

**ESTABLISHING CENTRE FOR FARM MACHINERY
RESEARCH DEVELOPMENT AND TRAINING
IN ALAPPUZHA DISTRICT**



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**Agricultural Engineering Project-RKVY
Rice Research Station, Moncompu
KERALA AGRICULTURAL UNIVERSITY
Thekkekara P.O, Alappuzha-688 503**



Kerala Agricultural University

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RESEARCH DEVELOPMENT AND TRAINING
IN ALAPPUZHA DISTRICT**

809463



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Executive Summary

The Project on “Establishing Farm Machinery Research, Development and Training in Alappuzha Dist., was started in December, 2010 at the Rice Research Station, Moncompu. The objective was to establish an Agricultural Engineering Research and Technology Transfer Center to cater needs of the farming community in Kuttanad especially for the below sea level and wetland rice farming.

The Centre has evaluated different kinds of machines used for tillage to harvesting for rice mechanization and tested their feasibility in Kuttanad. The successful use of tractor powered rotavator was demonstrated to farmers in Kuttanad and apprised them for using appropriate technology in rice farming. The mechanical rice transplanters and drum seeders were tested and found their operational feasibility in Kuttanad below sea level areas. The rice transplanters and drum seeders have performed satisfactorily especially the trafficability of 4-wheel self-propelled rice transplanters were encouraging except at some specific points or locations in the field where channels are made for draining water.

Under the project, a power driven drum seeder attachment was made to a self-propelled Yanchi make transplanter. The drum seeder attachment is capable of placing pre-germinated seeds on the ridges with channels formed in between for draining water in low wetland field conditions. The power seeder was able to sow one acre in less than an hour. The motorized power seeder was tested in different locations of Kottayam, Pathanamthitta and Alappuzha districts. A tractor drawn ginger and turmeric planter was developed and tested under M.Tech. Student project. The metering of rhizome was done manually. The machine planted both ginger and turmeric on ridges satisfactorily. The ridge planting can be adopted to facilitate further mechanization in ginger and turmeric cultivation compared to bed planting. There was a provision for placing fertilizer/farmyard manure deeper in the ridges. A manually operated ear head thresher was developed to thresh breeder seeds. The thresher is operated by hand cranking and minimal damage was observed to the seeds.

The different types of rice transplanters, drum seeder, power weeders were tested in different locations to demonstrate the technology viable for rice establishment in Kuttanad compared to manual broadcasting. These machines have demonstrated the used of higher end technology to increase yield and to reduce the incidence of pests and diseases, thereby reduce the minimal use of agrochemicals. The technology for raising nursery tray and mat seedlings were demonstrated to farmers. The feasibility of testing mechanical broadcaster was also demonstrated to farmers to discontinue manual broadcasting method. Further, the seed broadcaster is being modified and improved to make it battery operated. A walking type four row rice transplanter was tested to transplant Pokkali rice at RRS, Vytilla, which was satisfactory compared to traditional method.

The farmers were trained to operate tractor, power tiller, 4-wheel and walking type transplanters, power weeder, drum seeder and manual brush cutter etc. About twenty six trainings were conducted. Some of the trainees have learnt tractor driving and obtained driving license. The agricultural machinery demonstrations cum training were conducted at various

locations in Kuttanad and other areas to raise mat nursery establishment, transplanter and drum seeder operation etc. The drum seeder was promoted as an alternative to manual broadcasting to eliminate and proliferation of wild rice and also to reduce the application of agro-chemicals for the incidence of pests and diseases. The Centre has participated in a number of exhibitions organized by the various agencies with in state.

The infrastructure facilities of workshop, machinery and post-harvest engineering equipment in the Center are adequate to undertake further research and technology transfer activities of the farming community in Kuttanad.

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Research Report 2010-2017

Title of the project: Establishing Centre for Farm Machinery Research, Development and Training in Alappuzha district

i. Order no. of administration Sanction : R3/61614/2010 dated 19/5/2010

ID Nos. KE/RKVY-AGRE/2012/ 542; 857 /& 868

Name & designation of

a. Principal investigator

Dr. Manoj Mathew, Professor[FPME] & in Charge- Officer from (17/11/2013)

Dr. V. Ganesan, KAU- RKVY-Agricultural Engineering Project- OSD (Retired on 16/11/2013)

b. Associate

Dr. Manoj Mathew, Professor (FPME), Farming System Research Station, Sadanandapuram. Kottarakara (Up to 16/11/2013)

Project location : Rice Research Station, Moncompu

Date of commencement of project : December, 2010

Date of termination of project : March, 2017

Financial Details : Annexure-I

Reporting period of project : From 2010 to 31st March, 2017

OBJECTIVES

1. To identify the gap in mechanization and select the operations on which the specialised machinery are required.
2. To identify and procure suitable machinery available in and outside the country for the specific objective.
3. To conduct extensive adaptive field trials of these machinery and identify the modifications and alterations required.
4. To modify the existing machinery and rectify it based on the field trials.
5. To develop machinery suitable to the peculiar field conditions.
6. Dissemination of developed technology.
7. To impart training to the farmers and farm workers in the operation and maintenance of agricultural machinery suitable for Kuttanad region.

Report

Survey of Agricultural Mechanization Status in Kuttanad

The survey of farm mechanization in Kuttanad was conducted to evaluate the use of different agricultural machines for farm operations in rice and other vegetables and root crops. Farmers mainly rely on tractors and power tillers for the preparation of fields for pre-germinated seeding. Also, it is observed that seeds are broadcasted in harvested fields without tillage after incorporating soil amendments and flooding. The manual broadcasting is done in a team and excessive seeds are used beyond the recommended rate. Uneven distribution of seeds leads to excess plant population and blank spots in the field. This causes intense labour for gap filling and re-distribution seedlings to leanly plant populated areas of the field. In this circumstance, the feasibility of machines like line seeders, transplanters, power weeders and other machines viz., balers are to be tested in Kuttanad. Since the farmers are more inclined to save labour, cost and their management, introduction of above machines is inevitable.

I. Feasibility Testing of Agricultural machines

Rotavator:

Tractor drawn Rotavator was used for tillage. The machine is operated at 10% m.c and stubbles and roots of the harvested crop were finely disintegrated and mixed with soil for accelerated decay during flooding. The performance of the machine is shown in below figures.



Tractor with Rotavator is used tillage in Chambakulam rice fields

Rice Transplanters:

Feasibility of testing the adaptability of rice transplanters and pre-germinated seeders in Kuttanad area

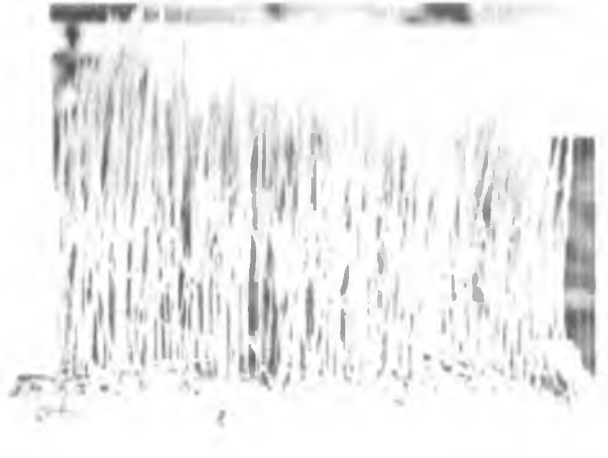
Experiments were conducted to evaluate the various type of rice transplanters and seeders by mechanizing the operations like land preparation by tilling and puddling were carried out before transplanting was done. The experiment was conducted to evaluate rice transplanters and seeders and to compare with manual broad casting for establishing rice.

1. Traditional method of planting (Broadcasting)
2. Use of drum-seeder
3. Transplanting by (Yanchi Transplanter)
4. Transplanting by (Walk behind Mahindra Transplanter)
5. Transplanting by (Kubota Transplanter)

In one of the experiment the mat nursery was raised by using an automatic paddy mat nursery machine. A complete demonstration and performance of rice farming machines was conducted evaluate the machines for rice cultivation in Kuttanad.



Mat nursery raising by plastic sheet and using automatic seeding machine using tray



Testing of rice transplanters and plastic sheet and tray mat nursery



Testing of manual drum seeder

Performance of various seeders / transplanting machines

Sl. No:	Equipment	Row Spacing,cm	Hill spacing,cm	Plant height,cm	No. of Tillers/hill	No. of Hill/sq.m
1	Drum Seeder	13-18	17-18	34-36.5	7-9	28-36
2	Kubota Make (manual mat seedling)	27-24	17-18	40-46	8-9	24-28
3	Kubota Make (Tray mat seedling)	24-27	12-13	30-34	6-8	28-32
4	Yanchi Make	17-19	12-14			
5	Mahindra Make	28-29	10-12	30-34	6-8	28-32
6	Broadcasting			21-22		372-400

Line seeding and row transplanting facilitates easy weeding and spraying which can reduce infestation of wild rice and reduce incidence of diseases and pests. This will also labour input for these operations.



Performance drums seeders and rice transplanter after 30 DAS/ planting and seeding

Manual and Power Weeders:



Testing of two row power paddy weeder and cono weeder

Two row power weeder and cono-weeders were tested in wetlands of Kuttanad. The imported three row paddy weeder is not suited for the traditional 25 cm below spacing since these machine blades are spaced and made for 30 cm row spacing. The blades were produced locally for the power weeders to operate below 25 cm spacing. However, imported weeders with aluminium hexagonal roller with tine hook type weeder attachments were superior in uprooting the weeds and works deep in the soil for better soil loosening which promote aeration and improves for the growth plants.

Development and Modification of Agricultural Machines

1. Self - propelled riding type motorized pre-germinated Seeders:

Power driven pre-germinated seeder was developed as an attachment to Yanchi-Self propelled riding type transplanter was integrated to drop seeds from drum seeders in line on the ridges for wetlands in Kuttanad is shown in Fig. The machine saves labour for weeding and gap filling operations by about one third and seed rate by half almost. The modified machine requires about 20-22 kg/acre only. This also facilitates easy and effective spraying application for rice. The prototype was tested at different locations of Kuttanad.



Prototype testing self propelled riding type motorized drum seeder at Ambalappuzha



Testing of Self –propelled riding type drum seeder at Kodumpunna

The average rice yield at Kodumpunna was about 3.10 t/acre. There was an increase in 10 % increase in yield. The line seeding facilitated easy weeding and removal wild rice plants early stage as it can be easily identified between the rows. The machine covers 0.45- 1 acre/ hour. Both line seeding and transplanting reduced the usage agro-chemicals against weeds and other diseases to great extent. The machine was tested at Ambalapuzha, Kodumpunna, Thodiyur near Karumnagapally and Kulanada. Puramattom, Ayamanam in Kottayam district etc.

Development of walking type powered drum seeder

A walking type drum seeder (figure-6) was developed using a commercially available power pack. Some problems were observed with existing transmission and modifications are made to rectify the problems observed. The work on developing walking type motorized drum seeder for pre-germinated rice in Kuttanad is under progress.



Figure.6 walking type of powered type of drum seeder

**Feasibility testing of mechanical broadcaster for sowing pre-germinated rice
Broadcasters:**



The fertilizer broadcaster was tested under the project for collecting the information about seed rate obtained per square meter on the threshing floor of the station. The settings of the machine were satisfactory for the desired seed rate. Therefore, the fertilizer broadcaster was tested in the field and the results are shown in table below.

Performance motorized seeder and mechanical broad caster with manual operated machines

No.	Type of Machine	Seed rate, Kg/acre	Plants/hill per Sq.m	No. of Tillers /Plant	Height of Plant after 59 th DAS	Yield/acre
1	Manual Drum Seeder	14-17	36-44	4-21	71-76	1770-34672
2	Motorized Drum Seeder	20-22	44-64	9-24	73.5-79	2950-3409
3	Manual Broadcaster	40-60	404-520	3-4	60-82	2901
4	Mechanical Broadcaster	22-27	436-648	3-4	71-76	3491-4163

Power Weeder

The existing power weeder has blade width to work at a spacing of 30cm. This spacing is suitable for the imported Kubota, Yanmar, Mahindra-Kubota transplanters. For rice transplanting machines and drum seeders having less than 25 cm spacing requires blades of 15-17 cm width. The production technology for production of this width was made through a local entrepreneur. These power weeders can be fitted with this reduced size of blades and can be operated in fields planted by Yanchi transplanter and manual drum seeders.

Paddy Earhead Thresher

Present practice of separating paddy seeds from plant panicle is by trampling by male/female labourers at the research stations. Generally lots of samples are being done like this during harvesting season. To reduce the drudgery and time of operation, a simple and easy to operate hand driven paddy thresher is developed. The fabricated thresher is shown below.



Working of hand operated paddy Earhead thresher

Development of Rhizome Planter for ginger and turmeric (M.Tech Thesis Project)

A semi-automatic three row rhizome planter was developed for ginger and turmeric planting. It consists of cartridge disc type metering mechanism rotating horizontally through a sprocket-chain drive from a lugged ground wheel. The rhizomes are stored in a trapezoidal tank for the rhizomes to slide down towards the metering disc. Also, adjacent to this, a fertilizer/manure tank is fixed having a screw type metering mechanism to regulate quantity of material dropped into the furrow. The planter have three shoe type furrow opener with slightly angled wings to brake open the soil and to place rhizomes seed set at the bottom of furrow

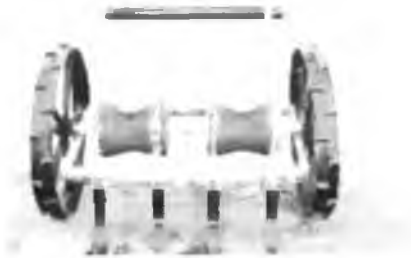


Rhizome planter for ginger and turmeric

At the rear side of the furrow openers and in between shoe type opener, the ridgers are positioned to cover the rhizomes dropped in the furrow. A seat with back rest is provided for the operators to regulate and control the metering mechanism performance. A three point hitch is provided to mount the planter with the tractor. All the components of the planter fixed on a main frame and rhizome and fertilizer hoppers are mounted on to the main base frame.

Development of a Four Row Drum type Seed Drill for Onattukara

A four row drum type seed drill was developed and fabricated for supply to OARS, Kayamkulam. Four furrow openers were fixed for opening the furrows for placement of seeds and at the rear, a roller attached was used as soil covering device to cover seeds deposited in the furrow. A pull handle was fixed at the front to pull drum seeder in the field. Three units of drum seed drill were fabricated. Two units were delivered to OARS, Kayamkulam. The cost of unit is Rs.8400/-. The testing of the unit for dry seeding of rice and other crops such as sesame is to be conducted in collaboration with OARS, Kayamkulam.



Four row drum type seed drill

II. Transfer of Technology

a. Training

Trainings were given to farmers, students and others. The list is given in below table. About 27 training was conducted to the farmers and farm workers. The rice mechanized technologies were presented in classes to VHSC students and others.

Training/ seminars conducted

Sl. No.	Seminar/ training	Date and no. of days	Place	Collaborated Agency/ department	No. of farmers attended/ participated
1	Seminar	20/6/2011 1 day	Puzhathi Grama Panch, Kannur	Agril Engg. Wing	
2	Training	07-08/07/2011-2day	RRS, Moncompu	State Agril. Dept.	
3	Training	10,11/11/2011-2day	kavalam	KB, Kavalam	
4	Seminar-Demonstration	07/01/2012	Kadakkapalli, Cherthala	Cherthala Thekku Kera Karashaka Swasarya Sangham	
5	Training	16-17/01/2012 – 2 Days	RRS, Moncompu	State Agril. Dept.	
6	Training	13-14/02/2012- 2 Days	Thakazhi, Alappuzha	Thakazhi Grama Panch	
7	Training	15-16/02/2012- 2 Days	Ambalapuzha North GP, Alappuzha	Ambalapuzha North GP, Alappuzha	
8	Training	17-18/02/2012-2Ddays	Ambalapuzha South GP, Alappuzha	Ambalapuzha South GP, Alappuzha	
9	Training	22/02/2012- 1Days	Ambalapuzha South GP, Alappuzha	Ambalapuzha South GP, Alappuzha	
10	Training	22-23/02/2012	Purakkadu	Purakkadu. K. Bhavan	
11	Training	23-24 & 12/3/2012 -3 Days	Karuvatta	Karuvatta, GP	
12	Training	25/02/2012,13/03/2012 - 2 Days	Ambalapuzha	Ambalapuzha South GP, Alappuzha	
13	Training	7-9/03/2012 3 Days	RRS, Moncompu	KVK Kumarakom	
12	Training	15-16/03/2012	Purakkadu, Alappuzha	Purakkadu KB	
13	Training	15-16/03/2012 – 2 Days	Thakazhi, Alappuzha	Thakzhi KB	
14	Training	18/05/2012 – 1 Day	Mutholi , Kottayam	Mutholi KB, Pala	
15	Training	14-15/6/2012 – 2 Days	Vazhapally, Paippad	Paippad KB, Changancherry	
16	Training	22-23/6/2012 – 2 Days	Vazhapally, Paippad	Paippad KB, Changancherry	
17	Training	6-7/7/2012 – 2 Days	Vazhapally, Paippad	Paippad KB, Changancherry	
18	Training	26-27/7/2012	Mutholi, Pala	Mutholi KB, Pala	

19	Training	5/10/2012 – 1 day	Vaikkom	Vaikkom KB, vaikkom
20	Training	06/12/2012	RRS, Moncompu	Pandarakulam Padasekharam, Nedumudi KB
21	Training	22/2/2013 – 1 Day	RRs, Moncompu	Karukachal KB , Kottayam
22	Training	12/3/2015- 1 Day	RRS, Moncompu	Nedumudi KB
23	Training	5 Days-4/5/15 to 9/5/15	RRS, Moncompu	GVHSS,Thalavady
24	Training	1/2/16 to 9/2/16 -6 days	RRS, Moncompu	KVK , Kottayam
25	Training	20/2/17 to 4/3/17- 10 Days	RRS, Moncompu	Kuttanad Taluk
26	Training	6/3/17 to 17/3/17- 10 Days	RRS, Moncompu	Kuttanad Taluk



Trainings conducted on agricultural machines and hands on practice to operate

Demonstrations:



Demonstrations conducted at various locations in collaboration with different agencies

Different agricultural machines, tractors, garden tillers, rice transplanters, manual drum seeders, automatic mat tray seeding machines, mechanical broadcasters were demonstrated in many Panchayaths in collaboration with Krishi Bhavans and Paddasekhra samitis.

Feasibility testing of walking type transplanter at RRS, Vytilla

A light weight walking type rice transplanter was tested at Vytilla station for floatation and traction related performance. The weight transplanter is below 150 kg of Yanmar Make, Japan (figure.1) was able to operate without any sinkage problems. This transplanter can be used to transplant the Pokkali fields and can mechanize the operation from the traditional rice establishing method followed for Pokkali cultivation. Further, extensive trials have to be conducted at RRS, Vytilla farm and farmers fields.



Figure.3 Trial tests of walking type rice transplanter at RRS, Vytilla for pokkali

b. Miscellaneous Activities

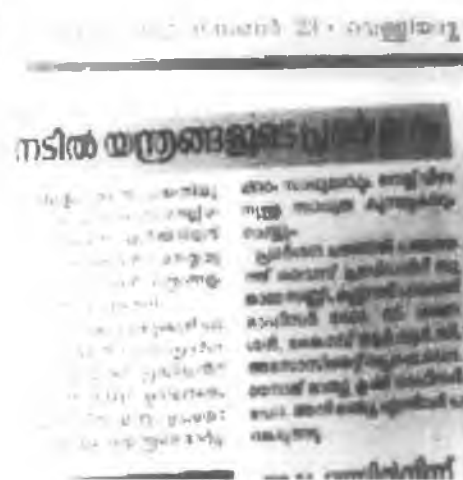
1. Participated in the performance evaluation of rice combines of different companies viz., Kubota India Ltd, Swaraj Pvt. Ltd., and Claas India Pvt. Ltd., in the month of April and May, 2011
2. Participated in the performance evaluation of rice combines of different company Claas India Pvt. Ltd., in the month of April and May, 2011



A documentary was produced about the mechanized rice farming in Kuttanad.

News reports and others

- Demonstration of mat nursery preparation and mechanical transplanting was done at Kottamukkam, and Ambalapuzha South Krishi Bhavan. The comparative study of mechanical transplanting and traditional method is undergoing



- 500 Nos. of File folders and Note pads for training programme has been prepared.



- Participate in Exhibition programmes at different areas like Thiruvalla, Cherthala, Kottayam etc.



- A Booklet on agricultural machineries, suitable for Kuttanad area in Malayalam is in progress.



Financial Details:

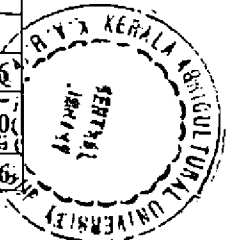
Years	Amount sanctioned from Govt. Kerala, Rs	Expenditure, Rs	Balance Amount, Rs.	Remarks
2010-11	450,00,000	96,916		
2011-12		45,52,111		
2012-13		16,18,002		
2013-14		1,81,56,369		
2014-15		3421097		
2015-16		14442257		
2016-17		2655442		
			336600	Refund From Bank in 16-17
Total	450,00,000	44942194	57806	
G. Total	45000000	44942194	394406	

Place: Moncompu
Date:31/03/2017

Professor (Engg.) & in- Charge Officer on Special Duty,
KAU- RKVY, Agricultural Engineering Project

Appendix-I
Establishing Centre for Farm Machinery Research Development & Training in Alappuzha Dist.

Sl.No	Sub Head Code	Sub Head	As per DPR(in lakhs)	EXPENDITURE, Rs.							Total expenditure up to 31.03.2017	Balance of funds available as on 01.04.2017
				2010-11	2011-12	2012-13	2013-14	2014-15	2015-16	2016-17		
1	121	Tech /RA & S.S	3500000	0	119604	47647	40124	69177	94820	105200	476572	
2	300	TA (Travelling Allowance)	300000	0	11975	3075	10005	24937	17283	22061	89336	
3	416	Furniture/ Fixture	300000	0	14078	55075	35750	0	99968	0	204871	
4	420	Equipment/ machinery	15100000	0	2730999	966468	2807610	3108319	13484597	1515386	24613379	
5	153	Contractual Service	1500000	13286	340732	286663	289607	88930	83510	116460	1219188	
6	210	Research Material	2100000	0	67484	51434	191721	86696	77669	71875	546879	
7	221	Stationary / Printing	300000	4729	60527	909	6494	0	81699	18264	172622	
8	330	Hiring of Vehicles	800000	27400	0	22246	11335	7000	22619	143776	234376	
9	410	Rep. & Maint.	500000	0	0	0	0	0	0	38962	38962	
10	418	IT Mainten.	700000	49511	0	0	0	901	0	99500	149912	
11	812	Training	600000	0	99862	49462	20520	10986	4065	45421	230316	
12	840	Other items	1500000	1990	44685	0	19103	24151	190924	305190	586043	
13	910	Civil Works	15000000	0	199700	100000	14700000	0	0	300	15000000	
14	924		2500000	0	861765	0	0	0	0	0	861765	
15	340	Others	300000	0	700	35023	24100	0	285103	173047	517973	
16	Expenditure Total		45000000	96916	4552111	1618002	18156369	3421097	14442257	2655442	44942194	57806
17	Balance Details-Bank Refund of GCMS Purchase in 2016-17											3,36,600
19	Total		45000000	96916	4552111	1618002	18156369	3421097	14442257	2655442	44942194	394406



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Appendix-II

List of Equipment & Machinery

Sl No.	Stock Regis. Page No:	Name of Article & Page No:	Date	Name and date of voucher/ invoice	From whom received or to whom issued	Rate	Quantity	Total amount
1	6	Steel Exec. Table	14/1/11	Bill No:10156 dt: 13/1/11	SIDCO, Alappuzha		3 No.	
2	7	Executive revolving Chair	14/1/11	Bill No:10156 dt: 13/1/11	SIDCO,Alappuzha		1	
3	8	Computer chair	14/1/11& 22/6/12	Bill No:10156 dt: 13/1/11 Bill:3028 dt:22/6/12	SIDCO,Alappuzha		10	
4	9	Steel Almirah	14/1/11	Bill No:10157 dt: 13/1/11	SIDCO,Alappuzha		1 No.	
5	10	Steel Slotted angle rack- panels (72"x36"x15")	14/1/11	Bill No:10157 dt: 13/1/11	SIDCO,Alappuzha		1 No.	
		Steel Cabinet/Almirah with Locker	29/10/12	SMC AL/PY/0036 dtd 22/10/12	SIDCO,Alappuzha	7470	1	
		Steel Cabinet/Almirah without locker	29/10/12			7048	1	
		Industrial Locker	29/10/12			12978	1	
6		Lap top MSI 810 MS,PR21, Black NB	21/1/11	CPI-10646 dt:20/1/2011	Computer Park, Changancherry		1 No.	
7	11	Plastic Moulded Chair	22/6/12	Bill No.3028 dtd 31/5/12	SIDCO,Alappuzha	26809	25 nos.	2624/piece
8	12	Steel Slotted angle rack-6 panels (72"x36"x15")	14/1/11	Bill No:10156 dt: 13/1/11	SIDCO,Alappuzha		1 No.	
9	13	Scanner-HP2410 Make	18/3/2011	CP12521 dtd 18/3/2011	Computer Park, Chanagancherry	3750	1	
10	14	Hard Disk -External Segate make	18/3/2011	CP12521 dtd 18/3/2011	Computer Park, Chanagancherry	2400	1	
11	15	Key Board-HP	15/12/15	Bill No. Nil dated 14/12/15	Logic Systems Cullen Road, Alapuzha	450	1	
12	16	Hub Port -4	17/5/2011	CP12521 dtd 18/3/2011	Computer Park, Chanagancherry	250	1	
13	17	Spilke 6 outlet-Belkin	17/5/2011	CP12521 dtd 18/3/2011	Computer Park, Chanagancherry	1800	3	
14	18	Card Reader-Amkette Tech.com Make	17/5/2011	CP12521 dtd 18/3/2011	Computer Park, Chanagancherry	150		
15	19	HCL PC Core i5 Serial No:1113AB099215 With Monitor	17/5/2011	CP12520 dtd 18/3/2011	Computer Park, Chanagancherry	32398	1 each	
		Lenova Alliance PC	30/3/17	Bill no.Nil	Popular Computers	48800	1	Entry Made

		with inbuilt CPU Model -PRIN 19.5" Screen		dated Nil	Kiran Complex ,Alappuzha			in Page No:131
16	20	Printer HP- 213nf MFP	17/5/2011	CP1325 dtd 9/5/11	Computer Park, Chanagancherry	164499	1	
17	22	UPS APC -1 KV	9/5/11	CP1328 dtd 18/3/2011	Computer Park, Chanagancherry	12000		
18	24	John Deere Tractor With Rotavator attachment	14/6/11	Invoice No. Amb/92/11-12 dtd 3/6/2011	KAICO, Ambalapuzha	965186	1 each no	4 % Cess
19	25	Sanyo PLC LCD Projector with accessories	4/7/11	Bill No.20391 dtd 1/7/11	Crystal Technologies, Room No.10,AU Chambers, Unnes Road, Kochi-682035	38028	1 unit	
20	26	Weed Cutter Falcon ;2 Stroke 2.1 hp	14/10/11	Bill No.Amb/131-11/11-12:dtd 13/10/11	KAICO, Ambalapuzha	26000	1	
21	27	Coconut Palm Climber	14/10/11	Bill No.Amb/131-11/11-12 dtd 13/10/11	KAICO, Ambalapuzha	5850	2 nos	Two types (Sitting & Standing types)
22	28	Petty Para Model	14/10/11	Bill No.Amb/131-11/11-12:dtd 13/10/11	KAICO, Ambalapuzha			
23	30	Mahindra MP 46 Walk Behind Rice Transplanter	14/10/11	Bill No.Amb/131-11/11-12 dtd 13/10/11	KAICO, Ambalapuzha	220000	1	
24	31	Panasonic Make - TV -50x 30"	25/8/11	Bill no. A2861 dtd 19/8/11	M/s Ideal Home Appliances Trivandrum	64750	1	
25	32	Rice Transplanter Kubota Make	1/12/11	Bill No.Amb/131-133/11-12 dtd 24/8/11	KAICO, Ambalapuzha	1025000	1	
26	34	Power Tiller- KAMCO Make	12/11/11	Bill No.11212125 dtd 10/10/11	KAMCO, Athani	123495	1	
27	35	Steel Wheel /Tail Skid Trailer	12/12/11	11513690 dtd 10/10/11	KAMCO, Athani	50209	1 each	
28	36	Hitch frame for Plough/Trailer	12/12/11	11513691 dtd 10/10/11	KAMCO, Athani	2471	1	
29	37	Power Reaper-KR 120 M	12/12/11	41118475 dtd 7/10/11	KAMCO, Athani	68146	1	
30	38	Steel Wheel Stud-L&R	12/12/11	41118474 dtd 7/10/11	KAMCO, Athani	2050	1 each	
31	39	Temporary Shed	27/3/12	Amb/310/11-12 dtd 15/3/12	KAICO, Ambalapuzha	150200		
32	41	Pedestal Fan & Wall Fan	29/3/12	Invoice No.3390000669	J.M Electricals Pallikootamma	6015	2 & 1 each	
33	42	Temporary Shed	27/3/12	Amb/311/11-12 dtd 15/3/12	KAICO, Ambalapuzha	49500		Part bill of item in page

								No:39
34	43	Wooden Work Table Open	5/6/12	Bill No. Nil dated 5/6/12	M/s. Arvind & Krishnan, Kurumpana, Pandalam - P.O	29500	1	Total -2
		Wooden Work Bench Table with cabinets with lock	14/3/17	Bill No. Nil dated 14/3/17		35750	1	
35	53	Fertilizer Broadcaster	26/12/12 28/8/14 & 27/1/15	Invoice Nos: 180 dtd 19/12/12; 112 dtd 23/7/14 & 192 dtd 25/1/15	Bhuvana Enterprises Ram Nagar, Coimbatore-9	4600 (for 2 nos); Rs 5600 for 2 nos.; & 4500/- for 1 no.	4	
36	54	Cono weeder	4/1/13	Bill No. 520/12-13 dtd 30/12/12	Radico, Alappuzha	4950	3	
37	55	Paddy Drum Seeder	4/1/13	Bill No: 4/1/13 & 17/3/14	RAIDCO, Alappuzha	4090 + 4090	2	
38	56	Temporary Shed	31/3/13	Bill No. Amb/248/12-13 dtd 26/3/13	KAICO, Ambalapuzha	100000	1	Implement Shed with RRS Shed for 500 Sq.Ft
39	58	Manual Tree Pruner	31/3/13	Bill No: 249/12-13 dtd 26/3/13 1	KAICO, Ambalapuzha	11000	1	
		Telescopic Tree Pruner- 2 hp				30,000	1	
		3- Row Paddy Weeder - Engine Operated				77500	1	
		KAMCO Terra Tractor KDW-702				408935	1	
		Post Hole Digger - 9/12/18 inches dia.				149500	3 nos.	Three sizes
40	59	Sprayer- Rocking Sprayer	31/7/13	Bill No: 120/13-14	RAIDCO, Alappuzha	4950	1	
		-Marut Compressor type				3950	1	
		-Knapsack				1950	1	
		-Bolo-Power Sprayer/Duster				133440	1	
41	61	Chain saw 16"	19/3/14	Bill No: 18706 dtd 17/3/14	RAIDCO, Alappuzha	27000	1	
42	62	Power Sprayer- STHIL Make	19/3/14	Bill No: 18706 dtd 17/3/14	RAIDCO Alappuzha	30850		Vat 5% Plus
43	63	Soil Earth Auger - Engine operated/ Manual	19/3/14	Bill No: 18706 dtd 17/3/14	RAIDCO Alappuzha	59240	1	Vat 5% plus
44	64	Multi system With attachments	19/3/14	Bill No: 18706 dtd 17/3/14	RAIDCO, Alappuzha	127229	3 nos	
45	65	Rice Paddy Weeder - Engine Powered	19/3/14	Bill No: 18706 dtd 17/3/14	Raidco Alappuzha			
46	66	Engine - Honda 1.5 hp	19/3/14	Bill No: 18703 dtd 17/3/14	Raidco Alappuzha	13060	1	Vat 5% plus
		Engine Honda -3 hp	19/3/14	Bill No: 18703 dtd 17/3/14		15475	1	Vat 5 % plus
		Diesel Engine- 3 hp Vijay Villers	21/3/14	Bill No: 18719 dtd 20/3/14		26908	1	

47	67	Transplanter Yanchi 8 row paddy transplanter	19/3/14	Invoice No:19/3/14	Radico, Alappuzha	176400	1	
48	68	Ridger	28/11/14	Invoice No. 22717 dtd 21/11/14	Radico, Alappuzha	3938	1	Plus vat 5%
		Sub soiler	28/11/14	Invoice No. 22717 dtd 21/11/14	Radico, Alappuzha	28476	1	Plus vat 5%
		Bund Former	28/11/14	Invoice No. 22717 dtd 21/11/14	Radico, Alappuzha	24285	1	Plus vat 5%
49	69	Wheel Barrow	2/12/14	Invoice No: 22719 dtd 29/11/14	Raidco , Alappuzha	9450	2 nos.	
50	71	Straw baler	21/3/14	Invoice No. 18707 dtd 17/3/14	Radico, Alappuzha	394250	1	
51	72	Fertilizer Broadcaster	28/5/14	Bill No. 112 dtd 27/7/14	Radico ,Alappuzha	5600	2 nos.	
52	73	Tool Box	13/11/14	Bill No.182288 dtd 5/11/14	M/s. Sundar Tools Alappuzha	735	1	
53	76	Grafting Tools	27/11/15	Bill No.193 dtd 25/11/15	Bhuvana Enterprises, Ram Nagar, Coimbatore-9	2454	3 sets	Bud/Slot / Omega Cut tools
54	78	Centrifugal Spreader	16/5/15	Amb/358/14-15	KAICO, Amabalapuzha Br.	68200	1	
55	79	Compost Spreader	16/5/15	Amb/358/14-15	KAICO, Amabalapuzha Br.	189500	1	
56	80	Rotary Slasher	16/5/15	Amb/358/14-15	KAICO, Amabalapuzha Br.	58300	1	
57	81	Multi purpose intercultivator- Attachments Kissan Craft Make	16/5/15	Amb/358/14-15	KAICO, Amabalapuzha Br.	110000	1	
		Iron wheel	16/5/15	Amb/358/14-15	KAICO, Amabalapuzha Br.	7473	1 pair	
		Reaper	16/5/15	Amb/358/14-15	KAICO, Amabalapuzha Br.	42000	1	
		Ridger	16/5/15	Amb/358/14-15	KAICO, Amabalapuzha Br.	5000	1	
		Plough	16/5/15	Amb/358/14-15	KAICO, Amabalapuzha Br.	11000	1	
		Leveller	16/5/15	Amb/358/14-15	KAICO, Amabalapuzha Br.	3000	1	
		Yanmar Transplanter	16/5/15	Amb/358/14-15	KAICO, Amabalapuzha Br.	250000	1	Transferred to RRS, Vytilla vide order no.R6/61614/ 10 dated 8/5/15
58	84	Analytical balance	25/3/15	Invoice No:11981 dtd 25/3 15	Calgon Scientific Co., Vinayaka,LBS Road, Ponekara,	45280	1	

					Edappally, Ernakulam			
59	85	Rotary Centrifuge	25/3/15	Invoice No:11979 dtd 25/3/15	Calgon Scientific Co., Vinayaka,LBS Road, Ponckara, Edappally, Ernakulam	183230	1 no.	V guard Stablizer with rotors nos:4
60	86	Moisture Analyzer	25/3/15	Invoice No:11979 dtd 25/3/15	Calgon Scientific Co., Vinayaka, LBS Road, Ponckara, Edappally, Ernakulam	108100	1	
61	87	Colorimeter	25/3/15	Invoice No: 25/3/15	Scientiechs 1 st Floor, AR Complex, Palace Rd. Mankavu, Calicut	17333	1	
62	88	Rotary Vacuum Evaporator	25/3/15	Invoice No.25/3/15	Scientiechs 1 st Floor, AR Complex, Palace Rd. Mankavu, Calicut	69000 +18500	1	Vat 5% plus (vacuum pump - 18500/-)
63	89	Protein Estimation System	26/3/15	Invoice No: PEQ/Mp?ES/31 A-1113/14-15 dtd 26/3/15	Pelican Equipments 2 nd Floor, Burkit Rd. T Nagar, Chennai- 600007	419843	1	With other accessories
64	90	Rheometer	26/3/15	Invoice 10188349 dtd 25/3/15	M/s. Anton Paar Anton Paar – Strasse, 20, A-8054 , Grag Austria	1361991	1	
65	91	Universal Moisture Meter	26/3/15	Invoice No: 79/14-15 dtd 25/3/15	M/s .Indosaw B-7, Ram Nagar Indl. Estate, Roorkee- 247667	29128	1	
66	92	Drier RRL NC Model	10/2/16	Invoice No:129 dtd 10/2/16	Anna Industries Angamally	49150	1	
67	93	Abbe Refractometer	1/3/16	Invoice No:UA/1616/15 dtd 29/2/16	Unversal Agencies Palakkal Angadi Thrissur	33000	1	
68	94	Microwave Oven	29/2/16	Invoice No:1043 dtd 26/2/16	Konbattu Agencies AC Road Changanacherry	17250	1	
69	95	Combine Harvester	11/3/16	Bil No:35 dtd 2/3/16	RAIDCO, Alappuzha Branch	2399500	1	
70	96	Vaccum Packaging Machine	30/3/16	Invoice No:12049 dtd 30/3/16	Sevana Elect Appliances Pvt. Ltd. Kizhakeamabbalam Ernakulam	149793	1	
71		Tray Drier	30/3/16	Invoice No:12049 dtd 30/3/16	Sevana Elect Appliances Pvt. Ltd. Kizhakeamabbalam Ernakulam	94500	1	

72	97	Wall Clock	16/3/16	Bill No: 23077 dtd 15/3/16	Nettikadan Watch Co., Aluva Road Angamally	2900	1	
73	99	Furniture-(Jefferson Chair)	29/3/16	Invoice No:15- 16/0382 dtd 29/3/16	SIDCO, Alappuzha Branch	72500	20	
74	100	Notice Board	29/3/16	Invoice No:15- 16/0382 dtd 29/3/16	SIDCO, Alappuzha Branch	7088	1	
75	101	Wooden Stool	29/3/16	Invoice No:15- 16/0382 dtd 29/3/16	SIDCO, Alappuzha Branch	3302	1	Size-40x40x65 Taxes 14.5 plus
			29/3/16	Invoice No:15- 16/0382 dtd 29/3/16	SIDCO, Alappuzha Branch	2872	1	Size:35x35x50 Taxes 14.5 plus
			29/3/16	Invoice No:15- 16/0382 dtd 29/3/16	SIDCO, Alappuzha Branch	1546	1	Size:35x35x50 (Anjili), Taxes 14.5 plus
76	102	UV -Visible Spectrophotometer	18/5/16	Invoice No:924003436 dtd 28/16	Thermo Fisher Scientific India Pvt. Ltd Bombay , Delphi Hiranandani Park- Business Park, PowaiBombay- 400076	1075080	1	Through Scientific Enterprises , Vytilla - 682019
		UPS and Battery	17/3/17	Invoice No:1905 dtd 14/317	Scientific Enterprises , Vytilla -682019	49500	1	
77	103	Rotary Sieve with Sieves	19/3/16	Invoice No:375 /15-16 dtd 19/3/16	M/s Integrated Instruments & Services, XIX/427, Asha.G Building, Muvattupuzha	87158	1 Shaker Plus IS Sieves set(1 Set) & 6 nos. sieves of Different sizes	58205;8100 & 8805 Plus 14.5 % tax Extra
78	104	Water Activity Meter	29/4/16	Bill No:22 dtd 16/4/16	Svan Analytical Instruments Pvt. Ltd\ ROW House- C-3, Sector-4 Opp. Fire Brigade Airoli, Mumbai	353419	1	
79	105	Plastic Furniture (Lab Type shelf/Cabinet)	23/3/16	Bill No:1866 dtd 27/3/16	Great Indian Trading Company M.H Meera Sahib Complex, Kollakadvu, Chengannur	7960	2 nos.	CHSTR- 2490/- and FMDR- 5470/-
80	106	Excavator- V1020-3- P Yanmar Make	16/4/16	Invoice No: 1190501258 dtd 30/3/16	DOZCO India Pvt. Ltd., 4-191B, Thaikkavau, NH-17 , Cheranallor P.O, Cochin	2150000	1	

81	107	Oxygen & Carbon dioxide Analyzer-Checkmate Model	24/5/16	Invoice No:10 dtd 24/5/16	Elixir Technologies No:9,GuruKurpa, Ground Floor, 14A Cross,Behind MES College, Malleswaram, Bangalore	595400	1	
82	110	Freezer Dryer	28/6/16	Invoice No: 24/6/16	Lark Innovative Technoledge,	515250	1	
83	111	Fluidized Dryer with Air Compressor	28/6/16	Invoice Book No:01-R-21 dtd 16/6/16	Shakti Pharmatech Pvt. Ltd. @7/ Saket Indl. Estate, NH-47 Sarkhej Bavala Rd. Moraiya, Sanand Ahmedabad	10,00,000	1	
84	112	Precision Lab Hot Air Oven	22/6/16	Bill No:456/16-17 dtd 22/6/16	Scientific Enterprises, P.B No:1951 Vytilla-682019	27560	1	
85	113	Rice Mill	28/3/16	Invoice No: 3240/15-16 dtd 28/3/16	Scientific Enterprises, P.B No:1951 Vytilla-682019	83475	1	
86	114	Laminar Flow	22/6/16	Invoice no: 454/16-17 dtd 27/6/17	Scientific Enterprises, P.B No:1951 Vytilla-682019	65800	1	
87	115	Muffle Furnace	22/6/16	Invoice No:455 dtd 27/6/16	Scientific Enterprises, P.B No:1951 Vytilla-682019	126785	1	
88	116	Vacuum Oven	28/7/16	Invoice No:647/16-17 dtd 28/7/16	Scientific Enterprises, P.B No:1951 Vytilla-682019	110250	1	
89	117	Autoclave	28/7/16	Invoice No:648/16-17 dtd 28/7/16	Scientific Enterprises, P.B No:1951 Vytilla-682019	57880	1	
90	118	Hammer Mill	28/7/16	Invoice No:643/16-17 dtd 28/7/16	Scientific Enterprises, P.B No:1951 Vytilla-682019	164400	1	
91	119	Ball Mill	28/7/16	Invoice No:642/16-17 dtd 28/7/16	Scientific Enterprises, P.B No:1951 Vytilla-682019	56130		
92	120	Mini Oil Expeller	28/7/16	Invoice No: 643/16-17 dtd 28/7/16	Scientific Enterprises, P.B No:1951 Vytilla-682019	283750.01	1	
93	121	Cone Polisher	27/7/16	Invoice No: 642/16-17 dtd 27/7/16	Scientific Enterprises, P.B No:1951 Vytilla-682019	298500	1	

94	122	Mini Rice Mill	27/7/16	Invoice No: 647/16-17 dtd 27/7/16	Scientific Enterprises, P.B No:1951 Vytilla-682019	308400	1	
95	123	Vertical Deep Freezer	28/7/16	Invoice No:645/16-17 dtd 28/7/16	Scientific Enterprises, P.B No:1951 Vytilla-682019	85300	1	
96	124	Gas chromatograph with accessories	20/6/16	Bill no:3652191 dtd 20/6/16	Scientific Enterprises, P.B No:1951 Vytilla-682019	41000 dollars	1	Rs.27763640 0/- with all expenses
97	127	Wonder Climber	17/3/17	P.Invoice No: Nil dtd 9/3/17	RAIDCO Alappuzha Br.	7550	1	
98	130	Pump Set-CF			RAIDCO Alappuzha Br.		1	
99	131	Computer-Lenova	5/4/17	Invoice No:9323 dtd 5/4/17	Popular Computers Kiran Complex, Vazcherry Alappuzha	48800	1	
100	132	Ear Head Thresher	21/11/17	CIAE/PPC/201 5-16 dtd 16/11/15	CIAE, Nabibagh , Berasia Road, Bhopal	26000	1	
101	133	Dynamometer	30/8/17	Invoice No:0113/17-18 dtd 28/8/17	Scientific Enterprises P.B -1951 Vytilla-682019	61300	1	
102	134	Proving Ring	28/8/17	Invoice No:463 /17-18 dtd 30/6/17	Scientific Enterprises P.B No:1951 Vytilla-682019	19250	2 nos.	100 kg & 50 kg
103	135	Generator- Diesel/7.5KVA	23/5/2017	Invoice No: MEU/122 dtd 23/5/17	Prompt Machine Tools Co. Kaloor, Kadavanthra, Kochi	265545	1	

APPENDIX III
Tools and Machinery Register Details

Sl No	Stock Register Page No.	Name of Article	Date	Name and date of voucher/ invoice	From whom received or to whom issued	Rate	Quantity	Total amount	Tax/ VAT
1	14	Steel Rule-30 cm	2/9/2011	B/167/11/12 dated 25/8/11	Venus Machine Tools, Valanjambalam, Ernakulam	20	2	40	12.5
2	15	Steel Rule – 60 cm	2/9/2011	B/167/11/12 dated 25/8/11	Venus Machine Tools, Valanjambalam, Ernakulam	140	2	280	12.5
3	16	Steel Rule – 100 cm	2/9/2011	B/167/11/12 dated 25/8/11	Venus Machine Tools, Valanjambalam, Ernakulam	201	2	402	12.5
4	17	Engineers steel square - 6"	2/9/2011	B/167/11/12 dated 25/8/11	Venus Machine Tools, Valanjambalam, Ernakulam	154	2	308	4
5	18	Engineers Steel Square – 12"	2/9/2011	B/167/11/12 dated 25/8/11	Venus Machine Tools, Valanjambalam, Ernakulam	332	2	664	4
6	19	Try Square – 6"	2/9/2011	B/167/11/12 dated 25/8/11	Venus Machine Tools, Valanjambalam, Ernakulam	63	2	126	4
7	20	Try Square – 12"	2/9/2011	B/167/11/12 dated 25/8/11	Venus Machine Tools, Valanjambalam, Ernakulam	125	2	250	4
8	21	Outside Caliper, Spring type – 6"	2/9/2011	B/167/11/12 dated 25/8/11	Venus Machine Tools, Valanjambalam, Ernakulam	36	2	72	4
9	22	Inside calliper – 6"	2/9/2011	B/167/11/12 dated 25/8/11	Venus Machine Tools, Valanjambalam, Ernakulam	36	2	72	4
10	23	Sahil Brand Bench vise – 6"	2/9/2011	B/167/11/12 dated 25/8/11	Venus Machine Tools, Valanjambalam, Ernakulam	3000	1	3000	4

11	24	Taparia D-E Spanner set 6-32	2/9/2011	B/167/11/12 dated 25/8/11	Venus Machine Tools, Valanjambalam, Ernakulam	444	1	444	4
12	25	Taparia Adjustable Spanner – 12”	2/9/2011	B/167/11/12 dated 25/8/11	Venus Machine Tools, Valanjambalam, Ernakulam	272	1	272	4
13	26	JK File flat, 150mm, Bastard W/H	2/9/2011	B/167/11/12 dated 25/8/11	Venus Machine Tools, Valanjambalam, Ernakulam	127	2	254	4
14	27	JK File flat 250 mm	2/9/2011	B/167/11/12 dated 25/8/11	Venus Machine Tools, Valanjambalam, Ernakulam	131	2	262	4
15	28	JK File flat, 300 mm, Bastard S/F	2/9/2011	B/167/11/12 dated 25/8/11	Venus Machine Tools, Valanjambalam, Ernakulam	198	2	396	4
16	29	JK File round – 6”	2/9/2011	B/167/11/12 dated 25/8/11	Venus Machine Tools, Valanjambalam, Ernakulam	180	2	360	4
17	30	JK File round – 10”	2/9/2011	B/167/11/12 dated 25/8/11	Venus Machine Tools, Valanjambalam, Ernakulam	261	2	522	4
18	31	JK File round - 12”	2/9/2011	B/167/11/12 dated 25/8/11	Venus Machine Tools, Valanjambalam, Ernakulam	351	2	702	4
19	32	JK File half round – 6”	2/9/2011	B/167/11/12 dated 25/8/11	Venus Machine Tools, Valanjambalam, Ernakulam	253	2	506	4
20	33	JK File half round – 10”	2/9/2011	B/167/11/12 dated 25/8/11	Venus Machine Tools, Valanjambalam, Ernakulam	409	2	88	4
21	34	JK File half round – 12”	2/9/2011	B/167/11/12 dated 25/8/11	Venus Machine Tools, Valanjambalam, Ernakulam	560	2	1120	4
22	35	Hack saw adjustable, Fix	2/9/2011	B/167/11/12 dated 25/8/11	Venus Machine Tools, Valanjambalam,	79	1	79	4

					Ernakulam				
23	36	Hacksaw solid pipewala	2/9/2011	B/167/11/12 dated 25/8/11	Venus Machine Tools, Valanjambalam, Ernakulam	158	1	158	4
24	37	Centre punch – 4”	2/9/2011	B/167/11/12 dated 25/8/11	Venus Machine Tools, Valanjambalam, Ernakulam	21	1	21	4
25	38	Centre punch – 6”	2/9/2011	B/167/11/12 dated 25/8/11	Venus Machine Tools, Valanjambalam, Ernakulam	34	1	34	4
26	39	Number punch set ¼”	2/9/2011	B/167/11/12 dated 25/8/11	Venus Machine Tools, Valanjambalam, Ernakulam	183	1	183	4
27	40	Number punch set 3/16”	2/9/2011	B/167/11/12 dated 25/8/11	Venus Machine Tools, Valanjambalam, Ernakulam	153	1	153	4
28	41	Letter set ¼”	2/9/2011	B/167/11/12 dated 25/8/11	Venus Machine Tools, Valanjambalam, Ernakulam	549	1	549	4
29	42	Letter set 3/16”	2/9/2011	B/167/11/12 dated 25/8/11	Venus Machine Tools, Valanjambalam, Ernakulam	456	1	456	4
30	43	Scribler 7” sagar	2/9/2011	B/167/11/12 dated 25/8/11	Venus Machine Tools, Valanjambalam, Ernakulam	12	2	24	4
31	44	Scribler 150 mm	2/9/2011	B/167/11/12 dated 25/8/11	Venus Machine Tools, Valanjambalam, Ernakulam	24	2	48	4
32	45	Ball peen hammer 800g	2/9/2011	B/167/11/12 dated 25/8/11	Venus Machine Tools, Valanjambalam, Ernakulam	195	2	390	4
33	46	Hammer cross peen	2/9/2011	B/167/11/12 dated 25/8/11	Venus Machine Tools, Valanjambalam, Ernakulam	155	2	310	4
34	47	Sledge hammer 2lbs	2/9/2011	B/167/11/12 dated	Venus Machine Tools,	106	2	212	4

				25/8/11	Valanjambalam, Ernakulam				
35	48	Sledge hammer 4lbs	2/9/2011	B/167/11/12 dated 25/8/11	Venus Machine Tools, Valanjambalam, Ernakulam	176	2	352	4
36	49	Sledge hammer 8lbs	2/9/2011	B/167/11/12 dated 25/8/11	Venus Machine Tools, Valanjambalam, Ernakulam	327	1	327	4
37	50	Claw hammer 1lbs	2/9/2011	B/167/11/12 dated 25/8/11	Venus Machine Tools, Valanjambalam, Ernakulam	162	1	162	4
38	51	Taparia Screw driver set 8-12	2/9/2011	B/167/11/12 dated 25/8/11	Venus Machine Tools, Valanjambalam, Ernakulam	157	1	157	4
39	52	Taparia pipe wrench 300mm 1273	2/9/2011	B/167/11/12 dated 25/8/11	Venus Machine Tools, Valanjambalam, Ernakulam	201	1	201	4
40	53	Taparia pipe wrench 14"	2/9/2011	B/167/11/12 dated 25/8/11	Venus Machine Tools, Valanjambalam, Ernakulam	238	1	238	4
41	54	Taparia nose plier 1430-6"	2/9/2011	B/167/11/12 dated 25/8/11	Venus Machine Tools, Valanjambalam, Ernakulam	125	1	125	4
42	55	Taparia combination plier 6" 1621(165mm)	2/9/2011	B/167/11/12 dated 25/8/11	Venus Machine Tools, Valanjambalam, Ernakulam	158	1	158	4
43	56	Taparia combination plier 8"	2/9/2011	B/167/11/12 dated 25/8/11	Venus Machine Tools, Valanjambalam, Ernakulam	178	1	178	4
44	57	Jack planner no.4	2/9/2011	B/167/11/12 dated 25/8/11	Venus Machine Tools, Valanjambalam, Ernakulam	488	1	488	4
45	58	Dayton Allen key set	2/9/2011	B/167/11/12 dated 25/8/11	Venus Machine Tools, Valanjambalam, Ernakulam	116	1	116	4
46	59	Dewalt Angle	2/9/2011	B/167/11/12	Venus Machine	2352	1	2352	4

		grinder DW801		dated 25/8/11	Tools, Valanjambalam, Ernakulam				
47	60	Hitachi Brand Electric Drill model DV 13SS, 13mm	2/9/2011	B/167/11/12 dated 25/8/11	Venus Machine Tools, Valanjambalam, Ernakulam	2853	1	2853	4
48	61	Rilon Brand arc welding machine, 200amps, ARC 200	2/9/2011	B/167/11/12 dated 25/8/11	Venus Machine Tools, Valanjambalam, Ernakulam	16800	1	16800	4
49	62	Sunbond Brand welding electrode, 3.15x 350mm	2/9/2011	B/167/11/12 dated 25/8/11	Venus Machine Tools, Valanjambalam, Ernakulam	188.5	8 packets	1508	4 [Con suma ble Item]
50	63	Sunbond brand welding electrode, 2.50 x350mm	2/9/2011	B/167/11/12 dated 25/8/11	Venus Machine Tools, Valanjambalam, Ernakulam	204.5	16 packets	3272	4[Co nsum able Item]
51	64	Tin cutter 8"	2/9/2011	B/167/11/12 dated 25/8/11	Venus Machine Tools, Valanjambalam, Ernakulam	77	1	77	4
52	65	Chipping hammer	2/9/2011	B/167/11/12 dated 25/8/11	Venus Machine Tools, Valanjambalam, Ernakulam	95	1	95	4
53	66	Leather gloves, weld craft	2/9/2011	B/167/11/12 dated 25/8/11	Venus Machine Tools, Valanjambalam, Ernakulam	62	2	124	12.5[Cons umab le Items]
54	67	Apron leather , weld craft	2/9/2011	B/167/11/12 dated 25/8/11	Venus Machine Tools, Valanjambalam, Ernakulam	220	2	44	12.5[Coth Make - Cons umab le]
55	68	Hand sleeve	2/9/2011	B/167/11/12 dated 25/8/11	Venus Machine Tools, Valanjambalam, Ernakulam	125	2	250	12.5(Cons umab le)
56	69	Leg sleeve	2/9/2011	B/167/11/12	Venus Machine	125	2	250	12.(C

				dated 25/8/11	Tools, Valanjambalam, Ernakulam					onsu mabl e)5
57	70	Perfect brand hand lever shearing machine, G13L	2/9/2011	B/167/11/12 dated 25/8/11	Venus Machine Tools, Valanjambalam, Ernakulam	3221	1	3221	4	
58	71	Pipe vice 2"	2/9/2011	B/167/11/12 dated 25/8/11	Venus Machine Tools, Valanjambalam, Ernakulam	800	1	800	4	
59	72	Safety helmet nap type , Shree arc	2/9/2011	B/167/11/12 dated 25/8/11	Venus Machine Tools, Valanjambalam, Ernakulam	80	2	160	12.5	
60	73	Welding shield black	2/9/2011	B/167/11/12 dated 25/8/11	Venus Machine Tools, Valanjambalam, Ernakulam	165	1	165	12.5	
61	74	Sumo head screen	2/9/2011	B/167/11/12 dated 25/8/11	Venus Machine Tools, Valanjambalam, Ernakulam	370	1	370	12.5	
62	75	Goggles specs type	2/9/2011	B/167/11/12 dated 25/8/11	Venus Machine Tools, Valanjambalam, Ernakulam	35	3	105	4(Co nsum able)	
	75	Goggles specs type	28/5/12	B/20586 dated 25/8/11	C.P M tools, Pulimood Jn, Kottayam	40	1	40	5(Co nsum able)	
63	76	Goggles Bocal type	2/9/2011	B/167/11/12 dated 25/8/11	Venus Machine Tools, Valanjambalam, Ernakulam	50	3	150	4(Co nsum able)	
64	77	Black glass, No 11	2/9/2011	B/167/11/12 dated 25/8/11	Venus Machine Tools, Valanjambalam, Ernakulam	28	3	84	12.5(Cons umab le)	
65	78	Black glass No.13	2/9/2011	B/167/11/12 dated 25/8/11	Venus Machine Tools, Valanjambalam, Ernakulam	56	3	168	12.5(Cons umab le)	
66	79	White glass	2/9/2011	B/167/11/12 dated 25/8/11	Venus Machine Tools, Valanjambalam, Ernakulam	3	2	6	12.5	
67	80	Grease gun	2/9/2011	B/167/11/12	Venus Machine	392	1	392	12.5	

				dated 25/8/11	Tools, Valanjambalam, Ernakulam				
68	81	Prima oil can ½ pint, Prima	2/9/2011	B/167/11/12 dated 25/8/11	Venus Machine Tools, Valanjambalam, Ernakulam	78	1	78	4
69	82	PMT Brand bench type drilling machine, 13mm	2/9/2011	B/167/11/12 dated 25/8/11	Venus Machine Tools, Valanjambalam, Ernakulam	4500	1	4500	4
70	83	Taparia ring spanner set BI- Hex, 12pcs, 18- 12	2/9/2011	B/167/11/12 dated 25/8/11	Venus Machine Tools, Valanjambalam, Ernakulam		12 pcs	904	4
71	84	Taparia box spanner set	2/9/2011	B/167/11/12 dated 25/8/11	Venus Machine Tools, Valanjambalam, Ernakulam	1891	1	1891	4
72	85	Inder pipe wrench	2/9/2011	B/167/11/12 dated 25/8/11	Venus Machine Tools, Valanjambalam, Ernakulam	495	1	495	4
73	86	Inder pipe wrench 14"	2/9/2011	B/167/11/12 dated 25/8/11	Venus Machine Tools, Valanjambalam, Ernakulam	830	1	830	4
74	87	Drill bit set 1 to 13mm	2/9/2011	B/167/11/12 dated 25/8/11	Venus Machine Tools, Valanjambalam, Ernakulam	2865	1set	2865	4
	87	Drill bit 4.8 & 5 mm	28/5/12	B/20586 dated 28/5/12	C.P.M.Tools centre, Kottayam	130	4.8mm- 2nos 5mm- 2nos	130	5
	87	Drill bit 3.8 & 4 mm	31/5/12	B/20621 dated 31/5/12	C.P.M.Tools centre, Kottayam	75	4mm- 3nos 3.8mm- 3nos	75	5
	87	HSS Drill Bit Set 8 size nos.	28/11/15	Bill No.7102 dtd 25/11/15	Y. M Tool Traders 45-46, Grey Town Coimbatore		3/4/5/6/ 8/10/12/ 13 mm		5 each exce pt 12 & 13m m

									one only
75	88	Anvil 15kg	28/5/12	B/20586 dated 28/5/12	C.P.M.Tools centre, Kottayam	1375	1	1375	5
76	89	File handle	28/5/12	B/20586 dated 28/5/12	C.P.M.Tools centre, Kottayam		3	28	5
77	90	Flat chisel	28/5/12	B/20586 dated 28/5/12	C.P.M.Tools centre, Kottayam	90	1	90	5
78	91	Hack saw blade	28/5/12	B/20586 dated 28/5/12	C.P.M.Tools centre, Kottayam	100	1	100	5[consumable]
79	92	Spirit level	31/5/12	B/20621 dated 31/5/12	C.P.M.Tools centre, Kottayam	95	1	95	13.5[Consumable]
80	93	Grinding & cutting wheel	28/5/12	B/20586 dated 28/5/12	C.P.M.Tools centre, Kottayam			230	13.5[Consumable]
81	93	Disc cutter	22/12/12	Bill no 7637 dtd 22/12/12	St Antonys hardware ,ramankary	150	1		5[Consumable]
82	94	Disc cutter Machine [Mitre Type]	12/10/12	Inv no 2944 dtd 12/10/12	Krishna Bhatt Mill Stores, Ernakulam	9505	1	9505	5
83	95	Electric arc welding machine	12/10/12	Inv no 2944 dtd 12/10/12	Krishna bhatt mill stores,ernakulam	5770	1	5770	5
84	97	Drill Chuck	12/10/12	Inv no 2944 dtd 12/10/12	Krishna Bhatt Mill Stores, Ernakulam	483	1	483	5
85	96	Electric Motor- 1 HP for bench drill	12/10/12	Inv no 2944 dtd 12/10/12	Krishna Bhatt Mill Stores, Ernakulam	6343.61	1	6343.61	5
86	98	Line tester	12/10/12	Inv no 2944 dtd 12/10/12	Krishna Bhatt Mill Stores, Ernakulam	54	1	54	5
87	99	Multi meter	12/10/12	Inv no 2944 dtd 12/10/12	Krishna Bhatt Mill Stores, Ernakulam	900	1	900	5
88	100	C clamp	12/10/12	Inv no 2944 dtd 12/10/12	Krishna Bhatt Mill Stores,	1672	1	1672	5

					Ernakulam				
89	101	Bench grinder	12/10/12	Inv no 2944 dtd 12/10/12	Krishna Bhatt Mill Stores, Ernakulam	4523.1	1	4523.1	5
90	102	Surface plate	12/10/12	Inv no 2944 dtd 12/10/12	Krishna Bhatt Mill Stores, Ernakulam	2950	1	2950	5
91	103	Vernier calliper	12/10/12	Inv no 2944 dtd 12/10/12	Krishna Bhatt Mill Stores, Ernakulam	2000	1	2000	5
92	104	Surface vernier height gauge	12/10/12	Inv no 2944 dtd 12/10/12	Krishna Bhatt Mill Stores, Ernakulam	4250	1	4250	5
93	105	Extension box Materials	14/11/12	Bill no - 1068 dtd 14/11/12	Kalarithara Electricals	238.40	1	238.40	5- Box- I
94	105	Extension box ,Equipments- Switches	17/11/12	Bill no 81 dtd 17/11/12	Gopika stores, Nellimukal	1940	1	1940	5- Box- I
95	105	Extension box ,equipmnts	17/11/12	Bill no 81 dtd 17/11/12	Gopika stores, Nellimukal	566.60	1	566.60	5 Box- II
96	105	Extension box equipments	19/11/12	Bill no dated 19/11/12	Bhaskaran nelliayath, Thekkekara- fabrcn charges	400	1	400	5- Box- II
96	106	Square file	12/12/12	Bill no 865 dated 12/12/12	Ms hardwares & tools, Allapuzha	120	1	120	5
97	107	Triangular file	12/12/12	Bill no 865 dated 12/12/12	Ms hardwares & tools, Allapuzha	60	1	60	5
98	108	Battery charger	16/03/13	Inv no 5101 dtd 16/03/13	Krishna Bhatt Mill Stores, Ernakulam	9300	1	9300	5
99	109	First aid box	16/03/13	Inv no 5101 dtd 16/03/13	Krishna Bhatt Mill Stores, Ernakulam	575	1	575	5
100	110	Welding & earth cable	16/03/13	Inv no 5101 dtd 16/03/13	Krishna Bhatt Mill Stores, Ernakulam	6700	1	6700	13.5
101	111	Punch box set	16/03/13	Inv no 5101 dtd 16/03/13	Krishna Bhatt Mill Stores, Ernakulam	90	1	90	5
102	112	Brass rule	16/03/13	Inv no 5101 dtd 16/03/13	Krishna Bhatt Mill Stores, Ernakulam	175	1	175	13.5

103	113	Round nose swips	16/03/13	Inv no 5101 dtd 16/03/13	Krishna Bhatt Mill Stores, Ernakulam	650	1	650	5
104	114	Hydraulic pipe bender	16/03/13	Inv no 5101 dtd 16/03/13	Krishna Bhatt Mill Stores, Ernakulam	15625	1	15625	5
105	115	Press fly wheel manual;	16/03/13	Inv no 5101 dtd 16/03/13	Krishna Bhatt Mill Stores, Ernakulam	7600	1	7600	5
106	116	Welding holder	16/03/13	Inv no 5102 dtd 16/03/13	Krishna Bhatt Mill Stores, Ernakulam	110	1	1110	5
107	116	Welding holder	3/06/13	Bill- cs/14/510 Dtd 3/06/13	Qualiy machines, valanjambm, Ernakulam	175	1	175	5
108	117	Wire gauge	18/4/13	Bill no 1466 dtd 18//13	Ms hardware tools, Alappuzha	200	1	200	5
109	118	Feeler gauge	18/4/13	Bill no 1466 dtd 18//13	Ms hardware tools, Alappuzha	320	1	320	5
110	119	Hand air blower	1/6/13	Bill cs/14/513 dtd 1/06/13	Qualiy machines, valanjambm, Ernakulam	1620	1	1620	5
111	120	Spray gun – pilot made	3/06/13	Bill- cs/14/510 Dtd 3/06/13	Qualiy machines, valanjambm, Ernakulam	1790	1	1790	14.5
112	121	Analog tacho meter	16/12/13	Bill no 3098 dtd 16/12/13	Krishna Bhatt Mill Stores, Ernakulam	9250	1	9250	5
113	122	Digital tachometer	16/12/13	Bill no 1836 dtd 16/12/13	Krishna Bhatt Mill Stores, Ernakulam	2559	1	2559	5
114	123	Bearing puller	16/12/13	Bill no 3098 dtd 16/12/13	Krishna Bhatt Mill Stores, Ernakulam	905	1	905	5
115	124	Air compressor-70 CC	16/12/13	Bill no 3098 dtd 16/12/13	Krishna Bhatt Mill Stores, Ernakulam	25110	1	25110	5
		Air Compressor-55 CC	28/11/15	Bill No.620 dtd 25/11/15	Orcient Machinery, Nanjappa Road, Coimbatore	11812	1	11812	
116	125	Swage block	17/3/14	Bill no 3945 dtd 14/3/14	Krishna Bhatt Mill Stores, Ernakulam	11700	1	11700	5

117	126	Chain pully block	17/3/14	Bill no 3945 dtd 14/3/14	Krishna Bhatt Mill Stores, Ernakulam	17625	1	17625	5
118	127	Piston ring expander	17/3/14	Bill no 3945 dtd 14/3/14	Krishna Bhatt Mill Stores, Ernakulam	375	1	375	5
119	127	Piston ring compresor	17/3/14	Bill no 3945 dtd 14/3/14	Krishna Bhatt Mill Stores, Ernakulam	765	1	765	5
120	128	Planer	17/3/14	Bill no 3945 dtd 14/3/14	Krishna Bhatt Mill Stores, Ernakulam	7150	1	7150	5
121	129	Gas weld torch	17/3/14	Bill No 3945 dtd 14/3/14	Krishna Bhatt Mill Stores, Ernakulam	5700	1	5700	5
122	129	Welding blow pipe	17/3/14	Bill no 3945 dtd 14/3/14	Krishna Bhatt Mill Stores, Ernakulam				5
123	129	Dunlop make hose	17/3/14	Bill no 3945 dtd 14/3/14	Krishna Bhatt Mill Stores, Ernakulam	850	1	850	5
124	130	Lathe	21/6/14	Bill no 40053 dtd 21/6/14	S&T engineers pvt ltd, Kalamassery, Ernakulam	759780	1	759780	5
125	131	Rad. Drilling machine	30/4/14	Bill no 40016 dtd 30/4/14	S&T engineers pvt ltd, Kalamassery, Ernakulam	191520	1	191520	5
126	132	Shaper	30/4/14	Bill no 40017 dtd 30/6/14	S&T engineers pvt ltd, Kalamassery, Ernakulam	265125	1	265125	5
127	133	Horizontal chain saw	30/04/14	Bill no 40018 dtd 21/6/14	S&T engineers pvt ltd, Kalamassery, Ernakulam	127680	1	127680	5
128	134	Shop crane	30/04/14	Bill no 40019 dtd 21/6/14	S&T engineers pvt ltd, Kalamassery, Ernakulam	39637.5	1	39637.5	5
129	135	Pedestal grinder	30/04/14	Bill no 40018 dtd 21/6/14	S&T engineers pvt ltd, Kalamassery, Ernakulam	17063	1	17063.00	5

130	136	Nylon belt-chain	13/11/14	Bill no d 21174 dtd 7/11/14	Home light s, Civil Station Road, Allepy	1450	1	1450	5 [Consumable]
131	136	Nylon belt-chain	13/11/14	Bill no d 21174 dtd 7/11/14	Home light s, Civil Station Road, Allepy	750	1	750	5 [Consumable]
132	137	Tap Sets	4/3/17	Bill No.S-1814 dtd 4/3/17	Sigma Equipments & Spares, Ravipuram Road, Valajambalam Ernakulam	5230 (Part Bill amt. of 12580/-)	1 set	5230	One Set
133	138	Hydraulic Trolley-3 ton	25/3/17	Bill No.39234 dtd 24/3/17	Tools India, MC Road, Kottayam	6000	1	6000	
134	139	Generator-7.5 KVA, Kirloskar Make	23/5/17	Bill No. MEU /122 dtd 25/5/17	Prompt Machine Tools Co. AV George Rd., Kaloor, Kadavanthra, Kaloor P.O, Kochi	265545	1	265545	
135	140	Gas Cylinder	26/3/17	Bill No. .IB00710 dtd 25/3/17	Excellent Enterprises, MC Road, Kottayam, T.B Junction, Palathingal Buildg. Kottayam	5250	1	5250	
136	140	Gas Cutting Torch & O2 + LPG Regulator	26/3/17	Bill No. 39284	Tools India MC Road, Kottayam	1900 1900 600	1 1 1	1900 1900 600	1 each of items
137	141	Tap & Die Set 6 mm to 24 mm	30/3/17	Bill No.S-1967 dtd 28/3/17	Sigma Equipments & Spares, Ravipuram, ValanjambalamErnakulam	6600	1 Set	6600	1 Set
138	142	Welding machine -3 Phase [ADOR Welding machine]	12/4/17		ACE Fine Pack Pvt. Ltd, Pullepady Jn, Chittor Road, Cochin -35	97335	1 set	97335	With accessories Torch

