiling, paddy is soaked in water followed by boiling in water and sun drying on mats.</li> <li>Consumption pattern: 50% raw and 50% parboiled.</li> <li>Farmers use the local small mills to process rice for consumption.</li> <li>Raw rice is used for making flour.</li> <li>No regular consumption pattern in raw and parboiled rice.</li> <li>Milling outturn of raw and par boiled rice are 62% and 66%, respectively.</li> <li>Milling out turn of raw rice is 62% while the parboiled is 66%.</li> </ul>
<b>Inland Fisheries</b>	
Inland fisheries	<ul style="list-style-type: none"> <li>At present no inland fishery activity in the tank.</li> <li>It is possible to introduce fingerlings to Karakolawewa tank if water is available.</li> </ul>

## Notes of FOs Meetings for Alagalla Cascade

### 1. Schedule of Meetings

No.	ASC Area	Cascade	FO	Date & Time	Participants
1)	Kebithigollewa	Kiulekada	Gonahathdenawa	29 <sup>th</sup> June 2020	15
2)	Kebithigollewa	Kiulekada	Govi Udana	6 <sup>th</sup> July 2020	12
3)	Kebithigollewa	Kiulekada	Parakum	23 <sup>rd</sup> July 2020	16

### 2. Notes of Meetings

#### 1) FO: Gonahathdenawa (Kiulekada Cas.)

Crop Production	
General	<ul style="list-style-type: none"> <li>The FO has a membership of 120</li> <li>80% of the farmers derive their income from agricultural activities.</li> <li>The total command area of the tank is 450 Ac (Medium scale Tank). Land holding size varied between 0.5 – 3 Ac. The tank is heavily silted due to deposits of decaying aquatic weeds.</li> <li>The tank is heavily silted due to deposits of decaying aquatic weeds.</li> </ul>
Paddy in Command area	<ul style="list-style-type: none"> <li>Entire command area is cultivated with paddy during the Maha.</li> <li>In the Yala only 30 Ac are cultivated. The area is shared by all member farmers to produce seed paddy for the next Maha.</li> <li>Main paddy varieties grown are the 3 ½ month age group</li> <li>Average yield is about 1,600 kg/ha</li> <li>In some seasons, farmers grow 3 month varieties when the rains are delayed and the water storage is inadequate.</li> <li>One reason for low yield is due to early harvesting before complete maturity level is not reached. This is done to avoid possible crop damage by elephants.</li> <li>Farmers are of the view that the yields could be increased if: <ul style="list-style-type: none"> <li>Dilapidated canal network is rehabilitated for better water management</li> <li>Good quality seed paddy is made available at reasonable prices</li> </ul> </li> </ul>
Crop diversification in command area	<ul style="list-style-type: none"> <li>No crop diversification is practiced in both seasons.</li> <li>Main reason was sited as non availability of water in the tank</li> </ul>
Highland cultivation	<ul style="list-style-type: none"> <li>About 50 Ac of highlands are cultivated in the Maha seson</li> <li>Main crops grown are maize, finger millet and vegetables,</li> <li>There are 5 agro-wells, but the land extents cultivated are small.</li> <li>All seeds used for highland crops, except maize, are the traditional varieties.</li> <li>These seed are produced by the farmers themselves</li> <li>Almost all farmers use imported hybrid varieties of Maize</li> </ul>
Crop damage	<ul style="list-style-type: none"> <li>Crop damage caused by wild elephants and monkeys is very high</li> <li>Farmers observed that monkeys trapped in the urban areas are released in the small patches of forest close to farmland area by officers of the Dept. of Wildlife.</li> <li>This has led to a rapid buildup of the monkey population</li> </ul>
Technology	<ul style="list-style-type: none"> <li>Farmers don't get information on crop production from reliable and authentic sources.</li> <li>Farmers are of the view that they need support through a good advisory service to improve their farming practices.</li> </ul>
Cattle	<ul style="list-style-type: none"> <li>40 – 50% of the farmers keep cattle, which is predominantly in the traditional form with indigenous cattle</li> <li>Most farmers are willing to upgrade and/or start dairy farming with external support if available to purchase stock.</li> <li>Sale of milk and culled animals is the main source of income</li> </ul>



Cattle feeding	<ul style="list-style-type: none"> <li>Free grazing and tethered grazing are practiced. Stall feeding is limited. In Yala land area is available for grazing as there is large area left fallow. Here, the grazing density is 6090 kg grass per day is available.</li> <li>Farmers mention that the cattle movement is beneficial for a better crop harvest</li> </ul>
Silage making	<ul style="list-style-type: none"> <li>No silage making is done. Stover or fresh grass feeding is not practiced.</li> <li>Outsiders purchase maize residues at Rs. 10 /kg</li> </ul>
Record keeping	<ul style="list-style-type: none"> <li>No regular record keeping is practiced except for keeping the farm registration receipts, milk sales vouchers and artificial Insemination receipts</li> </ul>
Poultry	<ul style="list-style-type: none"> <li>10% of the farmers keep free range chicken</li> <li>The flock sizes are small as the land extent available under home-garden is limiting.</li> </ul>
Poultry feeding	<ul style="list-style-type: none"> <li>Kitchen waste and grain refuse is fed to the chicken</li> </ul>
Replacement stock	<ul style="list-style-type: none"> <li>Indigenous types are used as replacement stock</li> </ul>
<b>Post-harvesting Operations of Paddy</b>	
Post-harvesting Operations of Paddy	<ul style="list-style-type: none"> <li>All farmers use combine harvesters for basic operations. (Hire rate: Rs. 10,000/Ac.)</li> <li>Drying of paddy after the harvest is limited to about 13% of the total harvest which is kept in domestic storage.</li> <li>Farmers prefer to use combine harvesters as it combines 3 post harvest operations simultaneously within a short time period</li> <li>Farmers need to sell their paddy soon after harvest in order to settle the cultivation loans to purchase production inputs</li> <li>They did not possess drying yards or paddy dryers.</li> </ul>
Marketing of Paddy	<ul style="list-style-type: none"> <li>87% of the total paddy harvest is sold:</li> <li>75% out of this is sold immediately after harvesting at the farm gate at Rs. 42/kg</li> <li>The balance quantity or 12% is dried and kept in domestic storage and sold later at Rs. 52/kg.</li> <li>Farmers have limited facilities for domestic level storage and are compelled to sell 75% of their produce soon after the harvesting.</li> <li>Farmers get low prices because:</li> <li>Glut period at the harvesting period</li> <li>High moisture content</li> </ul>
Storage period and losses of paddy	<ul style="list-style-type: none"> <li>The remaining quantity of 13% of paddy is kept under domestic storage is for home consumption and for use as seed material in the next season.</li> <li>Polysacks are used to pack rice</li> <li>Well dried paddy has storage period of 6 – 9 months</li> <li>Storage losses is about 2 – 4%</li> </ul>
Market Channel	Producer → Collector → Rice Millers
Local processing of paddy	<ul style="list-style-type: none"> <li>2 small scale rice mills and 2 small scale flour mill are operated (Milling cost Rs.2/kg)</li> <li>Rice consumption- Raw Rice 35% and parboiled 65%</li> <li>Cottage level parboiling is adopted by boiling of soaked paddy.</li> <li>Farmers use the local small rice mills to process paddy to rice.</li> <li>Raw rice is used for consumption, mainly breakfast and to make flour and the parboiled rice for the main meals.</li> <li>Milling out turn for raw rice and parboiled rice is about 60 and 65%, respectively.</li> </ul>
<b>Inland Fisheries</b>	
Inland fisheries	<ul style="list-style-type: none"> <li>At present no fish farming activity</li> <li>Several years ago, Gonahathdenawa tank was stocked with 30,000 fingerlings, though it was not successful because of the existing predatory local fish species</li> </ul>

## 2) FO: Govi Udana (Kiulekada Cas.)

<b>Crop Production</b>	
General	<ul style="list-style-type: none"> <li>Number of members in the FO is 48</li> </ul>

	<ul style="list-style-type: none"> <li>• About 80% of the members derive their income mainly from agriculture</li> <li>• Land holding in command area ranged between 3 – 5 Ac</li> <li>• There are 4 tanks under the FO management.</li> <li>• Galkadawela 19Ac, Kochchiyawa wewa 57 Ac, Kiulekada Ihalawewa 8 Ac and Kiulekada Kudagamawewa 46 Ac.</li> <li>• Cultivation in command area is limited to Maha</li> <li>• All 4 tanks are heavily silted and cultivation of the full command area is not possible even when the tanks are filled up to full supply level.</li> <li>• As a precautionary measure, farmers do dry sowing and the subsequent irrigation is from the tanks water after the commencement of rains.</li> <li>• Farmers commence initial land preparation at the end of August,</li> <li>• Some land area in the command area of Kudagamawewa are affected by salinity.</li> <li>• Frequently, about 25 Ac of command area get inundated with water heading up of the Kiulekada Mahawewa Tank.</li> <li>• Farmers propose desilting and deepening of this tank to prevent flooding.</li> </ul>
Paddy in Command area	<ul style="list-style-type: none"> <li>• Farmers grow 3 and 3 ½ month old paddy varieties</li> <li>• The average yield is about 2,000 kg/Ac. (In 19/20 Maha, average yield of only 800 kg/Ac was obtained due to severe pest damage.</li> <li>• Farmers observed that they need the seed paddy before the onset of rains.</li> <li>• Seeds are not available at the PDOA or any other place until the rains begins with the rains. This has compelled farmers to use their own seeds season after season.</li> <li>• The recommended pesticides are not effective in controlling the insect damage.</li> <li>• Farmers are confident that they can get higher yield if water, quality seeds and fertilizers are made available to them in adequate quantities at the correct time.</li> </ul>
Crop diversification in command area	<ul style="list-style-type: none"> <li>• OFCs are not grown in the command area at present</li> <li>• Farmers feel that about 50% of the irrigable lands can be cultivated with other seasonal crops in the Yala if irrigation water is available.</li> <li>• The preferred to grow crops are black gram and green gram for which they already have the experience.</li> </ul>
Highland cultivation	<ul style="list-style-type: none"> <li>• There is about 100 Ac of highland area. Maize is grown in these lands in the Maha. In Yala, sesame is grown. There are no agro-well in the area.</li> <li>• All farmers used imported hybrid seeds sold under different brand names.</li> </ul>
Crop damage	<ul style="list-style-type: none"> <li>• Wild elephants, peacocks and deer damage the crop extensively.</li> <li>• Farmers are able to manage the damage caused by wild animals to the paddy crop. However, they are in a helpless situation when the crops in the highlands including the perennial crops in home-gardens.</li> </ul>
Technology	<ul style="list-style-type: none"> <li>• Farmers keep the telephone number of the Agriculture Instructor of PDOA and contact him for technical issues relating to crop production</li> <li>• Farmers expect a more intensive and supportive extension service.</li> </ul>
<b>Livestock</b>	
Cattle	<ul style="list-style-type: none"> <li>• 20% of the farmers in the FO reared cattle.</li> <li>• Herd consisted predominantly of indigenous cattle managed under traditional form.</li> <li>• Average herd size is small with 2 or 3 animals.</li> <li>• Women expressed their interest in rearing cattle</li> <li>• One farmer has 12 cows, 4 in milk at present, yielding 35 liters per day, which is sold at Rs. 75 /liter and a daily income of Rs. 2,500.</li> </ul>
Cattle feeding	<ul style="list-style-type: none"> <li>• Free grazing and tethered grazing is the normal system practiced. Limited stall feeding is practiced</li> <li>• Feeding the cattle is a main issue as there is a shortage of grazing lands</li> <li>• Cut and feed system is practiced</li> </ul>
Silage making	<ul style="list-style-type: none"> <li>• No silage making in the area. Insufficient green crop residues for making silage</li> </ul>
Record keeping	<ul style="list-style-type: none"> <li>• Not practiced by the farmers.</li> </ul>
Poultry	<ul style="list-style-type: none"> <li>• Number of farmers engaged in poultry farming is insignificant.</li> </ul>

Poultry feeding	<ul style="list-style-type: none"> <li>Scavenging</li> </ul>
Replacement stock	<ul style="list-style-type: none"> <li>Only indigenous birds are raised</li> <li>Improved sock not available</li> </ul>
<b>Post-harvesting and Marketing</b>	
Post-harvesting Operations of Paddy	<ul style="list-style-type: none"> <li>All farmers used combine harvesters to harvest, thresh and cleaning of paddy.</li> <li>Drying of seeds is done by spreading on tarpaulin under sun shade for about 2 days. About 50% of the paddy is dried before sale.</li> <li>At direct farmgate transactions, buyers transport paddy in trucks and tractors.</li> <li>Hiring cost of combine harvester is Rs. 10,000 /Ac. Farmers are of the view that use of harvester is much more efficient</li> <li>Moisture contents of less than 14% are reached in 2 – 3 days.</li> <li>Buyers of paddy at farmgate transport the produce out using their trucks and tractors.</li> </ul>
Marketing of Paddy	<ul style="list-style-type: none"> <li>Farmers sell 50% of crops after harvesting as wet paddy at farmgate at average price of Rs. 42/kg.</li> <li>25% of the harvested quantity is stored in-house is sold later from time to time to purchase household needs at an average price of Rs. 53/kg.</li> <li>The balance 25 % is reserved for home consumption and for use as seed paddy.</li> <li>Farmers wish to dry their paddy prior to selling in order to maximize their returns. Lack of a proper drying yard was seen as an obstacle to complete the operation.</li> </ul>
Storage period and losses of paddy	<ul style="list-style-type: none"> <li>About 50% of the paddy crop is dried, packed in 50kg poly bags and stored in the farmhouse for later sale, consumption and use as seeds.</li> <li>2 - 4% of the paddy is lost during storage due to insects and rodent damage.</li> <li>The available space in farmers house is inadequate to store the paddy to take best advantage of higher market prices operating in the off season.</li> <li>Well dried paddy has a storage period of about 4 – 9 months.</li> </ul>
Market Channel	Producer → Collectors → Rice Millers
Local processing of paddy	<ul style="list-style-type: none"> <li>5 small scale rice mills and 2 small scale flour mills operate (Milling cost Rs.2/kg.)</li> <li>For parboiling, paddy is soaked in water followed by boiling in water and sun drying on mats.</li> <li>Farmers use the local rice and flour mills to process their rice.</li> <li>Raw rice is processed mainly for flour and there is no fixed pattern in the consumption levels of raw and parboiled rice.</li> <li>Milling out-turn of raw and parboiled rice are 60% and 65%, respectively.</li> </ul>
<b>Inland Fisheries</b>	
Inland fisheries	<ul style="list-style-type: none"> <li>No fish farming practiced at present</li> <li>Tanks required to be desilted and thereby increase the water holding period for successful fish culture.</li> </ul>

### 3) FO: Parakum (Kiulekada Cas.)

<b>Crop Production</b>	
General	<ul style="list-style-type: none"> <li>Number of FO members: 22. There are 3 tanks under the FO:</li> <li>Puliyankulama Mahawewa – 36 Ac, Halmillawetiya – 32 Ac and Kudawewa 14 Ac.</li> <li>All FO members owned land under each of the 3 tanks.</li> <li>Maha cultivation commenced with the onset of rains using mainly the rain water.</li> <li>Water collected in the tanks are used at the end of rains as a supplementary source of irrigation water at the end of the season</li> <li>Under the Puliankulama tank, every Yala was cultivated. However, in the 2020 Yala, cultivation was not possible due to non-availability of water.</li> <li>Size of home-garden varies 0.5 Ac to 2 Ac.</li> <li>There are no agro-well in the area, neither in command area or in highlands.</li> </ul>

Paddy in Command area	<ul style="list-style-type: none"> <li>In 19/20 Maha the total land in the command area was cultivated.</li> <li>About 10% of the land extent was cultivated with 3 ½ month old varieties while the rest of the area was grown with 3 month old paddy varieties.</li> <li>During the last 19/20 Yala, water was not available in adequate quantity for the paddy crop at maturing stage.</li> <li>This resulted in low paddy yield of about 800 kh/Ac</li> <li>In years with well distributed rainfall, farmers on average get about 2,400 kg/Ac</li> </ul>
Crop diversification in command area	<ul style="list-style-type: none"> <li>No crop diversification in the command area in Maha or Yala</li> <li>No effort has been made to introduce other field crops in the paddy lands.</li> <li>Farmers explained that they did not have previous experience or the technology required to grow crops such as soybean.</li> <li>However, they have seen such crops grown in the command area elsewhere and expressed their interest.</li> <li>They prefer to grow soybean and cowpea, but not chilli with difficult weed control.</li> <li>They were of the view that creating an awareness among all farmers through demonstration programs will encourage growing of other crops.</li> </ul>
Highland cultivation	<ul style="list-style-type: none"> <li>About 80 Ac of highlands are cultivated in the Maha.</li> <li>Main crops are: Maize – 50 Ac, Finger millet – 20 Ac and Sesame – 10 Ac.</li> <li>Contract farming system for highland crops is not operating in the area.</li> <li>Farmers have received good prices for their produce compared to previous season because of their low availability in the market due to limited imports during the Covid19 pandemic.</li> </ul>
Crop damage	<ul style="list-style-type: none"> <li>Elephants, peacocks &amp; monkeys cause extensive damage to crops. Farmers are helpless in this situation. Movement of wild elephant in home garden area late in the evenings in search of food is a threat to the humans as well.</li> </ul>
Technology	<ul style="list-style-type: none"> <li>Little or no access to new agricultural information.</li> <li>Farmers follow the instructions given in the labels of the pesticide containers.</li> </ul>
<b>Livestock</b>	
Cattle	<ul style="list-style-type: none"> <li>Only 2 farmers in the FO keep cattle</li> <li>The management is in the traditional form with indigenous cattle.</li> <li>One farm produces 12 liters of milk per day from 3 milking cows and earns a daily income of Rs. 900 from sales.</li> <li>All farmers wish to rear cattle, but the main impediment is the high cost of animals.</li> <li>Price of a good quality animal is about Rs. 150,000 which is beyond farmers reach.</li> </ul>
Cattle feeding	<ul style="list-style-type: none"> <li>Free grazing and tethered grazing is practiced.</li> <li>Animals are tethered most of the time due to lack of grazing lands</li> <li>Farmers are willing to maintain a pasture plot within their home gardens to cut and feed the animals.</li> <li>Use of crop residues and paddy straw are possible feed substitutes.</li> </ul>
Silage making	<ul style="list-style-type: none"> <li>Maize is grown for sale of dry grains. The dried up crop residues are not suitable for silage making. Less than an estimated 10% is harvested at green cob stage for human consumption.</li> <li>Farmers are aware of silage as cattle feed but lack the technology of making silage.</li> </ul>
Record keeping	<ul style="list-style-type: none"> <li>At farm level no records are maintained</li> <li>The receipts on purchase of milk are maintained by MILCO</li> </ul>
Poultry	<ul style="list-style-type: none"> <li>Few households keep small flocks of 5 – 10 birds</li> </ul>
Poultry feeding	<ul style="list-style-type: none"> <li>Scavenging on kitchen refuse and grain waste</li> </ul>
Replacement stock	<ul style="list-style-type: none"> <li>Indigenous chicken raised by themselves</li> </ul>
<b>Post-harvesting and Marketing</b>	
Post-harvesting Operations of Paddy	<ul style="list-style-type: none"> <li>Reapers are used by 95% of the farmers to harvest the paddy. (Cost Rs. 4,000/ Ac.)</li> <li>Only 5% of the farmers hired combine harvesters at a cost of Rs. 10,000 /Ac..</li> <li>20 % of the harvested crop is dried for storage.</li> </ul>

	<ul style="list-style-type: none"> <li>• For this purpose, farmers use tarpaulin sheets to spread the paddy for during under sun shade over 2 days.</li> <li>• Few members owned reapers. Farmers find it convenient to use reapers rather than the combine harvesters.</li> <li>• Poor state of the field roads has made accessibility of harvesters or sometimes the reapers difficult.</li> <li>• In such instances, manual harvesting is resorted to, but the areas are confined to isolated patches.</li> <li>• Harvested wet paddy is not dried and sold directly to the collectors at the farm-gate.</li> </ul>
Marketing of Paddy	<ul style="list-style-type: none"> <li>• Majority of farmers sell 80% of their produce soon after harvesting at average farmgate price of Rs. 45/kg</li> <li>• In general, farmers don't retain a portion of the harvested paddy for later sales.</li> </ul>
Storage, period and losses of paddy	<ul style="list-style-type: none"> <li>• About 20% of harvest is dried and stored in farm household for home consumption and for use as seed in the next season.</li> <li>• About 2 – 4 % storage losses are reported</li> <li>• Well dried paddy is stored over a period of up to 6 months. The storage losses are due to rodents and insect attacks.</li> </ul>
Market Channel	Producer → Collectors → Rice Millers
Local processing of paddy	<ul style="list-style-type: none"> <li>• Two small scale rice mills operate in the area. (Milling cost: Rs. 2/kg)</li> <li>• There is no regular rice consumption pattern between raw and parboiled rice.</li> </ul>
<b>Inland Fisheries</b>	
Inland fisheries	<ul style="list-style-type: none"> <li>• No culture based fish farming is practiced</li> <li>• Sometime ago, Puliyankulama tank had been stocked with 25,000 fingerlings.</li> <li>• However, by the expected time of maturity, no fish were found.</li> <li>• Farmers believe that the stocked fish were smaller than the standard size of fingerlings and were totally devoured by the indigenous local fish population that existed in the tank.</li> </ul>

## Notes of FOs Meetings for Naveli Kulam Cascade

### 1. Schedule of Meetings

No.	ASC Area	Cascade	FO	Date & Time	Participants
1)	Omanthe	Neveli Kulam	Arasan Kulam	9 <sup>th</sup> July 2020	9
2)	Omanthe	Neveli Kulam	Mahilan Kulam	9 <sup>th</sup> July 2020	14
3)	Omanthe	Neveli Kulam	Valisinna Kulam	14 <sup>th</sup> July 2020	7

### 2. Notes of Meetings

#### 1) FO: Arasan Kulam (Neveli Kulam Cas.)

Crop Production	
General	<ul style="list-style-type: none"> <li>Total number of members in the FO is 13 of which 4 are women.</li> <li>The tank name is Arasan Kulam and has a command area of 10 Ac.</li> <li>Main income is derived from crop and livestock farming.</li> <li>Only 3.5 Ac in the command area has been cultivated during 19/20 Maha season.</li> <li>Cultivation area is restricted because of the low storage capacity of the tank due to high silting.</li> </ul>
Paddy in Command area	<ul style="list-style-type: none"> <li>The total area of 3.5 Ac was cultivated by one member farmer.</li> <li>3 ½ aged paddy was used.</li> <li>Paddy yield was low and was around 1,700 kg/Ac.</li> <li>No cultivation in the Yala season</li> <li>Frequent delays in the availability of fertilizer at required time is a major problem.</li> </ul>
Crop diversification in command area	<ul style="list-style-type: none"> <li>No crop diversification at present</li> <li>If water is available, farmers prefer to grow crops such as groundnut, maize and green gram.</li> </ul>
Highland cultivation	<ul style="list-style-type: none"> <li>Members of the FO own about 200 Ac. of highlands and each farmer has an Agro-well. The main crops grown in the highlands are groundnut, red onions, chilli and Papaya.</li> <li>Farmers prefer to grow groundnut because it needed less water and gives good income</li> <li>Average yield is about 1000 kg/Ac.</li> </ul>
Crop damage	<ul style="list-style-type: none"> <li>Crop damage is caused peacock, wild boar and rats.</li> <li>Peacocks are chased away by using fire crackers but there is no effective control of wild boar and rats.</li> </ul>
Technology	<ul style="list-style-type: none"> <li>Farmers observed that cultivation is done on traditional methods and have little access to new farming information.</li> </ul>
Livestock	
Cattle	<ul style="list-style-type: none"> <li>20% of the farmers keep cattle and the population is predominantly crossbreds.</li> <li>Farmers find it difficult to let the cattle free graze in the area because of the unprotected railway tract running parallel to the main road. However, a new road that is away from the rail track is being built. This will make free grazing safer.</li> </ul>
Cattle feeding	<ul style="list-style-type: none"> <li>Free grazing and tethered grazing is the normal system</li> <li>Limited stall feeding is practiced</li> <li>Some farmers practice cultivation of improved grass in small plots for stall feeding.</li> </ul>
Silage making	<ul style="list-style-type: none"> <li>No silage making or feeding is practiced in the area</li> <li>Farmers showed a keen interest in silage making at farm level.</li> </ul>
Record keeping	<ul style="list-style-type: none"> <li>No record keeping is practiced by the farmers.</li> <li>At institutional level, cattle heads are registered and numbered as well as insemination records are being maintained by the Dept. of Animal production.</li> <li>Receipts of milk sold to collectors and artificial Insemination are maintained by the milk some farmers..</li> </ul>
Poultry	<ul style="list-style-type: none"> <li>Almost all the households posses 3 - 8 bird flocks. The produce is largely for home consumption.</li> </ul>

	<ul style="list-style-type: none"> <li>• There is an interest among farmers to increase their flock size as there is a demand for eggs of free range chicken.</li> </ul>
Poultry feeding	<ul style="list-style-type: none"> <li>• Scavenging and feeding</li> <li>• Controlled scavenging within the perimeter of the home garden to prevent conflicts with neighbors. Kitchen refuse and grain refuse is also fed.</li> </ul>
Replacement stock	<ul style="list-style-type: none"> <li>• Only indigenous birds</li> <li>• Chicks are produced by own hatching of eggs</li> </ul>
<b>Post-harvesting and Marketing</b>	
Post-harvesting Operations of Paddy	<ul style="list-style-type: none"> <li>• The extent cultivated is negligible and the paddy produced is mainly for household consumption and for use as seed paddy in the next season.</li> <li>• Quantity of paddy sold is insignificant.</li> </ul>

2) FO: Mahilan Kulam (Neveli Kulam Cas.)

<b>Crop Production</b>	
General	<ul style="list-style-type: none"> <li>• Number of members in the FO is 68.</li> <li>• The main source of income of all the farmers is derived from crop production and livestock farming.</li> <li>• There are 4 tanks under the FO: The names and command areas are as follows.</li> <li>• Mahilan Kulam: 23 Ac; Purasanpudi Kulam: 43 Ac; Alan Kulam: 26 Ac and Sinnamahikulam: 45 Ac. (Total: 137 Ac)</li> <li>• Hired labor is used for field work. The efficiency and availability is low though a unit costs Rs 2,500/day.</li> <li>• There is a shortage of farm machinery for land preparation and harvesting during the peak operational times.</li> <li>• The total command area cannot be cultivated in the Yala season even when the tanks are at full supply level.</li> <li>• Farmers apply organic manure, aquatic weeds collected from the tanks and cow dung to land patches to restore salinity affected plots in the command area.</li> </ul>
Paddy in Command area	<ul style="list-style-type: none"> <li>• The total command area of 137 AC were cultivated in 19/20 Maha season.</li> <li>• 4 and 3 ½ Month paddy varieties are used.</li> <li>• Yield averages to about 2,000 kg/Ac.</li> <li>• Few farmers grow traditional paddy varieties in small land plots (total: 4 – 5 Ac) during the Yala season. ‘Suwandel’ is the most popular. However, the yield are low at 600 kgs/Ac.</li> <li>• Where 4 month varieties are cultivated, the season begins with the onset of Maha rains.</li> <li>• Seed paddy is usually brought from outside market but there are instances where exchange takes place among farmers.</li> <li>• Recommended weedicides used in paddy cultivation are not effective</li> <li>• Fertilizers are not available in required quantities.</li> <li>• Traditional paddy varieties are not suited for cultivation in the Maha season as the plants tended to lodge heavily.</li> </ul>
Crop diversification in command area	<ul style="list-style-type: none"> <li>• Only paddy is grown in the command area in both seasons.</li> <li>• Except for parts of Parasanpukulam tank, the soils in the command area of other tanks are poorly drained and are not suitable for diversification.</li> </ul>
Highland cultivation	<ul style="list-style-type: none"> <li>• About 500 Ac of land, which include the home gardens are available for highland crop cultivation.</li> <li>• During the last Maha season (19/20), following crops were cultivated: black gram 150 Ac, ground nut 100 Ac, green gram 10 Ac, Cowpea 50 Ac and maize 15 Ac.</li> <li>• Seeds for cultivation are purchased from the Provincial Dept. of Agriculture.</li> </ul>

Crop damage	<ul style="list-style-type: none"> <li>Losses due to crop damage by elephants and peacocks and wild boar are most serious.</li> <li>Elephants were not found in the area. However, from recent times, 3 elephants roam the area causing crop damage. Farmers believe that they were transported from an outside area and released to the surrounding forest.</li> </ul>
Technology	<ul style="list-style-type: none"> <li>Agricultural information on crop production does not reach the farmers in an effective manner.</li> <li>Farmers are aware of new crops such as turmeric and pineapple being introduced. Their attempt to grow them, however, was unsuccessful mainly due to lack of proper advice and guidance from extension services.</li> </ul>
<b>Livestock</b>	
Cattle	<ul style="list-style-type: none"> <li>80% Of the farmers in the FO reared cattle.</li> <li>Traditional system is adopted with both with indigenous and crossbred animals.</li> <li>Income is derived from sale of milk and culled animals. Culled animals are sold at different growth stages to cover the costs of cultivation household needs.</li> <li>Farmers mentioned that they often use a combination of farmyard manure and inorganic fertilizers in crop production. They stated that there is a good cost saving in this practice. They also believed that a substantial proportion of inorganic fertilizers could be reduced as well as low disease incidence.</li> </ul>
Cattle feeding	<ul style="list-style-type: none"> <li>Free grazing and tethered grazing is the normal system practiced.</li> <li>Limited stall feeding is also practiced</li> <li>Limitation of grazing lands is a problem.</li> <li>(7,500 kg/Ac of grass is available in the fallow Yala season.</li> </ul>
Silage making	<ul style="list-style-type: none"> <li>Farmers did not possess the technique of silage making.</li> </ul>
Record keeping	<ul style="list-style-type: none"> <li>Not practiced by the farmers.</li> <li>At farmer level, the receipts issued by the DAPH on Artificial Insemination and milk purchased by milk collectors are filed with the farmers.</li> <li>The cattle heads, and numbering are maintained by DAPH</li> </ul>
Poultry	<ul style="list-style-type: none"> <li>Number of farmers engaged in poultry farming is insignificant. Only the indigenous chicken are raised.</li> </ul>
Poultry feeding	<ul style="list-style-type: none"> <li>Scavenging. Kitchen refuse and waste grains are other feed stuff available for feeding.</li> </ul>
Replacement stock	<ul style="list-style-type: none"> <li>Only indigenous birds are raised</li> <li>The chicks are hatched within the flocks.</li> </ul>
<b>Post-harvesting and Marketing</b>	
Post-harvesting Operations of Paddy	<ul style="list-style-type: none"> <li>All farmers hired combine harvesters at Rs. 9,000 /Ac. to do the basic post harvest operations. Three harvesters owned by 2 farmers are available in the village.</li> <li>Only 20% of the paddy is dried after harvesting. For this purpose, they spread the paddy on mats placed in the sun shade.</li> <li>Farmers always prefer the combine harvesters because of the operational efficiency in terms of time.</li> </ul>
Marketing of Paddy	<ul style="list-style-type: none"> <li>About 80% of the production is sold to the nearest buyers/collectors at the farm gate immediately after the harvest.</li> <li>Farmers wished to have a drying floor where paddy could be dried to a moisture level of 14% and sell same at a higher price.</li> <li>About 5% of the stored paddy is sold from time to time to purchase home needs while the balance is reserved for home consumption and for use as seed paddy for the next season</li> </ul>
Storage period and losses of paddy	<ul style="list-style-type: none"> <li>About 20% of the harvest is dried and stored in the somestead. The storage space is limited. Paddy is packed in poly sacks for storage.</li> </ul>
Market Channel	Producer → Collectors → Rice Millers
<b>Inland Fisheries</b>	



Inland fisheries	<ul style="list-style-type: none"> <li>• At present no commercial inland fishing activity in the area.</li> <li>• Farmers are willing to engage in fish farming if water is available to sustain the population.</li> </ul>
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### 3) FO: Valisinna Kulam (Neveli Kulam Cas.)

<b>Crop Production</b>	
General	<ul style="list-style-type: none"> <li>• The FO area covered 6 tanks, namely, Mahauwaiththakulam, Umaiyarthakulam, Velasinnakulam, Panichchankulam, Maruthodaikulam, and Kakkayar Puliyankulam. The total command area is about 200Ac.</li> <li>• 80% of FO members depend of crop and livestock farming as their income source.</li> <li>• Out of the 35 Ac of command area under Umaiyarthakulam, only 20 Ac are cultivable as it needs to be rehabilitated.</li> <li>• Farmers claim the agrochemicals available to them from the market are ineffective.</li> <li>• They requests government intervention to make recommendations and ensure availability in the market.</li> </ul>
Paddy in Command area	<ul style="list-style-type: none"> <li>• Depending on the rainfall, farmers cultivate 3, 3 ½ and 4 month paddy varieties. If the rains are received early in the season, 4 month varieties are sown in late September or early October.</li> <li>• Only 12 Ac is cultivated in the Yala season and is confined to Valisinnakulam.</li> <li>• In the other 5 tanks, Yala cultivation is not possible due to non-availability of water</li> <li>• One farmer cultivates the traditional variety 'Pachchaperumal'</li> <li>• Average crop yields by age class are as follows.</li> <li>• 4 month : 2,800 kg/Ac; 3 ½ month 2,500 kg/Ac and 3 month 2,300 kg/Ac.</li> <li>• Seed Paddy is purchased from DAD and PDOA.</li> <li>• Irrigation water is issued on a rotational basis and control is maintained by constant monitoring of the tank water level by the farmers.</li> </ul>
Crop diversification in command area	<ul style="list-style-type: none"> <li>• Only paddy is grown in the command area in both seasons.</li> <li>• Farmers like to grow OFCs in the command area of the tanks in Yala season if water is available.</li> </ul>
Highland cultivation	<ul style="list-style-type: none"> <li>• There is about 300 Ac of highland area for cultivation.</li> <li>• Major crops grown are groundnut, Black gram, sesame, chilli and vegetables. Groundnut is the predominant crop occupying 33% of the land.</li> <li>• Every member of the FO has an Agro-well in the highlands.</li> <li>• Water yield of the wells is inadequate to extend the presently cultivated area.</li> <li>• Farmers requested lift irrigation systems to cultivate the home-gardens.</li> </ul>
Crop damage	<ul style="list-style-type: none"> <li>• Losses due to crop damage by elephants, peacocks and cattle are most serious.</li> <li>• No effective solution has been found as yet to minimize the crop damage</li> </ul>
Technology	<ul style="list-style-type: none"> <li>• Farmers are not satisfied with the present extension system of the PDOA.</li> </ul>
<b>Livestock</b>	
Cattle	<ul style="list-style-type: none"> <li>• 95% of the farmers keep cattle. Traditional management systems are followed with both indigenous and crossbred herds.</li> <li>• Farmers are very enthusiastic about the livestock activity and believed that it takes prominence over crop production.</li> <li>• They are keen to have good studs of Indian types for upgrading their indigenous herd and a programmed Artificial Insemination system for the crossbreds.</li> </ul>
Cattle feeding	<ul style="list-style-type: none"> <li>• Free grazing and tethered grazing is the normal system practiced.</li> <li>• Limited stall feeding is practiced</li> <li>• About 7,500 kg of grass per day is available for grazing.</li> <li>• Feed straw and leaves of ipil ipil (a perineal tree grown as live fence) are fed to stall fed animals.</li> </ul>
Silage making	<ul style="list-style-type: none"> <li>• Farmers are aware of silage as a cattle feed</li> </ul>

	<ul style="list-style-type: none"> <li>• Silage (forage) making or feeding is not practiced in the area</li> </ul>
Record keeping	<ul style="list-style-type: none"> <li>• Not practiced by the farmers.</li> <li>• At institutional level, cattle heads are registered and numbered and records of AIs done are maintained by the Dept. of Animal production.</li> <li>• Receipts of milk sold to collectors are maintained by some farmers.</li> </ul>
Poultry	<ul style="list-style-type: none"> <li>• Most of the farmers keep chicken</li> <li>• Free range Chicken farming system is practiced.</li> <li>• The numbers in a flock are small as they are raised in the homesteads.</li> <li>• Scavenging and feeding with kitchen and grain refuse is common.</li> </ul>
Poultry feeding	<ul style="list-style-type: none"> <li>• Controlled scavenging is practiced.</li> <li>• Kitchen refuse and waste grains are other feed stuff are made available for chicken.</li> </ul>
Replacement stock	<ul style="list-style-type: none"> <li>• Only indigenous birds are raised. Raise chicks from own flocks.</li> </ul>
<b>Post-harvesting and Marketing</b>	
Post-harvesting Operations of Paddy	<ul style="list-style-type: none"> <li>• All farmers hired combine harvesters at Rs. 8,000 - 10,000/Ac to carry out the basic post-harvest operations</li> <li>• Some farmers use tarpaulin sheets for spreading paddy on in drying under shade.</li> <li>• Others use the drying yard (capacity 10,000 kg) owned by the 'Pradeshiya Sabbha' on hire basis at the rate of Rs. 2,000 per 2 days. It is common that some farmers use a part of the yard and pay according to the area used.</li> <li>• Two of the FO members owned combine harvesters and hired them to other farmers.</li> <li>• Farmers prefer the combine to traditional systems because of the time saved and to get over the shortage of labor.</li> <li>• However, the farmers observed that mixing of the paddy varieties occurred in the harvesting process due to: <ul style="list-style-type: none"> <li>• Adjoining plots cultivated with different paddy varieties</li> <li>• Some of the paddy remain inside machine after harvesting one plot.</li> <li>• This has caused a problem in using the paddy as seed material since they are mixed.</li> </ul> </li> </ul>
Marketing of Paddy	<ul style="list-style-type: none"> <li>• Farmers sell 50% of the paddy produced at the rate of Rs. 50/kg after shade drying at their homesteads.</li> <li>• Of the balance, 25% stored in the homesteads are sold later on from time to time to raise money to meet the household expenses.</li> <li>• Farmers are able to get the guaranteed price set by the Government soon after the drying and higher prices during the off-season period.</li> </ul>
Storage, period and losses of paddy	<ul style="list-style-type: none"> <li>• Harvested and well dried paddy may be kept in storage for 4 to 6 months at farm house level.</li> <li>• 2 - 4% of the paddy is lost during storage due to insects and rodent damage.</li> </ul>
Market Channel	<pre> graph LR   Producer --&gt; Collectors   Producer --&gt; PMB   Collectors --&gt; RiceMillers[Rice Millers]   PMB --&gt; RiceMillers </pre>
Local processing of paddy	<ul style="list-style-type: none"> <li>• 2 small scale rice mills and 2 small scale flour mills operate. Milling cost Rs.2.50/kg.</li> <li>• For parboiling, paddy is soaked in water followed by boiling in water and sun drying on mats.</li> <li>• Consumption pattern: 75% raw and 25% parboiled.</li> <li>• Raw rice is used for milling into flour.</li> <li>• No set consumption pattern with regard to raw and parboiled rice.</li> <li>• Milling outturn of raw and par boiled rice are 62% and 66%, respectively.</li> </ul>
<b>Inland Fisheries</b>	
Inland fisheries	<ul style="list-style-type: none"> <li>• At present inland fish farming is not an economic activity.</li> <li>• If water is available in the tanks, farmers are willing to engage in fish culture.</li> </ul>

## Notes of FOs Meetings for Rathmalawewa Cascade

### 1. Schedule of Meetings

No.	ASC Area	Cascade	FO	Date & Time	Participants
1)	Horowpothana	Rathmalawewa	Isuru Minimuthu	21 <sup>st</sup> July 2020	8
2)	Horowpothana	Rathmalawewa	Dutugemunu	21 <sup>st</sup> Jul 2020	9
3)	Horowpothana	Rathmalawewa	Weliwawa	23 <sup>rd</sup> July 2020	14

### 2. Notes of Meetings

#### 1) FO: Isuru Minimuthu (Rathmalawewa Cas.)

Crop Production	
General	<ul style="list-style-type: none"> <li>The FO has a membership of 68 farmers. Agriculture is main source of income of 90% of farmers.</li> <li>There are 3 tanks under the FO management: Thirippankadawela Tank 293 Ac. (Medium Irrigation), Paradehiyakada Tank 54 Ac, Nikawewa 28 Ac.</li> <li>Farmers are of the view that most of the agro-chemicals are of inferior quality their response, even after repeated applications is ineffective. They often find that the crops are severely affected by excessive applications.</li> <li>The prices they have to pay for the chemicals are very high in the local shops and in closest towns as well.</li> <li>Chemicals purchased in Dambulla Market are significantly less in price.</li> <li>Chemical fertilizers are often not available in the market.</li> <li>Large scale organic manure production at individual farmer level cannot be done for many reasons. A program to make organic manure on large scale at village level is most welcome.</li> </ul>
Paddy in Command area	<ul style="list-style-type: none"> <li>In 19/20 Maha season, the total extent of land in the command area was cultivated with 4 – 3 ½ month paddy varieties.</li> <li>In the Yala season, some lands under thirappankadawela tank were cultivated with 3 month varieties.</li> <li>98% of the farmers purchase seed paddy from private seed traders.</li> <li>Farmers believe that the present yield level could be increased further if new varieties, good seed paddy, effective agrochemicals and adequate water supply id available.</li> </ul>
Crop diversification in command area	<ul style="list-style-type: none"> <li>Only paddy is grown in the command area in both the seasons.</li> <li>There is about 100 Ac land area under Thirippanwela tank command area that is suitable for cultivation of OFCs.</li> <li>Farmers prefer to grow soybean, green gram and groundnut in these lands during the Yala season.</li> </ul>
Highland cultivation	<ul style="list-style-type: none"> <li>There are about 250 Ac of highlands cultivated with highland crops. Maize and black gram is the most commonly cultivated crops.</li> <li>There are about 20 agro-well in the areas</li> <li>Agro-well are mainly used for cultivation of crops for home consumption.</li> <li>One sprinkler irrigation system is in operation. Currently cowpea is grown, but the crop is rotated from time to time.</li> </ul>
Crop damage	<ul style="list-style-type: none"> <li>Damage to the crop by peacock is very high. No elephants are found in the area.</li> </ul>
Technology	<ul style="list-style-type: none"> <li>Inflow of agricultural information to the village is not systematic.</li> </ul>
Livestock	
Cattle	<ul style="list-style-type: none"> <li>Only 3 farmers out of the 68 members in the FO are engaged in livestock farming.</li> <li>Most farmers are interested in rearing cattle and believe that they could start with one cow and build up the herd over the years in stages.</li> </ul>
Cattle feeding	<ul style="list-style-type: none"> <li>Free grazing under the supervision of a herder and tethered grazing is the normal systems.</li> <li>Limited stall feeding is practiced.</li> <li>In Yala season, a significant land area is left fallow and is available for free grazing.</li> </ul>

	<ul style="list-style-type: none"> <li>Natural breeding is allowed with same type of indigenous animals though farmers are aware that increased production is possible through upgrading.</li> <li>Feeding the cattle during the Maha season is a major problem.</li> </ul>
Silage making	<ul style="list-style-type: none"> <li>No silage making or feeding is practiced in the area</li> </ul>
Record keeping	<ul style="list-style-type: none"> <li>No record keeping practiced</li> <li>Farmers are not aware if record of their herds are maintained at institutional level.</li> </ul>
Poultry	<ul style="list-style-type: none"> <li>About 50% of the farmers have Free Range Chicken (FRC) kept in small manageable numbers.</li> <li>Causes crop damage in the neighborhood.</li> <li>The flocks are small and varied between 5 and 8.</li> </ul>
Poultry feeding	<ul style="list-style-type: none"> <li>Scavenging and feeding</li> <li>FRC is kept in very small number per farmer as the land area of homestead offers a limited area for scavenging.</li> <li>Kitchen refuse and waste grains are other feed stuff available for feeding</li> </ul>
Replacement stock	<ul style="list-style-type: none"> <li>Only indigenous birds</li> <li>Produced by the farmers.</li> </ul>
<b>Post-harvesting and Marketing</b>	
Post-harvesting Operations of Paddy	<ul style="list-style-type: none"> <li>All farmers hire combine harvesters that combine the harvesting, threshing and winnowing operations. Hire charge Rs. 10,000/Ac.</li> <li>50% of the farmers dry the harvested crop at home level.</li> <li>For drying, they use tarpaulin sheets laid under sun to spread the grains and the drying process is repeated for about 2 days.</li> <li>Farmers shared the view that about 3% of the crop is wasted in using the combine harvesters.</li> <li>However manual harvesting, threshing and cleaning are more time and labor consuming and therefore more costly.</li> </ul>
Marketing of Paddy	<ul style="list-style-type: none"> <li>50% of the farmers who do not dry the paddy sell 80% of the crop at the farm-gate at an average price of Rs. 42/kg.</li> <li>The remaining 20% of the harvest is dried by these farmers.</li> <li>The other 50% of the farmers who dry their grains sell 80% of the crop at Rs. 50/kg within the harvesting period itself or later at off season periods at Rs. 55/kg.</li> <li>Farmers observe that they could get better off season market prices if the paddy can be dried (drying yard) and storage facility are made available to them.</li> </ul>
Storage period and losses of paddy	<ul style="list-style-type: none"> <li>20% of the crop is stored at domestic level for family consumption and to use as seed paddy in the next season.</li> <li>The dried paddy can be kept in storage for 4 – 9 months.</li> <li>Losses of 2 – 3% storage losses from insects and rodents are reported.</li> <li>Farmers are compelled to limit the quantity of paddy they can store due to inadequacy of storage space in their farm houses.</li> <li>Poly-sacks are used to pack the paddy for domestic storage.</li> </ul>
Market Channel	Producer → Collector → Rice Millers
Local processing of paddy	<ul style="list-style-type: none"> <li>One medium scale rice mill is owned by a member of the FO. (Milling cost Rs. 2.50/kg).</li> <li>Milling out-tern of raw rice is about 60%.</li> <li>Rice consumption- Mainly in the form of raw rice.</li> </ul>
Other crops	<ul style="list-style-type: none"> <li>Maize is cultivated in commercial quantities</li> <li>There are no contract growing systems operating at present. Farmers observed that such a system would be beneficial.</li> </ul>
<b>Inland Fisheries</b>	
Inland fisheries	<ul style="list-style-type: none"> <li>No stocking of fingerlings has been undertaken.</li> <li>About 10 farmers in the village are engaged in fishing of local fish in the tank.</li> </ul>

	<ul style="list-style-type: none"> <li>• Farmers observed that culture based fish farming in the tank would be difficult as it is heavily infested with aquatic weeds and presence of local predatory fish.</li> </ul>
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2) FO: Dutugemunu (Tathmalawewa Cas.)

<b>Crop Production</b>	
General	<ul style="list-style-type: none"> <li>• Number of members in the FO is 185.</li> <li>• The main source of income of 45% of the farmers is from agriculture.</li> <li>• There are 6 tanks under the management of the FO:</li> <li>• Pupulegalawewa: 40Ac, Mahawewa 120 Ac, Kudawewa 40Ac, Ataweerawewa 35 Ac, Olugaskada kudawewa 50 Ac, and Dambuluoya 20 Ac.</li> <li>• Tanks are heavily silted and the water retained is inadequate for Yala cultivation.</li> <li>• Cost of machine hire is high.</li> <li>• Land preparation using hired tractors is not at a satisfactory level..</li> <li>• Prices of seeds and agrochemicals are high and their quality standards are low.</li> </ul>
Paddy in Command area	<ul style="list-style-type: none"> <li>• Total extent of land in the tank command area is cultivated in the Maha season with 3 – 3 ½ month paddy varieties.</li> <li>• The land preparation period is 1 month and by end of last week of October, sowing is completed.</li> <li>• Average paddy yield is about 1,500 kg/Ac.</li> <li>• Farmers are unable to produce seed paddy requirement for Maha cultivation season because a crop for production of seed paddy cannot be established in the Yala season.</li> <li>• The tanks go dry during the Yala season.</li> </ul>
Crop diversification in command area	<ul style="list-style-type: none"> <li>• OFCs are not cultivated either in Maha or in the Yala seasons.</li> <li>• Following extents of land can be brought under OFCs during the Yala season if water is available.</li> <li>• Pupulegalawewa: 15Ac, Mahawewa 15 Ac, Kudawewa 40Ac, and Dambuluoya 10 Ac.</li> <li>• The preferred crops are groundnut, soya, green gram and vegetables</li> </ul>
Highland cultivation	<ul style="list-style-type: none"> <li>• About 450 Ac of land is available for highland cultivation.</li> <li>• 300 Ac of maize were cultivated in the 2020 Maha season.</li> <li>• Other crops grown are: vegetables 20Ac, sesame 80 Ac, finger millet (kurakkan) and others 50Ac.</li> <li>• 50 agro-wells operate in the area.</li> <li>• PDOA has made to popularize sprinkler systems for lift irrigation off tube wells among the farmers</li> <li>• However, frequent clogging of the delivery lines due to salt deposits has resulted in failure of the effort.</li> </ul>
Crop damage	<ul style="list-style-type: none"> <li>• Mainly elephants and peacocks damage the crop</li> </ul>
Technology	<ul style="list-style-type: none"> <li>• Farmers are satisfied with the services provided by the Agricultural Instructor of the PDOA and the ARPA of the ASC (DAD)</li> <li>• Farmers note the lack of a reliable and authentic way to access information on new technologies.</li> </ul>
<b>Livestock</b>	
Cattle	<ul style="list-style-type: none"> <li>• Only 4 farmers out of the 185 members in the FO rear mostly indigenous cattle.</li> <li>• Farmers are aware of the value of livestock to strengthen their farm economy.</li> <li>• Most farmers express their willingness to rear cattle and believe they could start with one good quality cow.</li> <li>• However, a quality heifer, a pregnant heifer/cow costs around Rs. 150,000, which is beyond the capacity of most of the farmers.</li> </ul>
Cattle feeding	<ul style="list-style-type: none"> <li>• Free grazing and tethered grazing is the normal system practiced.</li> <li>• Limited stall feeding is practiced</li> </ul>
Silage making	<ul style="list-style-type: none"> <li>• Silage making is not practiced</li> </ul>

	<ul style="list-style-type: none"> <li>Farmers lacked the technology of making silage</li> </ul>
Record keeping	<ul style="list-style-type: none"> <li>Not practiced by the farmers.</li> <li>Farmers are not aware if records on their cattle are maintained by the DAPH.</li> </ul>
Poultry	<ul style="list-style-type: none"> <li>50% of the farmers keep flocks.</li> <li>Flock size is usually less than 8.</li> <li>Home garden premises of individual farmers are too small for increasing the flock.</li> <li>Eggs are usually for home consumption.</li> </ul>
Poultry feeding	<ul style="list-style-type: none"> <li>Scavenging</li> <li>Kitchen refuse and waste grains are other feed stuff available for feeding.</li> </ul>
Replacement stock	<ul style="list-style-type: none"> <li>Only indigenous birds are raised locally.</li> </ul>
<b>• Post-harvesting and Marketing</b>	
Post-harvesting Operations of Paddy	<ul style="list-style-type: none"> <li>All farmers use combine harvesters to harvest, thresh and cleaning of paddy.</li> <li>Farmers dry the paddy after harvesting at the farmhouse level by spreading the grains on tarpaulin sheets and drying under the sun for 2 – 3 days. Tarpaulin comes in the sizes: 25'x25', 15'x15' and 10'x10' and are generally used over 3 years.</li> <li>The hire charge of the harvester is Rs. 10,000 /Ac.</li> <li>Farmers find the use of harvester is more economical and time saving compared to traditional methods.</li> </ul>
Marketing of Paddy	<ul style="list-style-type: none"> <li>Farmers sell 50% of their dried produce to buyers at a price of Rs. 50/kg.</li> <li>The transaction takes place at the household level and the local buyers transport the paddy out in their own trucks/tractors.</li> </ul>
Storage period and losses of paddy	<ul style="list-style-type: none"> <li>The remaining 50% of the dried paddy is stored in the farmhouse and is used for family consumption and for seed paddy in the next season.</li> <li>Harvested and well dried paddy may be kept in storage for 9 to 12 months at farm house level.</li> <li>2 - 3% of the paddy is lost during storage due to insects and rodent damage.</li> <li>Poly sacks are used to pack dried paddy for storage.</li> <li>Farmers express their hope in getting a drying yard to dry their paddy and a storage facility to hold the paddy for off season sales at higher market prices.</li> </ul>
Market Channel	Producer → Collectors → Rice Millers
Local processing of paddy	<ul style="list-style-type: none"> <li>2 small scale rice mill function in the area and the milling cost is Rs.2.50/kg.</li> <li>Milling turn-out of rice is 60%</li> <li>Raw rice is consumed by 75% of the families.</li> <li>Domestic level parboiling is not practiced. When needed, they purchase it from the local grocery shops.</li> </ul>
<b>Inland Fisheries</b>	
Inland fisheries	<p>Two years ago the FO leased out the tank to an outside party for harvesting at Rs. 250,000.</p> <ul style="list-style-type: none"> <li>Culture fish can be introduced to Kudawewa, Ataweerawewa and Olugaskada kudawewa if adequate water could be made available in the tanks.</li> </ul>

### 3) FO: Weliwawa (Rathmalawewa Cas.)

<b>Crop Production</b>	
General	<ul style="list-style-type: none"> <li>Number of members in the FO is 38.</li> <li>Agriculture is the main income source of 95% of the members.</li> <li>The FO manages one tank: Weliwawa with a command area of 80 Ac.</li> <li>Land holding size in the command area varied between 1 and 5 Ac.</li> <li>Scarcity of farm labor is one of the major problems faced by farmers.</li> </ul>

Paddy in Command area	<ul style="list-style-type: none"> <li>In the Maha season the total command area is cultivated with 3 ½ month paddy varieties just before the commencement of Maha rains.</li> <li>Only a limited extent of the command area is cultivated during the Yala season with 3 month varieties.</li> <li>The extent cultivated during 2020 Yala season was 6 Ac.</li> <li>Average yield of paddy is around 1,800 kg/Ac</li> <li>Farmers resort to dry sowing in order to make best use of the rain water received in the season.</li> <li>In dry sowing farmers use 75 kg of seed paddy per Ac. in consideration of the damage caused by birds.</li> <li>In dry sowing, farmers take the risk of delayed commencement of the Maha rains as well as excessive rains at the time of harvesting.</li> <li>Because of this risk factor, farmers tend to use lower amount of inputs to the crop than what is recommended.</li> <li>If there is an assured supply of water, farmers wish to invest more on inputs.-</li> </ul>
Crop diversification in command area	<ul style="list-style-type: none"> <li>There is no crop diversification during the Maha or Yala seasons.</li> <li>Farmers expressed willingness to grow OFCs in the command area during the Yala season if sufficient water is made available.</li> <li>The preferred crops are maize, vegetables, groundnut and green gram.</li> </ul>
Highland cultivation	<ul style="list-style-type: none"> <li>About 200 Ac of highland area is available for cultivation,</li> <li>The major crop in the highland is maize.</li> <li>No functional agro-wells in the area.</li> </ul>
Crop damage	<ul style="list-style-type: none"> <li>Crop damage is caused by elephants, cattle, monkeys, wild boars and birds.</li> <li>Some farmers use netting to cover their field with crops from monkeys, wild boar and birds.</li> <li>This approach has not been fully successful in crop protection.</li> </ul>
Technology	<ul style="list-style-type: none"> <li>There is no effective system of disseminating agricultural information to farmers.</li> <li>Farmers expect a regular information delivery system with follow up.</li> </ul>
<b>Livestock</b>	
Cattle	<ul style="list-style-type: none"> <li>Two members of the FO raised indigenous cattle.</li> <li>The heard size is relatively large with 30 heads per farmer.</li> <li>Farmers in general express their willingness to start cattle raising and are content to begin with one animal.</li> </ul>
Cattle feeding	<ul style="list-style-type: none"> <li>Free grazing and tethered grazing is the normal system practiced.</li> <li>Limited stall feeding is practiced</li> <li>In the Yala season, a significant area in the command area is not cultivated and is available for free grazing of cattle. Further, the tank bed is also available with the receding water level.</li> <li>Farmers use crop residues from harvested fields to feed the cattle as well.</li> </ul>
Silage making	<ul style="list-style-type: none"> <li>Silage (forage) making or feeding is not practiced in the area</li> <li>Cattle are fed with straw of rice and maize residues after the grains are separated.</li> </ul>
Record keeping	<ul style="list-style-type: none"> <li>Not practiced by the farmers.</li> <li>At institutional level, cattle heads are registered and numbered and records of AIs done are maintained by the Dept. of Animal production.</li> </ul>
Poultry	<ul style="list-style-type: none"> <li>Almost all farmers reared free range Chicken farming system.</li> <li>The number of chicken per farmer is small and is usually less than 10.</li> </ul>
Poultry feeding	<ul style="list-style-type: none"> <li>Controlled scavenging is practiced.</li> <li>Kitchen refuse and waste grains are other feed stuff are made available for chicken.</li> </ul>
Replacement stock	<ul style="list-style-type: none"> <li>Only indigenous birds are raised</li> <li>Chicks are produced locally.</li> </ul>
<b>Post-harvesting and Marketing</b>	
Post-harvesting	<ul style="list-style-type: none"> <li>80% of the farmers use combine harvesters at hiring charge of 8,500 to 10,500 /Ac.</li> <li>20% of the farmers who cultivate less than ½ Ac harvest their crop manually using sickles followed by threshing and winnowing by mechanical threshers.</li> </ul>

Operations of Paddy	<ul style="list-style-type: none"> <li>• About 40 – 50% of the farmers sundry the harvested paddy on tarpaulin sheets at farmhouse level or in drying yards belonging to 5 rice millers operating in the area.</li> <li>• Manual harvesting is confined to small holdings in isolated locations.</li> <li>• Farmers agree that use of combine harvester in large continuous blocks (yaya) is more efficient in terms of time and labor saved.</li> <li>• One member of the FO owns a combine harvester.</li> <li>• The drying yards are made available to farmers when not used by the millers at a hire charge of Rs. 1,500 /day.</li> <li>• About 50 – 60% of the farmers do not dry the paddy.</li> <li>• Dependence on the drying yards of the millers has restricted the quantity of paddy that can be dried by individual farmers.</li> </ul>
Marketing of Paddy	<ul style="list-style-type: none"> <li>• About 40 – 50% of the farmers sell 80% of their dried paddy to the Paddy Marketing Board (PMB) at the rate of Rs. 50/kg. For this, farmers prepare the paddy to comply with the standards set by PMB.</li> <li>• Limitations in the drying of paddy caused by inability to use millers drying yards and do large scale drying at household level have compelled farmers to dispose their produce at low prices.</li> </ul>
Storage, period and losses of paddy	<ul style="list-style-type: none"> <li>• About 20% of the total dried produce is kept in stoarge at farmehouse level and is reserved for family consumption and for use as seed paddy in the next cultivation season.</li> <li>• Harvested and well dried paddy may be kept in storage for 4 to 9 months at farm house level.</li> <li>• 2 - 4% of the paddy is lost during storage due to insects and rodent damage.</li> <li>• Paddy is packed in poly sacks for storage.</li> <li>• Farmers are unable to store more because the available space for domestic storage is limited.</li> </ul>
Market Channel	<p>Producer → Collectors → Rice Millers</p> <p>                  ↘                  ↗</p> <p>                                  PMB</p>
Local processing of paddy	<ul style="list-style-type: none"> <li>• Milling cost Rs.2.00/kg. Raw rice is consumed by nearly all farm families Milling outturn of raw rice is 60%</li> </ul>
<b>Inland Fisheries</b>	
Inland fisheries	<ul style="list-style-type: none"> <li>• No fresh water fish farming is practiced at present</li> <li>• Farmers wish to engage in fish farming with the available water in the tank.</li> </ul>



## Notes of FOs Meetings for Siyambalagaswewa Cascade

### 1. Schedule of Meetings

No.	ASC Area	Cascade	FO	Date & Time	Participants
1)	Kallanchiya	Siyambalagaswewa	Dilena Tharu	23 <sup>rd</sup> June 2020	6
2)	Kallanchiya	Siyambalagaswewa	Parakum	27 <sup>th</sup> June 2020	9
3)	Kallanchiya	Siyambalagaswewa	Shakthi	27 <sup>th</sup> June 2020	9

### 2. Notes of Meetings

1) FO: Dilena Tharu (Siyambalagaswewa Cas.)

Crop Production	
General	<ul style="list-style-type: none"> <li>Cultivation under Ehetuwawa tank. Command Area 24 Ac. Highland 30 Ac.</li> <li>Fulltime Member Farmers 80%</li> <li>In years with normal rainfall distribution pattern, 100% of tank command area is cultivated with paddy during Maha. In Yala, less than 59% of the total command area is cultivated</li> </ul>
Paddy in Command area	<ul style="list-style-type: none"> <li>24 Ac. Cultivated in 1019/20 Maha. No Yala cultivation.</li> <li>95% of farmers produce and use own seed paddy Average yield: 2000kg/Ac</li> <li>3 – 3&amp;1/2 month paddy varieties are used.</li> <li>Land preparation commence with onset of rains: save water</li> <li>All agreed that the present productivity level could be increased IF:</li> <li>Water supply is assured. High quality seed paddy is available</li> <li>Since nearly all farm operations are mechanized, no labor shortage.</li> </ul>
Crop diversification in command area	<ul style="list-style-type: none"> <li>Non of the farmers cultivate Other Field Crops (OFCs) in either Maha or Yalas.</li> <li>Farmers agree that some upper land strips in the slopes are suitable for OFC cultivation.</li> <li>They are willing to cultivate such land areas with OFCs during Yala IF: Water is available.</li> <li>Good quality seeds are made available. Technical guidance is provided.</li> </ul>
Highland cultivation	<ul style="list-style-type: none"> <li>4 Ac of highlands are cultivated by 8 farmers in 2019/20 Maha</li> <li>Main crops grown are: maize, millet &amp; cowpea</li> <li>Hybrid seeds of maize are purchased from the suppliers and other seeds are self-produced.</li> <li>Pesticides available in the market are ineffective in most occasions.</li> </ul>
Crop damage	<ul style="list-style-type: none"> <li>Elephants, Peacock, and monkey damages are very high</li> <li>Peacocks population has increased recently and the damage caused to all crops is extensive.</li> <li>No attempt has been made to by relevant authorities to address the issue.</li> </ul>
Technology	<ul style="list-style-type: none"> <li>Adoption of technologies takes place through farmer to farmer transfer rather than trained officials of the relevant agencies</li> <li>The services of the relevant officers are confined to supply or delivery of farm inputs.</li> </ul>
Livestock	
Cattle	<ul style="list-style-type: none"> <li>50% of the FO members are engaged in cattle rearing.</li> <li>Cattle population is predominantly traditional with indigenous cattle and little or no services are provided by state and private sectors.</li> <li>Most farmers are willing to upgrade and/or start dairy farming if external support is available for purchase of stock, etc.</li> </ul>
Cattle feeding	<ul style="list-style-type: none"> <li>Free grazing and tethered grazing is the normal system</li> <li>Limited stall feeding is practiced</li> <li>Stover or fresh grass feeding is not practiced. Maize Stover is sold to outsiders at Rs. 10/kg.</li> <li>Fields go fallow during Yala. Grazing density is 360 kg of grass per day over the fallow period.</li> </ul>

	<ul style="list-style-type: none"> <li>Farmers were of the view that cattle movement in fallow lands is beneficial as they add organic matter leading to better crop harvests.</li> </ul>
Silage making	<ul style="list-style-type: none"> <li>No silage making or feeding is practiced in the area</li> <li>Silage making technology not available to farmers.</li> </ul>
Record keeping	<ul style="list-style-type: none"> <li>No record keeping is practiced by the farmers.</li> <li>At institutional level, cattle heads are registered and numbered by the Dept. of Animal production.</li> <li>Receipts of milk sold to milk collectors are sometimes available with farmers.</li> </ul>
Poultry	<ul style="list-style-type: none"> <li>50% of the farmers in the FO keep Chicken (FRC)</li> <li>Exclusively indigenous chicken are raised.</li> </ul>
Poultry feeding	<ul style="list-style-type: none"> <li>Scavenging</li> <li>FRC is kept in very small number per farmer as the land area of homestead offers a limited area for scavenging.</li> <li>Kitchen refuse and waste grains are other feed stuff available for feeding</li> <li>Processed feeds are not available and not used</li> </ul>
Replacement stock	<ul style="list-style-type: none"> <li>Only indigenous birds. Improved stock not available</li> </ul>
<b>Post-harvesting and Marketing</b>	
Post-harvesting Operations of Paddy	<ul style="list-style-type: none"> <li>Harvesting, threshing and winnowing are integrated into one operation through use of combine harvester by all farmers.</li> <li>Drying the harvested paddy is not practiced as the crop is sold immediately.</li> <li>Farmers are of the view that use of harvester is much efficient and economical than the traditional systems that required more labor and time.</li> <li>About 25% of the crop, retained by the farmers, is sundried to 14% moisture level.</li> </ul>
Marketing of Paddy	<ul style="list-style-type: none"> <li>About 75% of the paddy produced by the farmers is sold soon after the harvest at an average farm gate price of Rs. 41/kg.</li> <li>The low prices at the harvest time are associated with the high product volume and the high moisture content of the paddy.</li> <li>Out of the 25% of the crop retained dried paddy, 10 % is sold during the off season period at higher market prices (&lt;Rs. 50 /ha). Farmers usually sell the produce immediately after the harvest in order to set off the loans (cash and kind) obtained from the lenders, usually the local input suppliers and collectors.</li> </ul>
Storage period and losses of paddy	<ul style="list-style-type: none"> <li>Harvested paddy may be kept in storage for 6 months.</li> <li>2 - 3% of the paddy is lost during storage due to insects and rodent damage</li> <li>The paddy stored in the household is used as seed paddy for the next season cultivation, selling as needed and for home consumption.</li> <li>Paddy is packed in poly sacks for storage</li> </ul>
Market Channel	Producer → Collector → Rice Millers
Local processing of paddy	<ul style="list-style-type: none"> <li>2 small scale rice mills and 1 small scale flour mill operate in the area.</li> <li>Rice consumption- Raw Rice 30% and parboiled 70%</li> <li>Raw rice is used for consumption, mainly breakfast and to make flour and parboiled rice for the main meals.</li> </ul>
Other crops	<ul style="list-style-type: none"> <li>Not produced in commercial quantities</li> </ul>
<b>Inland Fisheries</b>	
Inland fisheries	<ul style="list-style-type: none"> <li>At present no fishery activity</li> <li>The water in the tanks is retained for periods of less than 4 months. The tank goes dry by the time Maha crop is harvested. No dead storage due to built up of sedimentation of dead water weeds and sand in the tank and down flow from the upper tanks requires desilting.</li> </ul>

2) FO: Parakum (Siyambalagaswewa Cas.)

<b>Crop Production</b>	
General	<ul style="list-style-type: none"> <li>• 61 member farmers cultivated under 3 tanks: Kudawewa, Aluthwewa and Mahawewa .</li> <li>• Combined command area of the tanks is 200 Ac.</li> <li>• Farming is the main source of income of 85% of the farmers.</li> <li>• Total highland area is 40Acs.</li> <li>• The total command area of 200 Ac were cultivated with paddy during 19/29 Maha.</li> <li>• Maha cultivation commences with the onset of rains. However, lack of rains in the latter part of the season often causes crop damage due to inadequate water supply. No produce in Yala</li> </ul>
Paddy in Command area	<ul style="list-style-type: none"> <li>• Paddy varieties grown are predominantly 3 – 3 &amp; 1/2 month duration.</li> <li>• Seed paddy is mostly produced by farmers themselves.</li> <li>• Only 5% of the farmers obtain seed paddy from outside sources.</li> <li>• Average paddy yield is 2000kg/Ac.</li> <li>• Cost of seed paddy in the market is high, and often exceeds Rs. 100/kg.</li> </ul>
Crop diversification in command area	<ul style="list-style-type: none"> <li>• Crop diversification is not possible in Maha due to high rainfall and poor drainage</li> <li>• In Yala, water is not available for cultivation</li> <li>• 40% of the land under Mahawewa command area can be diversified into subsidiary food crops. The preferred crops are maize, onion and vegetables.</li> </ul>
Highland cultivation	<ul style="list-style-type: none"> <li>• 12 Ac of highland is cultivated during Maha under rain-fed conditions.</li> <li>• 7 agro-wells operate in the area which irrigate coconut palms cultivated in the home-gardens</li> <li>• Other crops irrigated by agro-wells include banana, maize and vegetables.</li> <li>• Available land area for highland cultivation is limited.</li> </ul>
Crop damage	<ul style="list-style-type: none"> <li>• Losses due to crop damage by elephants, peacocks, and monkeys are very high.</li> <li>• Peacock damage is severe as they feed on crops at all stages of growth.</li> <li>• No effective solution to counter this damage.</li> </ul>
Technology	<ul style="list-style-type: none"> <li>• There is no systematic and effective agricultural information and advisory service in operational within the area.</li> <li>• Farmers recall the effectiveness of the old system of village level extension service that functioned through village level workers (KVS) attached to the DOA. This has been abolished since 1980's.</li> </ul>
<b>Livestock</b>	
Cattle	<ul style="list-style-type: none"> <li>• About 40% of the farmers in the FO reared cattle in the traditional form. The population consisted entirely of indigenous animals.</li> <li>• Most farmers expressed willingness take up cattle rearing. They noted that the animals are expensive and expected external support to purchase the animals.</li> <li>• Those presently engaged in cattle farming wished to upgrade their stock.</li> </ul>
Cattle feeding	<ul style="list-style-type: none"> <li>• Free grazing and tethered grazing is the normal system practiced.</li> <li>• Limited stall feeding is practiced</li> <li>• About 170 Ac. of land in command area is left fallow in Yala due to lack of water for cultivation.</li> <li>• Grazing capacity works out to 2,500 kg per day.</li> <li>• Farmers opined that cattle movement control invasive weeds.</li> <li>• Stover and cutgrass feeding is practiced.</li> <li>• The maize crop residues are purchased by outsiders at prices up to Rs. 10/kg and is lost for use within the FO area.</li> </ul>
Silage making	<ul style="list-style-type: none"> <li>• No silage (forage) making or feeding is practiced in the area</li> <li>• Silage making technology not available to farmers. Farmers are aware that silage cab be fed to animals during the lean Maha.</li> </ul>
Record keeping	<ul style="list-style-type: none"> <li>• Not practiced by the farmers.</li> <li>• At institutional level, cattle heads are registered and numbered by the Dept. of Animal production.</li> <li>• Receipts of milk sold to collectors are sometimes maintained by the farmers.</li> </ul>
Poultry	<ul style="list-style-type: none"> <li>• 15% of the farmers in the FO keep Free Range Chicken (FRC)</li> </ul>

	<ul style="list-style-type: none"> <li>• FRC farming in home garden premises of individual farmers are small.</li> <li>• Eggs are usually for home consumption.</li> </ul>
Poultry feeding	<ul style="list-style-type: none"> <li>• Scavenging</li> <li>• Controlled scavenging is practiced to avoid conflicts with neighbors.</li> <li>• Kitchen refuse, waste grains are other feed stuff is available for feeding.</li> <li>• Processed feeds are not available and not used</li> </ul>
Replacement stock	<ul style="list-style-type: none"> <li>• Only indigenous birds are raised. Improved stock not available</li> </ul>
<b>• Post-harvesting and Marketing</b>	
Post-harvesting Operations of Paddy	<ul style="list-style-type: none"> <li>• All farmers use combine harvesters to harvest, thresh and clean paddy.</li> <li>• Since farmers resorted to sell the produce immediately after the harvest, they do not dry the seeds prior to sale.</li> <li>• The paddy purchased by the collectors/millers is transported out from the field in trucks and tractors.</li> <li>• Hiring cost of combine harvester is Rs. 9,000 per Ac.</li> <li>• Farmers are of the view that use of harvester is much more efficient as well as economical than the traditional systems which required more labor and time.</li> <li>• Farmers did not possess adequate facilities to dry the total quantity of paddy harvested. The practice is limited to the quantity stored in the farm house for later use.</li> </ul>
Marketing of Paddy	<ul style="list-style-type: none"> <li>• About 70% of the paddy produced by the farmers is sold soon after the harvest at an average price of Rs. 41/kg.</li> <li>• The remaining 30% is dried and stored in the farm house for later use.</li> <li>• Collectors usually provide the farmers with farm inputs on credit terms and recoveries are made following the purchase of the harvest.</li> <li>• The low prices at the harvest time are associated with the high product volume in the market and the high moisture content of the paddy.</li> <li>• Farmers are often compelled to sell the produce immediately after the harvest in order to set off the loans (cash and kind) obtained from the lenders, usually the local shop owners and collectors.</li> <li>• A moisture content value of 14% is maintained for stored paddy as collectors pay high off season price for low moisture paddy.</li> </ul>
Storage period and losses of paddy	<ul style="list-style-type: none"> <li>• Harvested paddy may be kept in storage for 6 to 9 months at farm house level.</li> <li>• 3 - 4% of the paddy is lost during storage due to insects and rodent damage.</li> <li>• Paddy quantity stored is small due to lack of storage space in the households.</li> <li>• The 10 % of the produce kept by farmers usually fetches a higher market price (Rs. 50 or above) and is reserved to cover domestic expenses. The remaining quantity is reserved for family consumption and seed paddy for the next season..</li> <li>• Paddy is packed in poly sacks for storage</li> </ul>
Market Channel	Producer → Collector → Rice Millers
Local processing of paddy	<ul style="list-style-type: none"> <li>• 3 small scale rice mills and 1 small scale flour mill operate in the area. Paddy milling costs Rs. 2/kg. Rice consumption- Raw Rice 30% and parboiled 70%.</li> <li>• For parboiling, paddy is first soaked in water followed by treating in boiling water and drying on mats.</li> <li>• Raw rice is used for consumption, mainly breakfast and to make flour and parboiled rice for the main meals.</li> <li>• Steaming in the parboiling process is not practiced by farmers.</li> </ul>
<b>Inland Fisheries</b>	
Inland fisheries	<ul style="list-style-type: none"> <li>• At present no commercial inland fishing activity in the area.</li> <li>• Fish farming can be introduced to Kehendewa Mahawewa. However, the tank needed to be cleaned of aquatic weeds. Farmers are willing to manage the tank with stocked fingerlings.</li> </ul>

3) FO: Shakthi (Siyambalagaswewa Cas.)

<b>Crop Production</b>	
General	<ul style="list-style-type: none"> <li>Total membership is 150. 65% of the farmers derive their income directly from agricultural activities.</li> <li>FO area covers 5 tanks, viz., Kendewa Mahawewa, Kendewa Kudawewa, Paradutuwewa, Diwulgala wewa and Thimbiriwewa and covers a total command area of 600 Ac.</li> <li>Many farmers in the FO possess irrigable lands in more than one tank in the same and/or outside cascades.</li> <li>Total command area under the tanks is cultivated with paddy during Maha. No Yala cultivation.</li> <li>Salinity has been observed in about 5% of the irrigated lands in the command area.</li> <li>Farmers apply cattle manure to pockets of such land and they were convinced that the practice has reduced the salinity level over time.</li> </ul>
Paddy in Command area	<ul style="list-style-type: none"> <li>3 – 3 &amp; 1/2 month paddy varieties are cultivated predominantly.</li> <li>Average yield is about 2000kg/Ac. 20 Ac. Cultivated in 1019/20 Maha. No Yala cultivation.</li> <li>95% of farmers produce and use own seed paddy. Average yield: 2000kg/Ac</li> <li>3 – 3 1/2 month paddy varieties are used</li> <li>About 3 Mahas ago, some traditional rice varieties were introduced among some farmers. In spite of the high market prices of the paddy/rice, these varieties failed to catch on due to longer growth period (4 – 4 &amp; 1/2 months) and the lower yields.</li> </ul>
Crop diversification in command area	<ul style="list-style-type: none"> <li>Non of the farmers cultivate Other Field Crops (OFCs) in either Maha or Yalas.</li> <li>Non availability of water is the main reason for not adopting crop diversification during Yala.</li> </ul>
Highland cultivation	<ul style="list-style-type: none"> <li>Limited area in the highlands is cultivated in Maha under rain-fed conditions.</li> <li>Crops grown are Kurakkan, cowpea, chilli and vegetables. Yields of these crops are very low.</li> <li>Seed material available in the market is of poor quality.</li> <li>Hybrid crop varieties require need more fertilizers and non-availability of these inputs at the correct time has adversely affected the crop performance.</li> </ul>
Crop damage	<ul style="list-style-type: none"> <li>Crop damage by elephants, Peacocks, and monkeys is severe. Farmers are highly disheartened by the frequent invasion of the crop lands by these wild animals.</li> <li>No permanent solution is forthcoming form the relevant authorities.</li> </ul>
Technology	<ul style="list-style-type: none"> <li>It is the general practice of the farmers to seek technical advice to solve crop related issues from the local fertilizer/agrochemical dealers.</li> <li>Good extension service by extensionists is a felt need of the farmers.</li> </ul>
<b>Livestock</b>	
Cattle	<ul style="list-style-type: none"> <li>10% of the FO members are engaged in cattle rearing.</li> <li>Cattle farming system is predominantly traditional with indigenous cattle</li> <li>Most farmers are willing to upgrade and/or start dairy farming if external support is available for purchase of stock.</li> </ul>
Cattle feeding	<ul style="list-style-type: none"> <li>Free grazing and tethered grazing is the normal system</li> <li>Limited stall feeding is practiced</li> <li>600 Ac of irrigated lands are cropped with paddy in Maha and is left fallow during Yala.</li> <li>Grazing density is 9,000 kg of grass per day over the fallow period.</li> <li>Farmers are of the view that cattle movement in fallow lands is beneficial as they add organic matter leading to improved soil fertility and better crop harvests.</li> <li>Stover or fresh grass feeding is not practiced. However, selling of the maize stover to outside collectors at Rs. 10/kg is commonly practiced in the area.</li> </ul>
Silage making	<ul style="list-style-type: none"> <li>No silage making or feeding is practiced in the area</li> </ul>

	<ul style="list-style-type: none"> <li>• Silage making technology not available to farmers. They agree that if silage making is made possible, stall feeding of cattle can be introduced while devoting more time for crop production.</li> </ul>
Record keeping	<ul style="list-style-type: none"> <li>• No record keeping is practiced by the farmers.</li> <li>• At institutional level, cattle heads are registered and artificial insemination records are maintained by the Dept. of Animal production.</li> <li>• Receipts issued by the milk collectors are sometimes kept by the farmers.</li> </ul>
Poultry	<ul style="list-style-type: none"> <li>• 10% of the farmers in the FO keep Chicken (FRC)</li> <li>• Exclusively indigenous chicken are raised</li> </ul>
Poultry feeding	<ul style="list-style-type: none"> <li>• Scavenging and feeding</li> <li>• FRC is kept in very small number per farmer as the land area of homestead offers a limited area for scavenging</li> <li>• Kitchen refuse and waste grains are other feed stuff available for feeding</li> <li>• Processed feeds are not available and not used</li> </ul>
Replacement stock	<ul style="list-style-type: none"> <li>• Only indigenous birds. Improved stock not available</li> </ul>
<b>Post-harvesting and Marketing</b>	
Post-harvesting Operations of Paddy	<ul style="list-style-type: none"> <li>• Harvesting, threshing and winnowing are integrated into one operation through use of combine harvester by all farmers.</li> <li>• Drying the harvested paddy is not practiced as major part of the crop is sold immediately. Drying of harvested paddy is confined to about 30% of the crop which is stored by farmers in their households.</li> <li>• Farmers aren't involved in produce transport as buyers collect the harvested crop off the field.</li> <li>• Farmers are of the view that use of harvester is much efficient and economical than the traditional systems that required more labor and time. The hire charge of combine harvester is Rs. 10,000 /Ac.</li> <li>• Little or no post harvest operations are done by the producer farmers.</li> <li>• A moisture content value of 14% is maintained for stored paddy as collectors pay high off season price for low moisture paddy</li> </ul>
Marketing of Paddy	<ul style="list-style-type: none"> <li>• About 70% of the paddy produced by the farmers is sold soon after the harvest at an average price of Rs. 42/kg.</li> <li>• Harvest time coincides with glut production period and the high moisture content of the paddy has led to low market prices.</li> <li>• The 30 % of the dried paddy kept by farmers fetches a higher market price (Rs. 50 or above)</li> <li>• Farmers are often compelled to sell the produce immediately after the harvest in order to set off the loans (cash and kind) obtained from the lenders, usually the local shop keepers and collectors.</li> </ul>
Storage, period and losses of paddy	<ul style="list-style-type: none"> <li>• Harvested paddy may be kept in storage for 6 months.</li> <li>• 3 - 4% of the paddy is lost during storage due to insects and rodent damage.</li> <li>• Paddy stored in the house hold is dried before storage. This accounts for about 15% of the total harvest and is always Sun-dried to less than 14% moisture content. This is used by farmers for home consumption, to sell in order to procure household needs as well as to use as seed paddy in the forthcoming season.</li> <li>• Paddy quantity stored is small due to lack of storage space in the households.</li> <li>• Paddy is packed in poly sacks for storage.</li> </ul>
Market Channel	Producer → Collector → Rice Millers
Local processing of paddy	<ul style="list-style-type: none"> <li>• 2 small scale rice mills and 1 small scale flour mill operate in the area.</li> <li>• Rice consumption- Raw Rice 30% and parboiled 70%.</li> </ul>

	<ul style="list-style-type: none"> <li>Raw rice is used for consumption, mainly breakfast and to make flour and parboiled rice for the main meals.</li> </ul>
<b>Inland Fisheries</b>	
Inland fisheries	<ul style="list-style-type: none"> <li>At present no commercial fishery activity. The tanks need de-silting to improve the dead storage in order to retain water at least over a part of Yala.</li> </ul>

**Additional Field visit to Ithalawetunawewa Cascade, Kahatagasdigiya Date -21<sup>st</sup> Oct.-2020**

**1. Farmer Organization – Al AmanIthalawetunawewa**

**Tank -Ithalawetunawewa**

**No.of Members -130**

**Total command area -350 Acres**

**Maha season –Total area is cultivated with 3-1/2 paddy varieties**

**Yalaseason(2020 Yala) 40 acres of paddy**

**Highland –Limited extent of highland. Mainly maize is grown (About 60 Acres)**

**Inland fishery – Tank retains water until October, The local species of fish are available and FO Obtained Rs 250000 by leasing the tank for catching fish. FO is planning to introduce culture base fishery into the tank.**

**2. Farmer Organization –Ekamuthu**

**Tank -DemalaHmmillewa**

**No .of FO members -30**

**Command Area -28 Acres**

Maha season total area is cultivated with 3-31/2 paddy varieties

**Yala– No cultivation**

With the issues of water for cultivation tank dries up.

Not possible for Culture Base Fishery.

President of the Farmer Organization is a medium scale entrepreneur totally engaged in agro based industry. He is a trader involved in collecting maize grains and supplying to the Prima Company. He possesses a ware house with dryers for maize drying in addition to a well constructed drying floor .The maize seed wastes collected in the ware house is fed to the cattle in his dairy farm which produces 150 liters of milk per day. The cattle farm waste is incorporated into the mango orchard which is about 15 acres with high demanding variety TJC. Now the mango crop is bearing fruits and total fruiting period per year is about 8 months . There are about 10 laboures working in the orchard. At the initial growth stage of mango trees drip irrigation was provided. There is a good demand for mango fruits and he supplies the harvest to three buyers.





*Appendix 3.11-2  
Estimate of Dairy Cattle and Poultry*

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## Appendix 3.11-2: Estimate of Daily Cattle and Poultry

### (1) Estimate of Dairy Cattle

SINGLE DAIRY FARM UNIT - BENEFIT COST CALCULATION		Notes	Unit	PROJECT PERIOD				
				With Free Grazing			Without Free Grazing	
No.	Item	*1		Year 1	Year 2	Year 3	Year 4	Year 5
<b>A. Farm Basic Parameters</b>								
	A1 Herd size, number of animal (livestock units: 350 kg/unit)	*2	LU	6.6	7.0	7.2	7.5	8.0
	A2 No. of cows / herd	*3	LU	2.0	2.5	2.7	3.2	4.0
	A3 Average number of cows in milk per year/ herd		LU	1.6	2.0	2.5	3.0	3.3
	A4 Productive animal %/ HERD = A3 /A1			24%	27%	28%	31%	42%
	A5 Herd Composition (productive % = A3 /A1)							
	A5.1 Number of cows -include Lactating cows + Dry cows	*4	LU	2.0	3.0	3.0	4.0	4.0
	A5.2 Average number of cows in milking per year		LU	1.6	2.0	2.5	3.0	3.3
	A5.3 Heifers		LU	1.6	1.6	1.6	1.6	1.6
	A5.4 Female calves		LU	1.6	1.6	1.6	1.6	1.6
	A5.5 Male calves		LU	0.4	0.4	0.4	0.4	0.4
	A5.6 Bulls (if AI is applied, no bull required)	*10	LU	1.0	1.0	1.0	1.0	1.0
	A6 Livestock units (total of A4.2 to A4.6)		LU	6.6	7.6	7.6	8.6	8.6
	A7 Calves born							
	A7.1 Female	*5	LU	2	1	2	2	2
	A7.2 Male		LU	2	2	1	2	2
	A8 Crossbred percentage (annual increase 12.0%-12.5%)	*6		40%	45%	50%	57%	64%
<b>B. Farm Productivity Parameters</b>								
	B1 Number of lactations / cow	*7	LU	6	6	7	7	8
	B2 Average age at first calving (shorten the age 7%-1% per annum)		months	42	39	37	35	33
	B3 Average calving interval		days	480	450	420	390	365
	B4 Average lactation length (enlong the length 7.5%-1.0% per annum)		days	189	203	217	231	245
	B5 Average milk production per cow (increase 30% to 4% per annum)	*8	lits./day	4.7	7.1	8.5	9.7	10.5
	B6 Annual lactation yield per cow (B4 days x B5 lits./day)		lits./year	888	1,441	1,845	2,241	2,573
<b>C. Farm Production Parameters</b>								
	C1 Annual herd milk production (A4.2 cows x B4 lactation length x B5 lits./day)		lits./farmer	2,745	5,183	7,756	10,622	12,647
	Annual Growth %				89%	50%	37%	19%
	C2 Replacement stock and culled @18 months							
	C2.1 Calves females retained (A6.1 x 0.85 x 0.4)		LU	1.0	1.0	0.7	0.7	0.7
	C2.2 Calves females sold (A6.1 x 0.85 x 0.6)		LU	1.0	0.5	1.0	1.0	1.0
	C2.3 Calves male culled (A6.2 x 0.8)		LU	1.0	1.6	0.8	1.6	1.6
	C3.4 Cows culled (A4.1 x 15%)		LU	-	-	-	-	-
	C3 Annual dung production (A6 x 25 kg/day, 365 days)	*9	kg	60,225	69,350	69,350	78,475	78,475
	C4 Weight of culled animals							

SINGLE DAIRY FARM UNIT - BENEFIT COST CALCULATION		Notes	Unit	PROJECT PERIOD				
				With Free Grazing			Without Free Grazing	
				225	225	225	225	225
	C4.1 Calves females sold kg		kg	225	225	225	225	225
	C4.2 Calves male culled kg (225 x C2.3 calves mae)		kg	120	120	120	120	120
	C4.3 Cows culled kg		kg	-				
<b>D. Feeds and Feeding</b>								
	D1 Feed							
	D1.1 Free grazing 8-10 hours LU intake 14 to 15kg		kg	96	96	96		
	D1.2 Cut and Feed 1 Grass		kg	24	29	29	34	34
	D1.3 Cut and Feed 1 Gliricidia		kg	17	21	21	25	25
	D1.4 Crop Residue 1 Straw		kg	10	15	15	25	25
	D1.5 Crop Residue 1 Silage		kg	0	34	34	81	81
	D1.6 Cut and Feed 1 CO 3		kg	0	45	45	69	69
	D2 Feeding							
	D2.1 Total Dry Matter Requirement (body maintenance) (D1+D2+D3+D4+D5+D6)		kg	58.0	58.0	58.0	58.0	58.0
	D2.2 Dry Matter Intake		kg	31.8	51.2	67.1	60.0	60.0
<b>E. Farm Product Prices</b>								
	E1 Milk sale price (no escalation)		LKR/kg	80	80	80	80	80
	E2 Sale price of male calf @18 months age (live w.) (no escalation)		LKR/kg	200	200	200	200	200
	E3 Sale price of female calf @18 months age (live w.) (no escalation)		LKR/kg	350	350	350	350	350
	E4 Sale price of culled cows live w. (no escalation)		LKR/kg	450	450	450	450	450
	E5 Price per kg CO 3 (no price escalation) (what is CO 3?)	*11	LKR/kg	3.50	3.50	3.50	3.50	3.50
	E6 Price for silage (no price escalation)		LKR/kg	7.50	7.50	7.50	7.50	7.50
<b>F. Cost Projections M LKR</b>								
	F1 Labour cost (LKR 250/day x 365 days, no price escalation)		LKR	91,250	91,250	91,250	91,250	91,250
	F2 Farmer Management Cost (Y1: 1.5 hrs/day, Y2 on ward: 2.0 hrs/day)		LKR	102,656	102,656	102,656	102,656	102,656
	F3 Feed Cost (E6 silage price x D6 CO3 kg) + (E5 CO 3 price x D6 CO3 kg)		LKR	-	150,563	150,563	309,885	309,885
	F4 Cows Depreciation 12.5% (cow value: LKR150,000 each)	*14	LKR	18,750	25,781	22,559	29,114	25,475
	F5 Veterinary cost @ Rs 5000 -6000 per months	*12	LKR	5,000	5,000	5,000	6,000	6,000
	F6 Depreciation on Buildings 4%	*13	LKR	20000	19,200	18,432	17,695	16,987
	F7 Depreciation on Equipment 5% (initial cost, replacement, etc.)		LKR	4000	3,840	3,686	3,539	3,397
	F8 Total Cost		LKR	241,656	398,290	394,146	560,139	555,650
<b>G. Income Projections</b>								
	G1 Income from milk (C1: annual production x E1 milk price @LKR 80)		LKR	219,584	414,640	620,500	849,720	1,011,780
	G2 Income from sale of male calves (C4.1 female calves kg x E2 price of male calf)		LKR	24,000	12,000	24,000	24,000	24,000
	G3 Income from sale of female calves (C4.1 female calves kg x E3 price of female calf)		LKR	78,750	39,375	78,750	78,750	78,750
	G4 Income from sale of culled cows (C2.4 culled cow x C4.3 LU x E5 price @450)		LKR	-	-	-	-	-
	G5 Income from sale of organic manure		LKR	30,113	34,675	34,675	39,238	39,238
	Total Income		LKR	352,447	500,690	757,925	991,708	1,153,768
<b>G. Monthly Profit</b>			LKR	110,790	102,400	363,779	431,569	598,117
			LKR	9,233	8,533	30,315	35,964	49,843

Source: Study Team

NOTES	
*1:	Increase number of farmers by 100%. In FO meetings a large proportion of crop farmers mentioned that they like to rear cattle. However, the problems were high initial capital risk, feeding and management knowhow.
*2:	Some farmers are already maintaining 8.0 livestock Units.
*3:	This will increase the number of productive animals gradually.
*4:	Ideal average numbers in a herd composition under project area conditions.
*5:	The target is to manage that every cow will produce a calf annually
*6:	Increase the hybrid proportion gradually. This is programmed
*7:	Productive life of a cow is 10 years:1260 days for the 1st calving + 480 after the 2n calving +480 days third calving + 480 days + 480 days +480 days = 3660 days.
*8:	Average of the 1st year is 4.7 lits./day, 2nd year - increase 30%, 3rd year - increase 25%, 4th year - 20%, 5th year - 15%, 6th year - 12%, 7th year - 6% and finally year - 4%.
*9:	25 kg per livestock unit / day
*10	A single technician has to cover 3000 to 4000 cows, Monthly 250 to 330 cows, Daily 8 to 11 cows. This is the minimum number. Most farmers live apart. So traveling can be costly and it takes over 10 hours to cover the whole area. Then there are repeats. The standard in Sri Lanka is it take 2.5 AIs for one Pregnancy.
*11	CO-3 Hybrid Napier var. CO-3 is a high yielding perennial fodder grass
*12	Veterinary cost includes treatment, medicine and Artificial Inseminations 6 to 8/ month @ Rs 500 each
*13	Initial cost of the whole facility is Rs 450,000
*14	Cow value is 75000 (1st lactation starting value)*3= 225,000. end of 1st year 31250.end of 2nd year 36718.75. end of 3rd year

## (2) Estimate of Poultry

SINGLE POULTRY FARM UNIT - BENEFIT COST CALCULATION	Units	Project				
Flock Composition						
1 Total number batches		1	1	2	2	2
2 Total number of layer adult birds	No	15	29	43	42	42
3 Replacements	No	15	15	15	-	15
4 Total culled birds	No	-	-	-	-	13
<b>Farm Production &amp; Productivity Parameters</b>						
Total annual production of eggs	No. eggs	2,275	5,195	7,875	8,395	9,208
Annual home consumption	No. eggs	704	880	1,408	1,408	1,408
Annual sale of eggs	No. eggs	1,571	4,315	6,467	6,987	7,800
Live Weight of culled kg	kg	-	-	-	-	23.38
<b>Feeds and Feeding</b>						
1 Maize seeds 1kg/15 birds/ day ( @ LKR 50/ Kg)	Kg	91	363	1,071	1,042	1,295
2 Other seeds 100 grams / 15 birds / day (@LKR 25/ Kg)	Kg	548	1,089	1,607	1,563	1,942
<b>Farm Product prices</b>						
1 Price per 16 week old female (Day old Chicks: DoC) all are vaccinated, dewormed and debeaked	LKR	500	500	500	500	500
2 Cost per kg Maize seed @SLR 50	LKR	4,563	18,148	53,573	52,105	64,741
3 Cost per Kg Other seed @SLR 25	LKR	13,688	27,222	40,179	39,079	48,556
4 Equipment - Plastic Trays, water troughs	LKR	2,000				
5 Average sale price of an egg LKR	LKR	20.00	20.00	20.00	20.00	20.00
6 Average sale price per culled bird LKR	LKR	500.00	500.00	500.00	500.00	500.00
<b>Cost Projections M LKR</b>						
1 Family labour: 0,5 hr/day @ LKR 1500 / day	LKR	3,422	3,422	3,422	3,422	3,422
2 Feed Cost (20.2 + 20.3)	LKR	18,250	45,370	93,752	91,185	113,297
3 Cost of Replacement SLR (No. 13.3 X No. 20.1)	LKR	7,500	7,500	7,500	-	7,500
4 Veterinary cost @ Rs 20 per bird	LKR	300	590	865	837	848
5 Depreciation on Buildings 3% (concrete/cemented floor, shade, etc.)	LKR	-		2,000	2,000	2,000
Total	LKR	29,472	56,882	107,539	97,444	127,067
<b>Income Projections LKR</b>						
Annual egg Sale income	LKR	31,420	86,300	129,340	139,740	156,000
Annual Culled Income	LKR	-	-	-	-	11,692
Total Income	LKR	31,420	86,300	129,340	139,740	167,692
Profit	LKR	1,948	29,418	21,801	42,296	40,625
Monthly Profit	LKR	162	2,452	1,817	3,525	3,385

Source: Study Team

*Appendix 3.11-3  
Supplemental Note on Inland Fishery*

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### Appendix 3.11-3: Supplemental Note on Inland Fishery

The fishing sector in Sri Lanka plays a vital role in economic and social life by providing direct employment opportunities for about 560,000 people and livelihoods for more than 2.7 million coastal communities. The contribution to the national GDP by the fishery sector was 1.3% in 2017 (Central Bank Annual Report). Moreover about 56 % of animal protein intake in Sri Lanka comes from fish (FAO2011) and in the dry interior areas most of this consumption originates from the major fresh water reservoirs. The per capita consumption of fish and fishery products in 2016 was 16.8 Kg per year ( NAQDA Statistics )and Medical Research Institute (MRI) of Sri Lanka recommends that it should be 21 Kg per year.

Government of Sri Lanka has well recognized the need for increasing fresh water fish production in terms of eliminating rural poverty & malnutrition , and creating job opportunities . Adequate legal provisions have been made under the Fisheries and Aquatic resources act (FARA 1996) for the development of inland aquaculture. These provisions include licensing to engage in fishing operations, registration of fishing crafts , prevention of the use of the gears specified as illegal, establishment of Community Base Organizations etc. National Aquaculture Development Authority (NAQDA)is the regulatory body of this act.

In line with government policy it is planned to obtain a production of 326000 metric tons of fish from inland fishery by the year 2025 (Source NAQDA).

Inland fishery resources comprise rivers , estuaries , lagoons , brackish water ponds flood plain lakes and major ,medium and minor village tanks. There are about 290500 hectares of inland water area in the island while Anuradhapura and Vavuniya districts have 51500 and 10600 hectares of them respectively The total production of all inland fishery resources in 2018 was 87690 MT in 2018 that contributed about 17 % of the total fish production in the country in the year 2018. (Source Ministry of fisheries and Aquatic Resource Development-Fisheries statistics -2018)

In Anuradhapura district there are 87 major & medium tanks and 2333 minor tanks .The number of major and medium tanks in Vavuniya district is 23 while it has 453 small tanks (Source National Atlas 2007). Although there are large inland water resources in the two districts only few of them have been utilized for aquaculture development .

**Table- No. of reservoirs used for aquaculture in 2017**

District	Major tanks	Medium tanks	Minor tanks
Anuradhapura	10	12	100
Vavuniya	01	04	33

Source- Fisheries statistics 2018, Ministry of fisheries

Anuradhapura is one of the dominant inland fish production districts (16 % of Fresh water fish production) in the country and its potential for further development is very high compared to the Vavuniya district

**Table- Inland fish production in Anuradhapura & Vavuniya districts**

District	Fish Production (MT)					
	2012	2013	2014	2015	2016	2017
Vavuniya	830	1520	1280	1500	2770	2290
Anuradhapura	14340	9650	16320	11940	12990	15760

Source-Fisheries Statistics 2018,Ministry of fisheries

Traditionally aquaculture was not practiced in Sri Lanka and catching of fish which were naturally bred in fresh water bodies were taken place . With the introduction of fast growing breeds of fish into the reservoirs the fresh water fish production has developed up to the present level. Since these exotic Species do not breed under local conditions (except few breeds) repeat stocking of finger lings need to be done. Releasing hatchery reared fish (stocking fingerlings) into the tank and recapturing upon reaching a desirable size is termed as culture based fishery (CBF) Therefore stocking is an ongoing part of fishery management in present aquaculture .

The breeding of fish for stocking is done at the centres of the National Aquaculture development Authority (NAQDA )under specialized conditions while fry , bred in these centres is reared up to fingerling stage either in NAQDA stations or in ponds run by private entrepreneurs .The total fingerlings production in the country by the NAQDA and private sector is given in table below.

**Table - Fingerling production in NAQDA & private hatcheries**

Source	Fingerling production (Mn)					
	2014	2015	2016	2017	2018	2019
NAQDA breeding centres	20.93	39.63	37.29	38.06	48.2	28.63
Private mini hatcheries	10.04	15.56	29.18	44.85	63.43	59.42

Source-NAQDA Statistics 2019

There are 10 breeding centres where fry & fingerlings are produced by NAQDA and they are located at Igniyagala, Dambulla , Udawalawe (2 centres) ,NuwaraEliya , Sewanapitiya Kalawewa, Iranamadu and muruthawela

In Anuradhapura district there are 22 active mini hatcheries maintained by the private sector entrepreneurs in addition to NAQDA centres as follows.

**Table - Active mini hatcheries maintained by the private sector entrepreneurs**

ASC	Number of mini hatcheries	Total fingerling production capacity
Anuradhapura	08	1800000
Mahawilachchiya	02	1200000
Palagala	02	1100000
Thirappane	01	200000
Nochchiyagama	02	116000
Galenbindunawewa	02	340000
Padawiya	01	680000
Parakkramapura	01	1800000
Eppawala	01	800000
Gambirigaswewa	01	800000
Saliyapura	01	200000
Total	22	9036000

Source-Anuradhapura district Aquaculture Entrepreneurs' Soci

The management of the tanks for CBF depends on the type of tank. In seasonal tanks since there are no traditional fishers and total harvest is taken once , fisheries organizations are not found . Instead, the whole irrigation and fishery management of tank is done by the Farmer organization of the respective tank. Sometimes a fishery sub group is formed with interested FO members under the farmer organization . On the other hand, in perennial tanks where fishing is done daily as a practice fisher have organized to form a fisheries organization named ' Rural Fishermen Organization'. There are 47 Rural Fishermen organizations in Anuradhapura district with over 5000 membership and a District Fisheries Organization has been formed with the representatives from the rural fishermen organizations. Moreover all District fisheries organizations in the country combine together to form National Fisheries Organization

Main features of culture based fishery (CBF)in minor and medium &major tanks are summarized below.

**Table –Main features of CBF in minor tanks and perennial medium & major tanks**

Item	Seasonal minor tanks	Perennial medium & major tanks
Ownership and Jurisdiction of water use	Agrarian Development Department ; Farmer organization	Irrigation Department(central) or Provincial Irrigation Department; Farmer organization
Responsible community group for CBF	Agricultural Farmers (Traditionally non fishers)	Agricultural farmers (Traditionally non fishers) or fishers



Item	Seasonal minor tanks	Perennial medium & major tanks
Stocking Frequency	After peak rainy season (Dec-Jan)	Once a year when fingerlings are not needed for stocking in seasonal tanks
Stocking rate	2000 fingerlings/Ha	1000 fingerling/Ha
Harvesting	Complete or partial harvesting during dry season	Year round harvesting
Productivity	High productivity due to abundance of Phyto and zoo plankton growth with cattle manure incorporated into the tank bed by the grazing animals during dry period.	Comparatively low productivity due to less availability of planktons which fish feed on.
Management	Farmer organization or Fisheries sub group under FO	Farmer organization or Fisheries organization
Funds for CBF	FO funds	FO fund or Fisheries organization fund

Source: Study Team

### Major issues and constraints in inland fish farming

#### 1. Vulnerability climate change

Minor reservoir fish culture is highly vulnerable to climate change including irregularity in rainfall pattern and prevalence of frequent droughts. Delay in onset of monsoonal rains shortens the culture period of fish in the tank giving poor harvest that discourages the farmers.

#### 2. Poaching or catching fish by other parties-

Although legal provisions are available poaching is a major problem in inland fish farming

#### 3. Low community participation

Since the whole income from the fish harvest is taken by the FO to raise its funds and farmers are not individually benefited, the interest of the community to develop the fish farming in the tank is at very low level.

#### 4. Uncoordinated Release of water for cultivation.

Release of water for cultivation at the early stage of fish culture, making the water level that fish cannot survive hinders the fishery development in minor tanks.

*Appendix 5.2-1  
Detail Cost from JICA Cost Estimation Kit  
and Summary of the Project Cost*

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Non-Disclosure Information

*Appendix 5.3-1  
Basic Design and Unit Rate of  
Cascade System Development*

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Non-Disclosure Information

*Appendix 5.3-2  
Cost Breakdown and Unit Rate  
of Soft Component*

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Non-Disclosure Information

*Appendix 5.3-3  
Cost Breakdown and Unit Rate of  
Project Management and Monitoring*

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Non-Disclosure Information

*Appendix 5.3-4  
Cost Breakdown and Tentative  
Assignment Schedule of Consulting Services*

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Non-Disclosure Information

*Appendix 8.7-1  
Economic Evaluation*

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Non-Disclosure Information

*Study Result 1  
Basic Development Plan of  
124 Sub-projects*

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Non-Disclosure Information