A DOCUMENT ON
UIIC - ILFC INNOVATIVE TECHNOLOGIES FOR LIVESTOCK AND POULTRY FARMERS

University Innovation and Instrumentation Centre

Instructional Livestock Farm Complex - MVC

Centre for Animal Production Studies

Tamil Nadu Veterinary and Animal Sciences University

Chennai - 600 051

2017

TAMIL NADU VETERINARY AND ANIMAL SCIENCES UNIVERSITY

Dr. S. THILAGAR
VICE-CHANCELLOR

Madhavaram Milk Colony
Chennai - 600 051

Foreword

Tamil Nadu Veterinary and Animal Sciences University developed, and tested many products like TANUVAS mineral mixture, SMART mineral mixture, GRAND supplement, custom chicken incubator, bird cage for rural women, TANUVAS oral pellet vaccine, PPR vaccine, Blue tongue vaccine for the use of farming community.

Farmers are in need of devices/innovations/instruments which are easy to handle, shift, labour saving and relatively cheaper. TANUVAS is actively engaged in developing farmer friendly devices and products to ensure livestock and poultry health, to augment their productivity so as to make the end users to generate more revenue for their food and livelihood security. This will be possible through need based research which is one of the mandates of TANUVAS.

To fabricate and supply these items to the farmers, public and entrepreneurs, a new University Innovation and Instrumentation centre (UIIC) is being created/ established in TANUVAS Instructional Livestock Farm Complex - MVC (University Research Farm), Madhavaram Milk Colony, Chennai.

Various types of farm equipments like identification devices, restraining devices, animal sheds, cleaning and management devices for both poultry and livestock, low cost incubators for poultry, devices for large animal treatment, pet bird cages, innovative devices for restraining pet animal, small animal and large animals, devices for minimal usage of land and water for fodder production like hydroponic fodder production devices, etc were designed for the benefit of farmers.

I request all the farmer friends, entrepreneurs and others, to help in innovating as many devices/innovations/instruments as possible so as to reduce the cost on irrigation, power, water usage, labour usage, loss and to improve profit.

I take this opportunity to wish all farmers and scientists to bring fruitful results.

Place : Chennai - 51
Date : 08.11.2017

(Dr.S.THILAGAR)
VICE-CHANCELLOR

University Innovation and Instrumentation Centre - ILFC

(Equipments purchased under NADP Scheme)

Established innovation and instrumentation centre at ILFC, MMC (Lathe, Welding, Carpentry and Electronic Unit)

Combined wood working machine with accessories

Wood Cutting Machine with accessories

Wood Polish Machine with accessories

Oxygen Cylinder with accessories

Pillar Drilling Machine with accessories

Digital Platform Weighing Machine with accessories

Dissolved Acetylene Cylinder with accessories

Gas Welding Machine with accessories

Innovative Technologies for Dairy

TANUVAS – ILFC - Misting Device to Cool Livestock

Name of the Technology : **Misting Device to Cool Livestock**

Name of the Scientists : **Dr. P. Tensingh Gnanaraj, Er. M. Siddharth and Dr. E. Rachel Jemimah**

Broad outline of the Technology: The misting device for livestock is designed in TANUVAS discharges water into mist and spray it over the animal.

This device is fit in front of pedestal fan thus the mist is sprayed over 3 – 4 animals by rotation.

Utility of Technology

- In summer the productivity is reduced in livestock due to heat stress.
- In summer this device can be used for about 5 minutes for every 20 minutes during high temperature.
- The cooling of livestock using this device helps to alleviate the heat stress and helps to overcome anorexia, panting and reduced milk yield.
- For dairy farms it proved to maintain the milk yield by alleviating heat stress on milch animals.
- One misting device can be used for up to 20 milch animals

Cost of Technology : Rs. 8,400/-

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TANUVAS – ILFC - Low Cost Dry Fodder Cutter

Name of the Technology : **Low Cost Dry Fodder Cutter**

Name of the Scientists : **Dr. P. Tensingh Gnanaraj, Er. M. Siddharth and Dr. E. Rachel Jemimah**

Broad outline of the Technology: This low cost dry fodder cutter designed in TANUVAS, for cutting dry fodder into small pieces of 4 – 5 inches quickly, easily and manually.

This device is made of metal, measuring 5 feet length attached at the bottom to a long curved fixed knife.

Utility of Technology

- Dry fodder to livestock is usually fed as such.
- Chaffing of dry fodder reduces wastage and encourage animal to consume more.
- It will be useful for cattle, sheep, and goat to feed chaffed dry fodder.

Cost of Technology : Rs. 6,000/-

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TANUVAS – ILFC - Cow Lifting Device

Name of the Technology : **Cow Lifting Device**

Name of the Scientists : **Dr. T. Geetha, Dr. P. Tensingh Gnanaraj and Dr. T. Muthuramalingam**

Broad outline of the Technology: Cow lift made up of iron and coated with seat cover to prevent scraping the cow's hips.

Rubber padded cow lift prevent scraping the cow's hips.

Chain pully linked with cow lift. It can be operated either manually (or) attach the chain pully to a tractor.

It can be extendable upto to 24 inch.

Weight of cow lift 3.5 kg.

Utility of Technology

- Specially designed for lifting cows that are down due to milk fever or calving injury.
- For assisting cows down on wet floor.
- Pick up a down cow by her hipbones for a short period for treatment, arranging bedding or milking.
- Tighten the lift as necessary to prevent slipping.
- It is useful for all size of cows.
- Cow lift is simple and inexpensive device to lift or move the cows.
- Cow lift useful for animals upto 1000kg body weight.

Cost of Technology : Rs 2,400/- (Without chain pulley)

Rs 13,500/- (With chain pulley)

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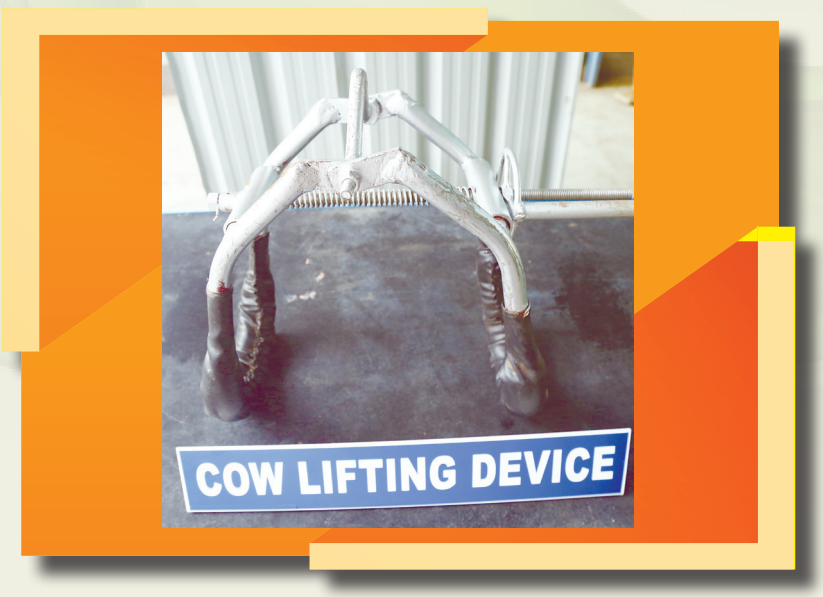

TANUVAS – ILFC - Calf Comfort Hutch

Name of the Technology : **Calf Comfort Hutch**

Name of the Scientists : **Dr. P. Tensingh Gnanaraj, Dr. T. Geetha and Er. M. Siddharth**

Broad outline of the Technology: Total length of calf hutch is 10.5 feet and width of the hutch is 4.5 feet. It has two division, pen and run. Length of pen is 4.5 feet, length of run is 6 feet.

Rear height of pen is 5 feet, front height of pen is 6 feet and front height run is 5 feet.

Calf enter into the calf hutch through upside down inlet door.

Neck lock in calf hutch allows controlled feed and water to calf.

Installed detachable milk bottle.

It is light weight and portable making them easy to clean.

Utility of Technology

- TANUVAS – URF – Calf hutch is designed to improve health and growth of calves prior to weaning.
- Calf enter into the calf hutch through upside down inlet door.
- Neck lock helps to provide clean feed and water to the calf at required time.
- Unlocking neck lock at night allows the calf to move itself into the pen. So calf hutch provide night shelter to calf.
- Calf hutch help to prevent the spread of contagious disease, reduce calf mortality.
- It is inexpensive. Properly designed calf hutch provides excellent natural ventilation which further reduce incidence of respiratory disease.
- If calf becomes ill, you can move susceptible calves further away from other calves. It can also easily move to different areas of the lot or pasture.
- Calf hutch provide more space allow more freedom for the calf to exercise and roam outside.
- Calf hutch allow greater control and management. A clean, dry, well ventilated hutch provides the best opportunity for a calf to stay health & growing.

Cost of Technology : Rs. 6,000/-

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TANUVAS – ILFC - Bracketed Hay Rack for Calves

Name of the Technology : **Bracketed Hay Rack for Calves**

Name of the Scientists : **Dr. T. Geetha, Dr. P. Tensingh Gnanaraj and Dr. T. Muthuramalingam**

Broad outline of the Technology: Made of durable plywood with bolt on brackets to easily hang on fence, gates or panels.

Top measures 36" x 19", bottom 31 ½ " x 13", over all height 24½", weight 19kg.

Holding capacity of rack 20 kg.

Utility of Technology

- Single flake, tapered design allows for easy hay filling from the top.
- Calves can easily pull hay through four front openings.
- It prevents contamination of hay with dung and soil.
- Prevents wastage of hay.
- Low cost and portable.

Cost of Technology : Rs 3,000/-

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TANUVAS – ILFC - Multipurpose – Clip–on Calving Corral

Name of the Technology : **Multipurpose – Clip–on Calving Corral**

Name of the Scientists : **Dr. P. Tensingh Gnanaraj, Dr. S. Balasubramanian and Dr. S. Thilagar**

Broad outline of the Technology : It is sturdy built to last and very versatile.

The entire calving corral can be modified into trevis by adjustable partition.

The trevis part which (3 ft wide and 7 ft long) is provided with a head lock in the front, chain lock in the rear end for better restraint and I/V stand to administer fluid therapy.

The corral has special provisions to keep obstetrical / surgical instruments for assisted delivery and surgery.

The roof is covered with metal sheet

Utility of Technology

- Cattle nearing parturition within a day or two can be shifted to this calving corral for specialized care and assistance.
- It is designed in such a way that it can be used as a corral and also trevis for medical / obstetrical and surgical interventions.
- It is also provided with a small table and wash basin and rechargeable light source.
- It is also provided with a special provision for performing standing surgical procedures.
- The corral is provided with automatic waterer and dry fodder feeder for cattle.
- A cow lift with chain pulley is hung from the top for lifting recumbent cattle especially downer cow syndrome.
- Ideal for medium and large scale dairy farmers for better care of individual animal.

Cost of Technology : Rs. 66,900/- per unit

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TANUVAS – ILFC - Portable Calf Pen

Name of the Technology : **Portable Calf Pen**

Name of the Scientists : **Dr. P. Tensingh Gnanaraj, Dr. T. Geetha and Dr. T. Muthuramalingam**

Broad outline of the Technology: The pen is divided by partition in such a way that three calves can be housed individually.

It is 12 ft long, 5 ½ ft wide and 4 ft high of which individual calf is housed in a pen of size 4ft X 5 ½ ft.

It is portable and can be fixed in any convenient location.

Utility of Technology

- TANUVAS – URF Calving Pen is designed to provide the ideal housing facility for raising calves.
- Provided with separate concentrate feeder, milk feeder and dry fodder feeder for better feeding management of calves.
- Helps in individual care and feeding of calves according to their requirement.
- Minimize the horizontal transmission of disease between calves.
- Ideal for small, medium and large scale dairy farmers for better care and management of their calves.

Cost of Technology : Rs. 18,000 per unit

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TANUVAS – ILFC - Low cost Portable Trevis for Large Ruminants

Name of the Technology : **Low cost Portable Trevis for Large Ruminants**

Name of the Scientists : **Dr. A. Shanmuga Sundaram, Dr. P.Tensingh Gnanaraj and Dr. T. Geetha**

Broad outline of the Technology: The trevis is made of GI pipe (2 ½′ dia) and MS pipe (1 ½′ dia).

The entire is structure is portable and can be fixed at convenient location.

Three poles are provided with a length of 3 ½′ for restraining the animals movement during examination.

The poles can be fixed at adjusting height both at front and rear side of the trevis.

Utility of Technology

- TANUVAS – ILFC – Low cost Portable Trevis for Large Ruminants is designed for restraining large ruminants
- Helps in easy restrain of large ruminants like Dairy cattle, bull, bullock and buffalo.
- The entire trevis can be relocated at convenient place with minimum man power.
- Useful in restraining the animals during treatment, artificial insemination and general examination.
- Ideal for medium and large scale dairy farmers for restraining animals during treatment and Artificial Insemination.

Cost of Technology : Rs. 11,580 per unit

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TANUVAS – ILFC - Circular Salt (Lick) Block Holder for Calves

Name of the Technology : **Circular Salt (Lick) Block Holder for Calves**

Name of the Scientists : **Dr. T. Geetha, Dr. P. Tensingh Gnanaraj and Dr. T. Muthuramalingam**

Broad outline of the Technology: Made up of metal.

Height of this holder from ground is 40 inch

Weight of salt block holder is 7.5 kg.

Utility of Technology

- Unique and effective design to hold and protect a 5-6 kg mineral salt block for maximum durability.
- Hold 4 salt block at a time suitable for four calves.
- It is portable and can be shifted easily.

Cost of Technology : Rs. 1,920

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TANUVAS – ILFC - Portable Calf Restraint

Name of the Technology : **Portable Calf Restraint**

Name of the Scientists : **Dr. T. Geetha, Dr. P. Tensingh Gnanaraj and Dr. A. Shanmuga Sundaram**

Broad outline of the Technology: Made up of metal.

It containing one ring structure and this joined with two side rods.

Removable neck chain attached with side rods.

Neck chain is adjustable type.

Front side of ring attached with clip frame.

Utility of Technology

- Ideal for restraining young calves (0-6 months).
- Portable calf restraining device holds the calf's head firmly for easier restraining.
- The chain pulls the calf's muzzle into the ring.
- Wherever required, clip frame help to fit the restraining device.
- Help to restrain the calves for dehorning, castration, dew claw removable, etc.,
- It can also be positioned closed to the ground. So the calf can be put on its side and yet maintain control of the animal.
- Taking off extra teats on yearlings or banding / cutting of bull calves can be performed with the help of restraining device.

Cost of Technology : Rs.1,440 per unit

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TANUVAS – ILFC - Muck Stall Cleaning Package

Name of the Technology : **Muck Stall Cleaning Package**

Name of the Scientists : **Dr. T. Geetha, Dr. P. Tensingh Gnanaraj and Dr. A. Shanmuga Sundaram**

Broad outline of the Technology: Bottom of muck cleaning package made up of three layer metal frame.

Length and breadth of upper, lower layer frame is 21″ x 21″.

Breadth of center layer frame is 20″.

Height of muck is 13″, capacity is 25kg and easily cleanable

30″ height and 18″ width handle attached with bottom frame.

6″ size four wheel fitted in the bottom for easy moving of muck cleaning package.

Utility of Technology

- Removable type tub fitted inside of bottom metal frame.
- Easy to load and unload the tub because of its removability.
- The multipurpose muck cart has a unique design to help perform common chores around the farm.
- Help to transport barn waste, water or moving bulky items like hay, feed bags and garbage cans, this cart makes it easy.

Cost of Technology : Rs. 1,800

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TANUVAS – ILFC - Dairy Barn Cart

Name of the Technology : **Portable Calf Restraint**

Name of the Scientists : **Dr. P. Tensingh Gnanaraj, Dr. T. Geetha and Dr. T. Muthuramalilngam**

Broad outline of the Technology: Made up of metal. It contains two trays.

Length, breadth of top and bottom tray is 16" x 28".

Both the trays made up of G.I sheet.

Trays are removable, easily cleanable and non-rusted type.

For fitting of the tray properly, lower and upper part of cart contain totally four horizontal rods.

30" height and 30" length round pipe in square shape attached to the top tray.

Utility of Technology

- This square shape pipe contain 3 'V' shape hook for holding of towels.
- For easy moving of cart four 6" wheel fitted in the bottom tray.
- Top tray can hold up to 10 litrs capacity milk pail.
- Bottom tray holds all the necessary tools and equipments like strip cup for mastitis test, teat dipper and also antiseptic solution for washing of udder.
- Bottom tray helps to make correct milking procedures practical and convenient.

Cost of Technology : Rs.3,000 per unit

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TANUVAS – ILFC - Portable Large Animal Heaver

Name of the Technology : **Portable Large Animal Heaver**

Name of the Scientists : **Dr.S.Thilagar., Dr.S.Balasubramanian and Dr. P.Tensingh Gnanaraj**

Broad outline of the Technology: The unit consists of a triangular stand component and trolley component.

The triangular stand of about 9 ½ feet high is fitted with chain pulley and cow lifting device for lifting the recumbent animal.

The trolley consists of detachable square pipe frame of 4 feet wide and 6 feet long as a base fitted with specially tubeless tyres for easy mobility.

A checked aluminum sheet of 4 feet wide and 6 feet long is fitted over the base as a platform for placing the animal.

Utility of Technology

- TANUVAS - ILFC – Portable large animal heaver has been designed to rescue recumbent animal from farmers door step for necessary intervention.
- It is specially designed to get easily connected to the large animal ambulance so that the animal can be shifted immediately for stabilizing and treatment.
- A hydraulic jack is fitted to one end of the trolley so as to incline the platform to the floor for easy shifting of animal on to the platform.
- A handle is fitted to other end for pulling of the trolley towards the hydraulic lift of the ambulance.
- The entire unit is detachable and can be easily assembled in any desired location.

Cost of Technology : Rs. 45,600/-

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TANUVAS – ILFC - Multi Teat Open Calf Feeder

Name of the Technology : **Multi Teat Open Calf Feeder**

Name of the Scientists : **Dr. T. Geetha, Dr. P. Tensingh Gnanaraj and Dr. A. Shanmuga Sundaram**

Broad outline of the Technology :

Made up of plastic open compartment tub.

Four peach teats attached in the bottom of tub.

The size, shape and color of the peach teat is as close to the real teats of cow.

Peach teats are easily removable. Easy to clean and replace.

Metal hanging brackets fitted outside of tub. Multi teat open calf feeder can be fitted in wall or rail.

Utility of Technology

- It easily attract the calf to drink the milk.
- When calves suckling the peach teat, by pump action the milk pump through the peach teat.
- Stop valve present in inside of peach teat makes it easier for calves to drink the milk.
- Calves when stop suckling, the flow of milk also stopped.
- Helps to feed more number calves at a same time
- Peach teat looks likes a natural teats of cow, so it easily attract the calves to drink milk.
- By using this we can prevent the wastage of milk.
- Portable from one calf shed to another shed easily.

Cost of Technology : Rs.7,200 per unit

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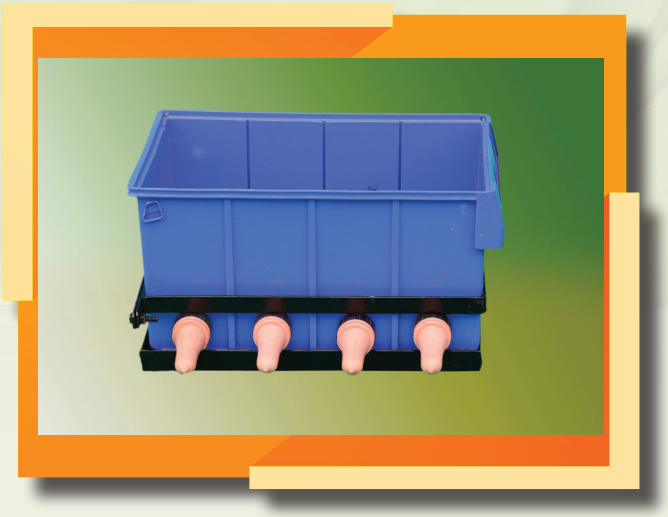

TANUVAS – ILFC - Lime Spreader

Name of the Technology : **Lime Spreader**

Name of the Scientists : **Dr. T. Geetha, Dr. P. Tensingh Gnanaraj and Dr. V. Ramesh Saravana Kumar**

Broad outline of the Technology : Made up of G.I. sheet and tapering from top to bottom.

Height of lime spreader is 24"

Top open and bottom open of spreader is 12" and 6".

Holding capacity of spreader is 10 kg.

Two 10" large size wheel fitted on bottom of the spreader for easy moving.

Utility of Technology

- The 6" spreading disc fitted in bottom open, through which spreading of lime takes place.
- It is easily washable and non rusted type.
- Automatic gear fitted along with spreader to give continuous shaking for spreader.
- Handle is attached with spreader for easy pushing of spreader.
- Easy to spread the lime in the boundaries of farm than manual spreading to avoid spreading of contagious diseases.
- It reduces the wastage of lime.
- Save labour and time.

Cost of Technology : Rs. 3,000 per unit

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TANUVAS – ILFC - Portable Dairy Animal Restraining Trevis

Name of the Technology : **Portable Dairy Animal Restraining Trevis**

Name of the Scientists : **Dr. P.Tensingh Gnanaraj, Dr.T.Geetha and Dr.V..Ramesh Saravana Kumar**

Broad outline of the Technology : This trevis is made up of G.I pipe with specially designed front part.

Length 6 feet, Width 3 feet, Front height 7.5 feet and Back Height 4.5 feet.

Front part contain 3 necklocks and adjustable according to the size of the cattle/buffalo.

Restraining is very easy.

Utility of Technology

- It is portable type trevis can be easily moved from one place to another.
- It is also provided with a small table and wash basin for the use of obstetrician while handling difficult cases.
- It is also provided with a special provision in the rear quarter for performing standing surgical procedures in the cow.
- Special provisions to keep obstetrical and surgical instruments for assisted delivery and surgery.
- For infusion of fluids during treatment one I/V set holder is attached with this device.
- It gives more comfort to veterinarian during artifical insemination and rectal examination.
- It saves time.

Cost of Technology : Rs.Rs- 18,000/-

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TANUVAS – ILFC - Single Peach Teat Feeder for Calf

Name of the Technology : **Multi Teat Open Calf Feeder**

Name of the Scientists : **Dr. T. Geetha, Dr. P. Tensingh Gnanaraj and Dr. M. Arul Prakash**

Broad outline of the Technology : Single peach teat feeder made up of exceptionally light weight, high density polyethylene, it resists the effects of harsh weather, chemicals, strong detergents, soaps etc.

Single peach teat attached in the bottom of the feeder.

Single peach teat feeder can be fitted into holder, both are easily detachable.

Holder welded with hanging clamp. This help to mount the feeder on fence.

Utility of Technology

- The teat is durable and natural for the calf to suckle.
- Feeder and teat can be easily cleaned with convenient assembly and dissembly.
- Easy to handle, cleaning and portable.
- The easy way to give milk to calves that don't require hand feeding
- Invested tip design inside of peach teat allows for fast milk flow as soon as the calf suckles, but does not leak when suckling stops.
- Feeding calves easier than pail feeder, featuring an extra wide top.
- Prevent the wastage of milk.

Cost of Technology : Rs.2,160 per unit

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TANUVAS – Heavy Duty Stainless Steel Barn Scraper

Name of the Technology : **Heavy Duty Stainless Steel Barn Scraper**

Name of the Scientists : **Dr. T. Geetha, Dr. P. Tensingh Gnanaraj and Dr. T. Muthuramalilngam**

Broad outline of the Technology : Scraper blade is made up of G.I sheet and handle made up of square pipe.

Length and width of scraper is 24" and 15".

Scraper blades have two layer of G.I. sheet.

In between the G.I. sheet rubber beading provided.

Handle is removable type and length of the handle in 5" feet.

Utility of Technology

- Rubber beading provide more pressure, because of it easy to clean the barn waste along with water.
- Rubber covering given for top ½ feet height of handle to provide cripness to handle during cleaning.
- Light weight, easy to push.
- Comfortable handle allows just right amount of pressure for scraping down of cow bedding, swine pens, etc.,
- Makes cleaning is a quick and easy job.

Cost of Technology : Rs. Rs.960 per unit

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TANUVAS – Comfort Calf Pail Feeder

Name of the Technology : **Comfort Calf Pail Feeder**

Name of the Scientists : **Dr. T. Geetha, Dr. P. Tensingh Gnanaraj and Dr. T. Muthuramalingam**

Broad outline of the Technology : Calf pail feeder made up of exceptionally light weight, high density polyethylene, it resists the effects of harsh weather, chemicals, strong detergents, soaps etc.

Pail feeder can be fitted into pail feeder holder. Both are easily detachable.

Pail feed holder equipped with strong 16 gauge welded hangings clamp. This help to mount the pail feeder on fence.

Utility of Technology

- Feeding calves is easier than ever with corner calf pail feeder, featuring an extra wide top. Improved pattern with milk saver valve that siphons the pail empty.
- Pail and nipple can be easily cleaned with convenient assembly and dissembly.
- Portable.
- Capacity – 6 litres.

Cost of Technology : Rs.3,000/-

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TANUVAS – Cow Dung Lounge

Name of the Technology : **Cow Dung Lounge**

Name of the Scientists : **Dr. P. Tensingh Gnanaraj and Dr. T. Devi**

Broad outline of the Technology : It is made up of a metallic cylindrical body of 1.3 feet long and 3 inch diameter and a pressing tool.

Utility of Technology

- Designed to convert the farm wastes like dung, left over fodder and paddy straw into solid fuel.
- Cow dung and farm wastes have to be filled in the cylinder and pressed to make it into a cylindrical form.
- The pressed dung etc. can be dried and used as a fuel.
- This type of dried cylindrical dung forms burn with less smoke and burn for a longer time, thus conserving energy.

Cost of Technology : Rs. 850/-

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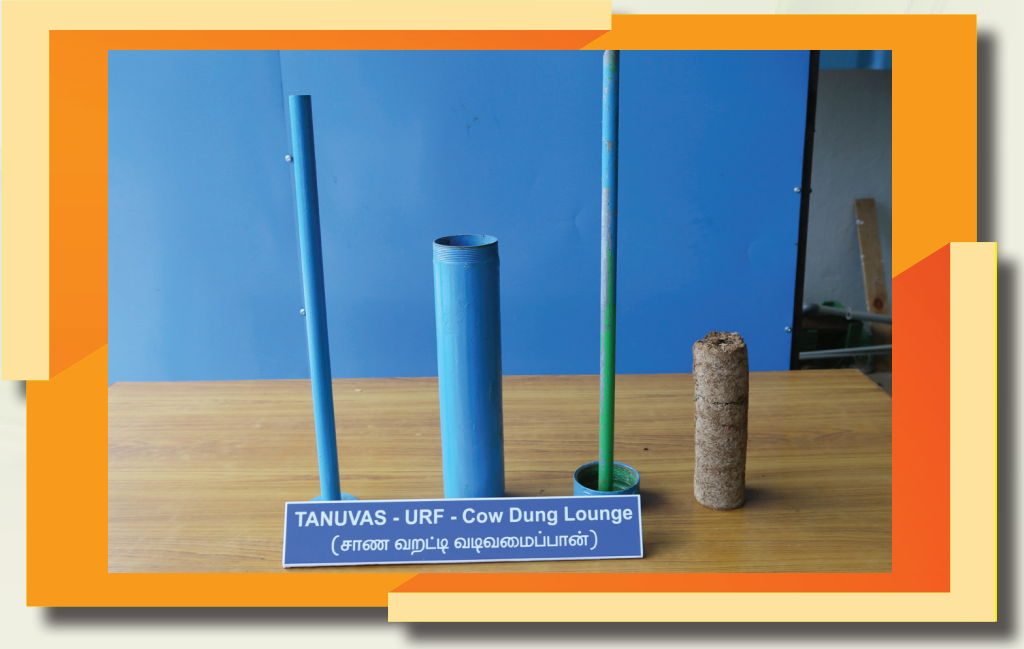

Innovative Technologies for Sheep and Goat

TANUVAS – ILFC - Slatted Floor House for Goats

Name of the Technology : **Slatted Floor House for Goats**

Name of the Scientists : **Dr. P. Tensingh Gnanaraj and Dr. T. Muthuramalingam**

Broad outline of the Technology : Distance of the slatted floor of the shed from the ground level shall be about 4 feet

The centre height of the roof from the slatted floor shall be 10 feet and at the end of the roof on either side shall be 7 feet.

The size of the run area of the house should be twice the size of the slatted floor house.

The height of the fence around the shed is 4 feet.

The width of the shed is 16 – 20 ft and the length can be according to the requirement.

Floor space requirement for goats

Type	Area (sq. ft.)
Kid (3- 6 months of age)	04
Doe (>6 months of age)	10
Buck (>10 months of age)	20

- The shed area can be divided into multiple compartments with separate gate for each.
- However there should be only one entrance and one exit gate for the entire shed.
- Common woods used for construction of slatted floor are woods of
  - Jack fruit tree
  - Coconut tree
  - Bamboo
  - Palmyrah tree
- Distance between woods in the slatted floor is half inch which facilitates draining of dung and urine from the animals to the ground level and prevent their stagnation / accumulation in the shed.

- The optimum wood width should be about two and half inches. Higher the width should be avoided as it will result in stagnation of dung and urine.
- The wood should be strong and durable to bear the weight of all the goats.
- The housing system consists of run area in addition to slatted floor house. This facilitates free movement and exercise to goats which further improves their appetite and feed intake. The pen and the run is connected by a (sloppy) ramp.
- As the system provides adequate air movement and circulation it tends to reduce respiratory illness in goats to certain extent.

Utility of Technology

It is an intensive method of rearing goats in which the goats are not allowed for browsing in to open field, instead green fodder, dry fodder and concentrate were fed to them within the housing system itself.

It is important to provide concentrate, green and dry roughages in an adequate quantity to goats in this system of housing. Lack or insufficiency of any one of the above feed will result in decreased body weight and overall performance like inadequate dry fodder will result in indigestion and poor growth rate in goats and inadequate green fodder will result in poor reproductive performance.

The following points should kept in mind before constructing shed for goats.

- The shed should provide ideal micro and macro environment to goats during all types of climatic condition.
- The shed should protect the goats from the cold weather during winter and from the heat stress during summer.
- The shed should provide adequate space for kids, does and the bucks.
- The shed should be constructed away from any water resources as they tend to induce respiratory illness in goats if possible
- The ideal shed length should be in east – west orientation.
- It should have provision for hanging tarpaulin / gunny bags / screen cloth in order to protect animal from cold weather during winter
- Goats can be grouped according to the age /body weight/pregnant status and can be reared in separate compartments within the same shed for effective management.
- Bucks should always be kept in separate compartment and should not be mixed with females or kids.
- Lactating does and their kids should should be kept and reared in separate compartment to facilitate adequate suckling of milk by the kids.
- Does which are crossed for breeding should ber kept in separate compartment to facilitate easy identification and confirmation of pregnancy status.
- Non cyclical goats should be kept in separate compartment to facilitate easy identififcation of estrous signs.
- Pregnant does should be reared in separate compartments in order to protect them from abortion due to trauma and also to provide extra ration to meet their demand.
- Brooding lights should be fit in the kids comparments to protect them from cold weather during night especially in winter and to provide enough warm to protect from hypothermia.
- As the slatted floor housing system provides better hygienic environment to goats, mortality due to diarrhoea and pneumonia is considerably low when compared to conventional system of goat rearing.

Cost of Technology : RS.450/sq. ft – Wood
RS.950/sq. ft – Plastic crate

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TANUVAS – ILFC - Nest Box for New Born Lambs and Kids

Name of the Technology : **Nest Box for New Born Lambs and Kids**

Name of the Scientists : **Dr. P. Tensingh Gnanaraj, Dr. P. Pothiappan and Dr. T. Devi**

Broad outline of the Technology : The nest box is 4 feet length, 3 feet width, 4 feet height at the centre with the curved top.

The sides and the top is covered with transparent acrylic sheet.

This nest box is mounted on a 1 1/2 feet height wooden frame with a ramp and door.

Utility of Technology

- The nest box is designed to provide ideal warmth and clean environment to the newly born lams and kids especially in winter.
- The wooden slatted floor in the nest box quickly drains the urine and dung voided by the lambs and kids.
- Required ventilation is provided by sufficient holes/windows on the supporting wooden plank on sides.
- The nest box of the set dimension is for lambs or kids or lambs and kids.
- It is observed that this nest box has substantially reduced the mortality in lambs and kids by providing warmth, light, clean and dry slatted floor and also improved body weight gain.
- Will be very useful for sheep and goat farmers and also rural household.

Cost of Technology : Rs.12,500/-

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TANUVAS – ILFC - Portable Multipurpose Medicine Wheel Cart

Name of the Technology : **Portable Multipurpose Medicine Wheel Cart**

Name of the Scientists : **P. Pothiappan, Dr. T. Muthuramalingam and Dr. T. Devi**

Broad outline of the Technology : Movable Multifunction Veterinary wheel cart made up aluminum and steel.

- Features of the device:
- Pull out trays or side plastic trays that provide additional space for staff to work.
- Oxygen cylinder holder
- LN2 container holder
- Height adjustable pole with utility hooks
- Wash basin holder
- Plastic trays
- Adjustable ball-bearing, extension drawer.
- Power points for connecting equipments for diagnostics e.g. Ultrasound machine.
- The top platform is for animal.

Utility of Technology

- ✦ It is a simple and efficient device for health care activity.
- ✦ Comfortable for animals as well as doctors.

Cost of Technology : Rs.12,000/-

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TANUVAS – ILFC - Movable Dipping Tank for Small Ruminants

Name of the Technology : **Movable Dipping Tank for Small Ruminants**

Name of the Scientists : **Dr. T. Muthuramalingam and Dr. P. Tensingh Gnanaraj**

Broad outline of the Technology: The dipping tank is 9 feet length, 3 feet width and 3 feet height and weighs 80 kg and capacity is 800 litres of water.

The tank is movable and hence can be wheeled to animal shed and thereby reducing labour and stress to animals.

Up to 500 goats can be dipped one by one at a time.

Utility of Technology

- TANUVAS – URF - Movable dipping tank for small ruminants is designed to reduce the cost of erection of conventional dipping tank to a considerable extent.
- The dipping solution after dipping can be drained and sprayed in the animal sheds.
- Cost effective and user friendly for small, medium and large farmers.
- Since the movable dipping tank is fabricated using light weight materials and cost is less when compared to construction of conventional dipping tanks.
- The movable dipping tank is self contained in the towing configuration and is equipped with new rims and tires.
- It can be fixed in any convenient location.

Cost of Technology : Rs.19,200/-

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TANUVAS – ILFC - Tretab - SG

Name of the Technology : **Tretab - SG**

Name of the Scientists : **Dr. S. Balasubramanian, Dr. S. Thilagar and Dr. P. Tensingh Gnanaraj**

Broad outline of the Technology : The tretab - SG is 4 ft long, 2 ¼ ft wide and 4 ½ ft high.

It is provided with sponge coated movable sides which can be adjusted according to the size of the animal for its restraint.

It is made up of iron and provided with animal and operator friendly features.

Utility of Technology

- It is specially designed multipurpose trevis attached with table on wheels for restraint, clinical examination and treatment of sheep and goat,
- The rear end is fitted with adjustable handle to lift the hind limbs of the animal to desired height for clinical examination and artificial insemination.
- The front end is provided with sponge coated head lock for proper restraint of animal and its clinical examination.
- A table is fitted to the left side of the trevis for placing equipments/and materials needed for treatment and examination of the animal.
- It is also provided with weighing balance in order estimate the weight of the animal for medication.
- Easy to transport from one place to another as it is provided with wheels.
- It is an important device which is indispensable for all veterinary hospitals and for medium and large farms..

Cost of Technology : Rs.Rs. 19,800 /-

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TANUVAS – ILFC - Lifting device for Sheep and Goat

Name of the Technology : **Lifting device for sheep and goat**

Name of the Scientists : **Dr. P. Tensingh Gnanaraj, Dr. S. Balasubramanian and Dr. S. Thilagar**

Broad outline of the Technology: The length, breadth and height of the device are 3 ½ ft, 2½ ft and 3 ½ ft respectively.

Once the animal is walked o n to the platform and head locked the platform can be raised to desired height up to 4 ft with the help of hydraulic lift for easy examination and operation.

Utility of Technology

- It is specially designed hydraulic lifting device to lift small ruminants for wool shearing, hoof trimming, clinical examination and treatment.
- It is made up of iron and provided with a lever for lifting.
- The platform frame is designed in the form of see saw so that the animal can be easily walked on to it from the ground.
- The platform is made up of iron mesh for animal standing.
- The fore end is fitted with head lock for restraining the animal.
- It is an important device which is indispensable for all veterinary hospitals and medium and large scale commercial farms.

Cost of Technology : Rs. 11,000/-

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TANUVAS – ILFC - Low Cost Feeding Rack for Goats

Name of the Technology : **Low Cost Feeding Rack for Goats**

Name of the Scientists : **Dr. P. Tensingh Gnanaraj and Dr. T. Muthuramalingam**

Broad outline of the Technology : Low cost wooden feeding rack for goats reared under intensive system of rearing to maintain their browsing nature (habitat).

Easily to carry and transport and prevents wastage of fodder.

One rack is sufficient to feed 8 goats.

Utility of Technology

- Prevent soiling of fodder with dung and urine.
- Increases the feed intake level among goats.
- Ideal for intensive system of goat rearing.

Cost of Technology : Rs.Rs.6,000/-

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TANUVAS – ILFC- Topper pop bottle Milk feeder for lambs and kids

Name of the Technology : **Topper pop bottle Milk feeder for lambs and kids**

Name of the Scientists : **Dr. P. Tensingh Gnanaraj, , Dr.T. Muthuramalingam, Dr. E. Rachel Jemimah**

Broad outline of the Technology : The topper pop bottle milk feeder is made up of recyclable plastic screw top soft drink bottle with a 28 mm neck fitted with nipple at the cap.

The nipple is made up of compression molded rubber and latex.

The topper pop bottle milk feeder is available in two different quantities viz. one litre and half litre capacity.

Utility of Technology

- The TANUVAS – URF topper pop bottle milk feeder is specially designed for hand raising of weak or newborn lambs and kids.
- It can be easily handled by children and women.
- It can also be mounted at desired height and location using frame.
- Easy to clean and hygienic.
- Cost effective and user friendly for small, medium and large farmers.

Cost of Technology : Price Rs. 950/- (Pritchard flutter nipple)

Price Rs. 1,500/- (Bottle cap nipple)

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TANUVAS – ILFC - Compartmental Lamb/Kid Milk Feeder

Name of the Technology : **Nest Box for New Born Lambs and Kids**

Name of the Scientists : **Dr. P. Tensingh Gnanaraj, , Dr.T. Muthuramalingam, Dr. E. Rachel Jemimah**

Broad outline of the Technology : The compartment milk feeder is made up of two individual plastic boxes fitted with removable teat made up of latex.

The compartments are mounted on a metallic frame with sand and clamp in a view to either place the feeder at desired height and location or to simply clamp the feeder to a frame at a desired height.

The length, breadth and height of the feeder are 30cm X 20 cm X 20 cm respectively.

Utility of Technology

- TANUVAS – URF – compartment lamb/kid milk feeder is specially designed to feed milk to two lambs/kids at a time and to ensure that the right quantity of milk is available to each lamb/kid.
- It is very useful for hand raising abandoned, weak or newborn lamb/kid by feeding correct quantity of milk to individual animal.
- The compartments help us to ensure the quantity of milk fed by each lamb/kid.
- The teats can be easily removed for cleaning and replacement.
- Each compartment can hold up to 4 litres of milk.
- Cost effective and user friendly for small, medium and large farmers.
- It can be fixed in any convenient location.
- Up to two lambs/kids can be fed milk at a time.

Cost of Technology : Rs.5,700/-

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Innovative Technologies for Swine

TANUVAS – ILFC - Piglet comfort crate

Name of the Technology : **Piglet comfort crate**

Name of the Scientists : **Dr. P. Tensingh Gnanaraj and Dr. T. Muthuramalingam**

Broad outline of the Technology : It is made of poly vinyl slatted floor

Slatted floor is elevated from the floor level which facilitates very little or no contact of piglets with urine and faeces.

The crate is 6 ft long and 7 ft wide. The width of the rail is 22 inches at the top and 25 inches at the bottom. The distance of the crate from ground level and from the side wall is about 1 foot.

Utility of Technology

- Specially designed to reduce mortality in newborn piglets.
- Instant draining of urine and faeces to the ground.
  - Soling of sow and piglet is prevented.
  - Maintenance of very good hygiene preventing mortality due to diarrhea in piglets.
  - Reduction of bacterial load especially E.coli.
  - Healthy accelerated growth in piglets.
  - The crate is dry and free from dampness.
- It is provided with creep area for piglets to escape from crushing by the mother.
- Heater and lamp is provided for warmth and light piglets during night and winter.
- Semi automatic feeder and waterer is provided.
- The nearing parturient gilt/sow should be placed inside the crate before a week farrowing after disinfection with 0.2% KMnO4 solution.
- Very useful for commercial farms to reduce mortality in piglets and to sell more piglets.

Cost of Technology : Rs. 28,000/- (with slatted floor);
Rs. 10,080 (without slatted floor)

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TANUVAS – ILFC - Wheel Barrow for Farm Waste Removal

Name of the Technology : **Wheel Barrow for Farm Waste Removal**

Name of the Scientists : **Dr. P. Tensingh Gnanaraj, Dr. D. Balasubramanyam and Dr. T. Muthuramalingam**

Broad outline of the Technology : Made of plastic mounted on a rectangular metal frame of 5.75 feet length and 2.65 feet width and 2.60 feet height with the capacity of 125 litres.

This unit is movable through a pair of wheels (pneumatic tyres) fixed at the centre for mobility.

The plastic container could be rotated to 1800 angle to unload the farm waste.

Utility of Technology

- This wheel barrow is convenient to load the farm waste, transport easily and quick unloading.
- This saves labour, prevents spillage and easy to clean.
- Wheel barrow is light in weight durable and proved to be of great use in farm waste disposal and also transport of goods within the farm.

Cost of Technology : Rs.9,600/-

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TANUVAS – ILFC - Tattoo Hammer for Pigs

Name of the Technology : **Tattoo Hammer for Pigs**

Name of the Scientists : **Dr. P. Tensingh Gnanaraj, Dr. T. Muthuramalingam, Dr. S. Rangasamy and Dr. M. Babu**

Broad outline of the Technology : The new tattooing device, the tattoo hammer can be used for tattooing pigs without restraining them.

The tattoo made by this tattoo hammer can be easily be identified from at a distance without restraini8ng the animal

Utility of Technology

- Pigs are identified for selection for breeding.
- Pigs are identified by tattooing and ear notching methods which involves restraining the animal which is difficult, time consuming and labour intensive.
- Tattooing using this tattoo hammer substantially minimize bleeding.
- This tattoo hammer can be used in animals of all age groups.
- The tattoo mark created by this tattoo hammer can be easily be identified up to 2 years.

Cost of Technology : Rs.5,500/

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TANUVAS – ILFC - Guiding Pad for Pigs

Name of the Technology : **Guiding Pad for Pigs**

Name of the Scientists : **Dr. P. Tensingh Gnanaraj, , Dr.T. Muthuramalingam, Dr. E. Rachel Jemimah**

Broad outline of the Technology : Made of thick board of 4 ft length and 3 ft height.

Provided with two oval holes at the top for holding the guiding pad and one in the middle for pig vision.

Available in two different models one for guiding single pig and other for guiding group of pigs.

Utility of Technology

- Designed to guide or direct pigs to desired destination/place/sty/pen with ease for relocation, weighment, etc.
- Can be used to transfer pig /group of pigs from one place to another.
- Minimize labour and time.
- Easy to handle.
- Cost effective and user friendly for small, medium and large farmers.

Cost of Technology : Single pad price Rs.600/-

Double pad price Rs. 1,200/-

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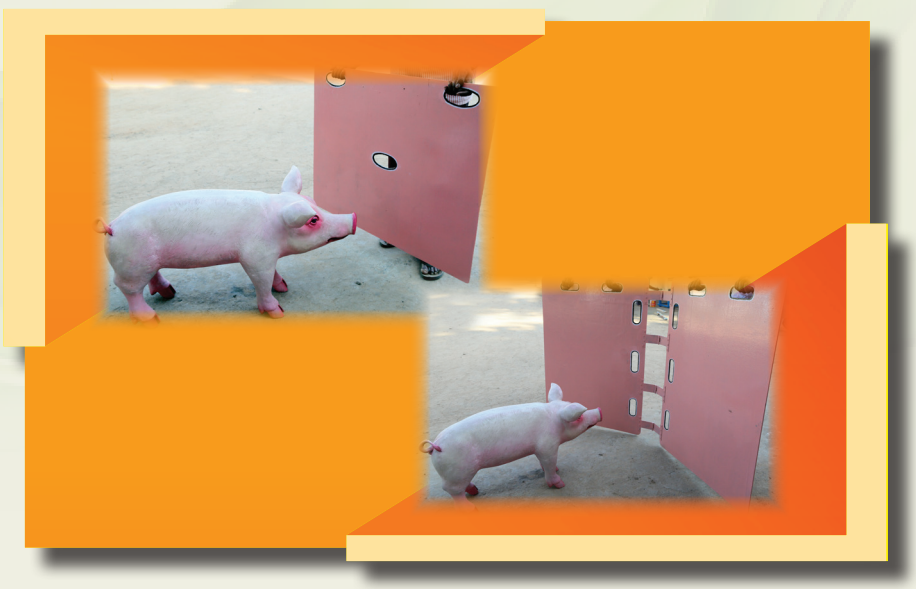

TANUVAS – ILFC - Creep Feeder for Piglets

Name of the Technology : **Creep Feeder for Piglets**

Name of the Scientists : **Dr. E. Rachel Jemimah, Dr.T. Muthuramalingam and Dr. P. Tensingh Gnanaraj**

Broad outline of the Technology : It is made up of 6 small plastic trays mounted on a metallic frame which is elevated at one side to provide easy access to piglet and to avoid wastage due to non accessibility.

Easily to carry and transport and prevents wastage of feed.

One feeder is enough for up to 10 piglets.

Utility of Technology

- TANUVAS – URF Creep feeder for piglets is specially designed to provide creep feed to piglets in the creep area of the farrowing pen.
- It is designed to ensure the availability of correct quantity of feed to piglets.
- It enhances concentrate feed intake among nursing piglets thereby improving daily weight gain and early weaning.
- Prevent contamination of feed with faeces and urine thereby minimizes the health issues.
- Easy to clean.
- Cost effective and user friendly for small, medium and large farmers.

Cost of Technology : Rs.Rs.900/-

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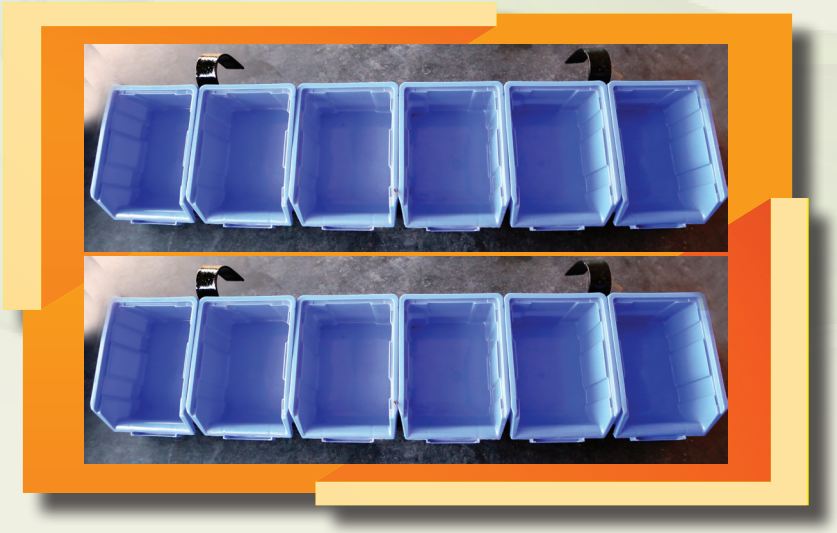

TANUVAS – ILFC - Barrel type Automatic Drinker for Pigs

Name of the Technology : **Barrel type Automatic Drinker for Pigs**

Name of the Scientists : **Dr. E. Rachel Jemimah, Dr.T. Muthuramalingam and Dr. P. Tensingh Gnanaraj**

Broad outline of the Technology : Made up of thick plastic cylindrical drum with lid of 120 litres capacity fitted with mechanical nipple.

The mechanical nipple is made up of stainless steel and let animal drink water by bitting action in order to eliminate water waste from play and accidental operation.

For piglets the drum is fitted with 6 nipplers for grower the drum is fitted with 5 nipplers and fro finishers/adult the drum is fitted with 4 nipplers to provide equal space for individual piglets for accessing the nipplers for drinking water and to avoid fighting among pigs.

Provided with plates at the bottom so that they can be fixed at any desired location.

Utility of Technology

- Designed to provide easy and comfort to pigs for drinking water.
- Provide clean and hygienic water to pigs round the day.
- The nipple is also provided with screen filter to keep out unwanted debris.
- The nipples can be easily removed for cleaning and replacement.
- Minimize wastage and contamination of water.
- Reduces space required for providing water.
- Ensure hygienic availability of water at any given point of the time.
- Easy to clean.
- Vitamin supplements / medications shall be mixed with water and easily administered.
- Available in three different ranges separately for piglets, growers and finishers.
- Ideal for pig sties where group of animals are housed together.
- Cost effective and user friendly for small, medium and large farmers.

Cost of Technology : 5,300 (Adult pig); Rs.5,900 (Pig grower); Rs.6,000 (Piglets)

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TANUVAS – ILFC - Barrel type swill feeder for pigs

Name of the Technology : **Barrel type swill feeder for pigs**

Name of the Scientists : **Dr. E. Rachel Jemimah, Dr. T. Muthuramalingam and Dr. P. Tensingh Gnanaraj**

Broad outline of the Technology : Made up of thick plastic cylindrical drum of 120 litres capacity

Provided with a loading inlet which can be rested at the level of side wall for easy feeding of animals from outside of the shed

Provided with stand which can be fitted to the ground by screw

Can be mounted at any desirable location

The feeding inlet is guarded by metal frame to avoid damage of the plastic drum by pig biting

Utility of Technology

- Designed to provide swill feed to fattener pigs
- Avoid spillage and wastage of swill feed
- Avoid soiling of pigs with swill feed
- Control offensive odour
- Minimize contamination of swill feed with urine and feces of pigs
- Aids in hygienic maintenance of pig shed
- One feeder can hold up to 100 -150 kg of swill feed
- 4-5 growers or 2- 3 finishers can be fed at a time
- Easy to clean
- Ideal for pig shed where animals are grouped together for fattening purpose
- Cost effective and user friendly for small, medium and large scale pig farmers

Cost of Technology : Rs. 3,120/-

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TANUVAS – ILFC - Piglet Soothe Snooze Deck

Name of the Technology : **Piglet Soothe Snooze Deck**

Name of the Scientists : **Dr.T. Muthuramalingam, Dr. E. Rachel Jemimah, Dr.P.Tensingh Gnanaraj**

Broad outline of the Technology : The piglet soothe snooze deck is 3 feet length, 2 feet width and 2 feet height.

It is fabricated using plywood on three sides and with acrylic door in the front.

A lamp is mounted on the top to provide light and warmth to the piglets during night and winter.

The floor is made up of two layers Viz. rubber mat on which the piglets rest and iron mesh beneath it to provide rigidity and to drain the excreta of the piglets.

The holding capacity is 12 – 15 piglets.

Utility of Technology

- TANUVAS – URF – piglet soothe snooze deck is designed to reduce the mortality in piglets due to hypothermia and crushing injury by the dam
- Piglets after suckling from the dam can be kept in this deck to provide them ideal hygienic environment.
- Incidences of illness can be reduced by minimizing the contact of piglets with the faeces and urine of the dam.
- Improves the daily body weight gain of the piglets as less amount of energy is lost for thermoregulation.
- Piglets can be kept for 3 week of age in this deck.
- The deck can be fixed at convenient location near the farrowing pen.
- Cost effective and user friendly for small, medium and large farmers.

Cost of Technology : Rs. 3,000/-

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Innovative Technologies for Rabbit

TANUVAS – ILFC - Slatted Floor (polyurethane) cage for Rabbit

Name of the Technology : **Slatted Floor (polyurethane) cage for Rabbit**

Name of the Scientists : **Dr. P. Tensingh Gnanaraj, Dr. T.R. Pughazenthi**
Dr. A. Sundaresan

Broad outline of the Technology : This slatted floor is 3 1/2 feet above the ground.

The cage is 2 feet length, 2 feet width and 4.5 feet height.

Inside 1 foot X 1 foot nest box for kindling is provided.

Utility of Technology

- Polyurethane slatted floor cage fabricated, tested and found to be ideal for rabbit.
- This slatted floor drains the urine and faeces of the rabbit to the ground.
- The cage is clean which ensures healthy growth for adult and young rabbits.
- Slat floor prevents diarrhea in bunnies and also reduced bacteria especially E. coli.
- The cage unit is easy to clean and wash.
- The cage can be maintained dry and damp free all the time.
- It is observed that bunnies grow comfortably healthy and attains satisfactory body weight with high livability in the cage.

Cost of Technology : Rs. 4,200/-

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TANUVAS – ILFC - Low Cost PVC Inclined Battery Cages for Rabbit

Name of the Technology : **Low Cost PVC Inclined Battery Cages for Rabbit**

Name of the Scientists : **Dr. P. Tensingh Gnanaraj, Dr. A. Sundaresan and Dr. T. Muthuramalingam**

Broad outline of the Technology : The conventional rabbit cage is made up of metal and prone for rusting.

The low cost PVC inclined battery cages for rabbit designed in TANUVAS is light and hence can be moved from one place to another.

Utility of Technology

- This cage is made of PVC frame is portable easy to clean and provides comfort to the rabbit.

Cost of Technology : 5,200/-

Contact Details : **The Professor and Head**
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TANUVAS – ILFC - Automatic Waterer for Rabbit

Name of the Technology : **Automatic Waterer for Rabbit**

Name of the Scientists : **Dr. P. Tensingh Gnanaraj, Dr.T.R. Pugazhenthi and P. Pothiappan**

Broad outline of the Technology : Thick aluminum material - 10cm long and 6cm diameter in drinking side and 3cm long and 3cm diameter in another side to attach water bottle.

Utility of Technology

- Designed to provide easy and comfort to rabbit for drinking water.
- Minimize wastage of water.
- Reduces space required for providing water.
- Ensure hygienic availability of water at any given point of the time.
- Vitamin supplements / medications shall be mixed with water and easily administered.

Cost of Technology : Rs. 400/-

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Innovative Technologies for Fodder Production

TANUVAS – ILFC - Low Cost Hydroponic Device

Name of the Technology : **Low Cost Hydroponic device**

Name of the Scientists : **Dr. P. Tensingh Gnanaraj, Dr.T. Muthuramalingam and Dr. T. Geetha**

Broad outline of the Technology : It is a soil less fodder production technology by which fodder can be grown to feed livestock such as cattle, buffalo, horse, pig, sheep, goat and poultry.

It request only minimal land, water and labour

As a seed also comes along with fodder and sprout mat, the whole fodder along with root and seed is utilize by the animals without wastage.

The low cost mode consist of 8 rows each with holding capacity of 4 trays

About 8 kg of fodder can be produced from 1.65 kg of maize seed

Different types of seeds the can be grown in to hydroponic fodder are maize, sun hump, horse gram, jowar etc.,

Utility of Technology

- The select seeds with high sprouting quality and moisture less the 12%
- Place the seeds in to tub / tank and add water
- Wash the seed by stirring with stick and drain the water
- Add water and soak the seeds for 24 hours
- Pack the soaked seeds in to gunny bags
- Place these gunny bags under shade (avoid keeping near / under direct sun light)
- Sprinkle water once in every 3 hours on to the gunny bags
- Allow the seeds to sprout in the gunny bag itself for one day
- Transfer the sprouted seeds from the gunny bags on to the trays and spread them evenly upto a height of 1/2 inches within the tray
- Rack the trays in to the lower section of the machine (i.e) in to the day 1 row.
- Switch on the sprinklers in every two hours for sprinkling water daily.
- Change / shift the trays to next row on every other day
- After completion of 8th day (i.e.) 8th row the fodder can be utilized for feeding farm animals.
- Usually the growth period is 8 days in which the fodder grows to a maximum height of 25 to 35 cm.
- It can be purchased from University Research Farm, TANUVAS by placing order.

Cost of Technology : Rs. 48,000/-

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TANUVAS – ILFC - Low Cost Coconut Cutter

Name of the Technology : **Low Cost Coconut Cutter**

Name of the Scientists : **Dr. P. Tensingh Gnanaraj, Dr. T. Muthuramalingam and Dr. T. Geetha**

Broad outline of the Technology : It is made of metal knife (1½ feet length) and a handle.

Knife with handle fixed in wooden table.

Height of wooden table is 2 ½ feet, length 3 feet and width 2 feet.

Utility of Technology

- It is easy to handle.
- In short time more number of coconuts can be cut.
- Knife and handle attached to a spring for easy and continuous operation.

Cost of Technology : Rs.4,200/-

Contact Details : **The Professor and Head**

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TANUVAS – ILFC - Modified Low Cost Hydroponic Fodder Machine (35-40 kg)

Name of the Technology : **Modified Low Cost Hydroponic Fodder Machine (35-40 kg)**

Name of the Scientists : **Dr. P. Tensingh Gnanaraj, Dr. T. Geetha and Dr. T. Muthuramalilngam**

Broad outline of the Technology : It is a soil less fodder production technology by which fodder can be grown to feed livestock such as cattle, buffalo, horse, pig, sheep, goat and poultry.
It request only minimal land, water and labour
The low cost mode consist of 8 rows each with holding capacity of 4 trays
About 8 kg of fodder can be produced from 1.65 kg of maize seed
As a seed also comes along with fodder and sprout mat, the whole fodder along with root and seed is utilize by the animals without wastage.
Different types of seeds the can be grown in to hydroponic fodder are maize, sun hump, horse gram, jowar etc.,

Utility of Technology

- The select seeds with high sprouting quality and moisture less the 12%
- Place the seeds in to tub / tank and add water
- Wash the seed by stirring with stick and drain the water
- Add water and soak the seeds for 24 hours
- Pack the soaked seeds in to gunny bags
- Place these gunny bags under shade (avoid keeping near / under direct sun light)
- Sprinkle water once in every 3 hours on to the gunny bags
- Allow the seeds to sprout in the gunny bag itself for one day
- Transfer the sprouted seeds from the gunny bags on to the trays and spread them evenly upto a height of 1/2 inches within the tray
- Rack the trays in to the lower section of the machine (i.e) in to the day 1 row.
- Switch on the sprinklers in every two hours for sprinkling water daily.
- Change / shift the trays to next row on every other day
- After completion of 8th day (i.e.) 8th row the fodder can be utilized for feeding farm animals.
- Usually the growth period is 8 days in which the fodder grows to a maximum height of 25 to 35 cm.
- It can be purchased from University Research Farm, TANUVAS by placing order.

Cost of Technology : Rs.39,360/-

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TANUVAS – ILFC - Movable Multiple Rain Gun

Name of the Technology : **Movable Multiple Rain Gun**

Name of the Scientists : **Dr. T. Muthuramalingam, Dr. P. Tensingh Gnanaraj and P. Pothiappan**

Broad outline of the Technology : It consists of four rain gun attached to pipeline which is further mounted on a movable trolley.
Can be easily moved from one place to another.
The height of the rain gun can be adjusted according to the height of the crop.
Water emitted by each rain gun is 12.5 liters/minute i.e. 50 liters/ movable multiple rain gun / minute.
One submersible motor (1 HP) is enough to run four rain gun and one 3 -10 HP motor is needed to run 3-20 movable multiple rain gun.

Utility of Technology

- Designed to irrigate lands of varying sizes from few cents to many hectares.
- Each rain gun emits 12.5 liters of water/ minute and the total quantity of water in 50 liters/ minute
- One rain gun will irrigate 3.5 cents of land /5 minutes. i.e. 10 trolleys irrigates1 acres of land in 30 minutes.
- This technology is highly useful for small, marginal and large scale livestock farmers especially l for backyard fodder cultivation
- Save water, electricity, time and labour.
- It is a simple and efficient tool to irrigate agriculture field.
- It can be purchased from University Research Farm, TANUVAS by placing order.

Cost of Technology : Cost of one movable multiple rain gun without trolley is Rs.1800/- and with trolley is Rs.2,700/-

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TANUVAS – ILFC - Low Cost Hydroponic Device (20 kg /day)

Name of the Technology : **Low Cost Hydroponic Device (20 kg /day)**

Name of the Scientists : **Dr. P.Tensingh Gnanaraj, Dr. T. Geetha and Dr. T. Muthuramalingam**

Broad outline of the Technology : All the four sides of the machine are made up of green shade net for insulation. The machine is 3 ft wide, 4 ft long and 6 ft height.

The machine consists of 8 rows each of which can hold 3 trays.

The machine is provided with a water tank of 200 litres capacity.

A ½ HP motor is provided to pump water from the water tank into the machine.

Each row is provided with 4 foggers on either side for misting water over the fodder.

Utility of Technology

- This device is designed to produce about 20 kg of green fodder per day by hydroponic method i.e. fodder production without soil.
- It is a soil less fodder production technology by which fodder can be grown to feed livestock such as cattle, buffalo, horse, pig, sheep, goat and poultry.
- Ideal for small scale farmers with one/two dairy cow or 10 goats.

Cost of Technology : Rs.18,000 per unit.

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TANUVAS – ILFC - Movable Multiple Sprinkler System

Name of the Technology : **Movable Multiple Sprinkler System**

Name of the Scientists : **Dr. P. Tensingh Gnanaraj and Dr. T. Muthuramalingam**

Broad outline of the Technology : It is 6 feet high and 90 feet width with 12 sprinklers.

Each sprinkler covers about 4 feet diameter area and sprinkles 13 litres of water per minute.

It irrigates 30 cents of land in 10 minutes i.e. an acre in 30 minutes with about 4700 litres of water.

Utility of Technology

- The movable sprinkler system is designed like wing shape with multiple sprinklers for effective irrigation of agricultural crops.
- This sprinklers system rotates on a vertical axis and sprinkles water over a circular area.
- Save water, electricity, labour and time.
- Suitable for farmers who has long stretch of cultivable land with a minimum of 120 feet width.
- It is a simple and efficient tool to irrigate fodder field.

Cost of Technology : Rs.1,17,000/-

Contact Details : **The Professor and Head**

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TANUVAS – ILFC - Low Cost Hydroponic Device (40 kg /day)

Name of the Technology : **Low Cost Hydroponic Device (40 kg /day)**

Name of the Scientists : **Dr. P. Tensingh Gnanaraj, Dr. T. Muthuramalilngam and Dr. E. Rachel Jemimah**

Broad outline of the Technology : The machine is 3 ft wide, 6ft long and 7 ft hight.
Acrylic sheet is attached in the front for exposure of fodder to sunlight for photosynthesis during day time.
Four LED light panel are provided inside the machine for provision of light during night for photosynthesis.
The machine consists of 8 rows each of which can hold 4 hydroponic fodder growing trays.
Each row is provided with 4 foggers on either side for misting water over the fodder.

Utility of Technology

- The TANUVAS - URF Low cost hydroponic machine is designed to produce about 40 kg of green fodder per day by hydroponic method i.e. fodder production without soil.
- It is a soil less fodder production technology by which fodder can be grown to feed livestock such as cattle, buffalo, horse, pig, sheep, goat and poultry.
- All the four sides of the machine are made up of puff panel for insulation.
- The machine is provided with air cooler for maintaining the temperature at 28^0C.
- The machine is provided with a water tank of 200 litres capacity.
- A ½ HP motor is provided to pump water from the water tank into the machine.
- The air cooler is fitted at the rear end while an exhaust fan is fitted in the anterior top for effective ventilation.
- Ideal for small scale farmers with 2 – 3 dairy cows or 20 – 30 goats.

Cost of Technology : Rs.61,560 per unit.

Contact Details : **The Professor and Head**
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Innovative Technologies for Pet Animals

TANUVAS – ILFC - Dog Washing and Grooming Tub

Name of the Technology : **Dog Washing and Grooming Tub**

Name of the Scientists : **Dr. A. Shanmuga Sundaram, Dr. P.Tensingh Gnanaraj and Dr. T. Geetha**

Broad outline of the Technology : Its polypropylene and GI steel construction is durable and resistant to water.

Can easily connect to existing utilities

Utility of Technology

- Pet washing and grooming tub is on a raised platform is designed to make washing and grooming pet much easier.
- Non – slip polypropylene slatted plastic floor on the bottom of the tub.
- It made of locally available materials.
- It have to be properly designed to be easy to clean, and provides comfort and safety to a dog.

Cost of Technology : Rs.15,000/-

Contact Details : **The Professor and Head**

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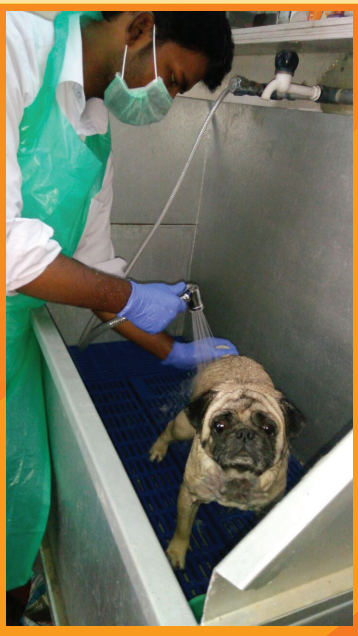

Other Innovative Technologies

TANUVAS – ILFC - Drinking Water Stand

Name of the Technology : **Drinking Water Stand**

Name of the Scientists : **Dr.A. Shanmuga Sundaram, Dr. R.K. Kanimozhi, Dr. M. Arul Prakash**

Broad outline of the Technology : The dimension of stand is: 29 inch in height and 35 inch in circumference.

The stand has a provision for placing a tumbler

Utility of Technology

- The drinking water stand is light in weight and can be placed anywhere as it is portable.
- The bubble top and dispenser are well supported as the body of the stand is firm and rigid.

Cost of Technology : Rs. 400/-

Contact Details : **The Professor and Head**

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TANUVAS – ILFC - Two Tier Drinking Water Stand

Name of the Technology : **Two Tier Drinking Water Stand**

Name of the Scientists : **Dr. R.K. Kanimozhi, Dr. M. Arul Prakash, Dr.A. Shanmuga sundaram**

Broad outline of the Technology : The upper end of the stand is 36.5 inch and the lower end of the stand is 29 inch in height.

The length of the stand is 24 inch.

The breadth of the stand is 12 inch.

The width between upper and lower end is 12 inch

Utility of Technology

- This drinking water stand is unique:
  a. The lower tier stand is for placing either an empty can or a can filled with drinkinag water.
  b. The upper tier stand will be utilized for dispensing the drinking water.
- The water can is fixed with a special nozzle for direct utilization of drinking water.
- The Two Tier Drinking Water Stand does not require a dispenser.

Cost of Technology : Rs.900/-

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Innovative Technologies for Poultry

TANUVAS – ILFC - Portable Mini Poultry Brooder

Name of the Technology : **Portable Mini Poultry Brooder**

Name of the Scientists : **Dr. P. Tensingh Gnanaraj, Dr. A. Sundaresan and Dr. S. Ezhilvalavan**

Broad outline of the Technology : Brooder guard is made of up of polypropylene flute board sheets which can withstand the brooding temperature.

The brooder guard height is 1ft and 3 ft diameter.

It can accommodate 100 chicks.

It is portable.

Utility of Technology

- Brooder is an equipment used to provide warmth to day-old chicken of broiler, layer, turkey, guineafowl , Japanese quail chicks, etc upto 2 weeks in summer and 3 weeks in winter.
- TANUVAS - URF - Portable mini poultry brooder consists of a heat source (incandescent bulb) with height adjustment to increase / decrease the temperature based on the behavior of the chicks.
- It is washable and can be disinfected and reused.

Cost of Technology : Rs. 800/-

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TANUVAS – ILFC - Low cost M-type Chicken Cage

Name of the Technology : **Low cost M-type chicken cage**

Name of the Scientists : **Dr. S. Ezhilvalavan, Dr. P. Tensingh Gnanaraj and Dr. A. Sundaresan**

Broad outline of the Technology : Front feeding length: 18 inch Front height : 18 inch
Back height : 15 inch Depth : 15 inch

The cage can be easily dismantled and easy to carry.

A mesh is provided on the floor of the layer cage to avoid egg breakage.

Utility of Technology

- M-type cage is meant for rearing chicken grower cum layers.
- Grower can be reared at upper row and layers can be reared at lower row.
- Each grower cage can accommodate 5 birds of 9-18 weeks of age and totally 40 growers can be reared in 8 compartments.
- Each layer cage can accommodate 4 birds of 19-72 weeks of age and totally 32 layers can be reared in 8 compartments.
- A nipple drinker is installed inside the cage and a linear feeder is fixed outside.
- More feeding space is available and better ventilation than conventional cages.
- It is more suitable for rural poultry production.

Cost of Technology : Rs.12,500/-

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TANUVAS – ILFC - Rural Poultry Cage

Name of the Technology : **Rural Poultry Cage**

Name of the Scientists : **Dr. P. Tensingh Gnanaraj, Dr. S. Ezhilvalavan and Dr. A. Sundaresan**

Broad outline of the Technology : RPC has two compartment; a top compartment meant for rearing adult birds and a bottom one is for rearing chicks.

Each cage in upper row can accommodate 10 adult birds and totally 20 adult birds can be reared.

Each cage in lower row can accommodate 15 chicks cum grower and totally 30 chicks cum grower can be reared.

The size of the each compartment is 30" x 30".

Utility of Technology

- Rural poultry cage (RPC) can be used for rearing day-old and adult desi-chicken.
- Droppings of upper compartment will be collected on a sloped sheet fixed on top of the lower compartments.
- Feeder and waterer can be kept inside the cage.
- RPC is most suitable for backyard rearing.

Cost of Technology : Rs.8,800/-

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TANUVAS – ILFC - Portable Electric Brooder

Name of the Technology : **Portable Electric Brooder**

Name of the Scientists : **Dr. P. Tensingh Gnanaraj, Dr. T. Geetha and Dr. S.Ezhil Valavan**

Broad outline of the Technology : Height:1.25 feet, Breath: 1 feet, Depth: 4" inches.

Portable electric brooder can be hanged 3 to 5 feet above the chick to provide heat and height can be adjusted based on the behavior of the chicks.

Portable electric brooder consists of a aluminum hover, tubular heater, thermostat, wire and chain.

Utility of Technology

- Brooder is an equipment used to provide warmth to day-old chicken of broiler, layer, Turkey, Guineafowl , Japanese quail chicks, etc.
- Temperature can be controlled gradually.
- Fire proof wire and connector is used.
- It can be installed and operated easily.
- It provides all time uniform temperature.
- It can provide heat for 100 chicks.
- It is portable.

Cost of Technology : Rs.2,400/-

Contact Details : **The Professor and Head**

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TANUVAS – ILFC - Double Deck Rural Poultry Cage (120 Birds)

Name of the Technology : **Double Deck Rural Poultry Cage (120 Birds)**

Name of the Scientists : **Dr. P. Tensingh Gnanaraj, Dr. T. Geetha and Dr. S.Ezhil Valavan**

Broad outline of the Technology : Cage specification: Length: 10 feet, Width: 6 feet, Height : 2 feet.
Cage with stand specification: Length: 10 feet, Width: 6 feet, Height : 6 feet
Metal roof specification: Length: 12 feet, Width: 8 feet, Height : 1 feet
TANUVAS-ILFC- Rural poultry cage can be used for rearing 120 layer chicken.

Utility of Technology

- This cage has upper and lower compartments can hold 120 layers.
- Droppings of upper compartment will be collected on a inclined sheet fixed on top of the lower compartment.
- Feeder and waterer can be kept inside the cage.
- Cage in upper row can accommodate 60 numbers of 19-72 weeks old.
- Roof of cage covered with metal sheet.
- A mesh is provided on the floor of the layer cage to avoid egg breaking.
- Upside down inlet doors present and the height can be adjusted with help of chain lock.
- This is most suitable for backyard rearing.
- This cage can be easily dismantled for easy transport.

Cost of Technology : Rs.32,400/- per unit

Contact Details : **The Professor and Head**

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TANUVAS – ILFC - Portable Egg Candler

Name of the Technology : **Portable Egg Candler**

Name of the Scientists : **Dr. P. Tensingh Gnanaraj, Dr. A. Sundaresan and Dr. S. Ezhilvalavan**

Broad outline of the Technology : Portable egg candler is an oval shaped and handy device made up of wood with dimension of 14 cm length, 9.5 cm breath and 1.8 cm height.

Portable egg candler requires 6 voltage power can be provided with 4 numbers of 1.5 volt battery.

Light source is heat sink LED lamp.

A rotating device is fixed on the oval platform, where the eggs can be kept and viewed for embryonic growth.

Utility of Technology

- The growth of embryo will not be affected by this candler.
- Embryonic development can be viewed with maximum accuracy than conventional method.
- Portable egg candler can be viewed with minimum care than conventional method.
- It is easy to carry and requires minimum skill for the operator.

Cost of Technology : Rs.1,100/-

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TANUVAS – ILFC - Low Cost Japanese Quail Layer Cage

Name of the Technology : **Low Cost Japanese Quail Layer Cage**

Name of the Scientists : **Dr.P.Tensingh Gnanaraj, Dr.V.Ramesh Saravana Kumar and S. Ezhil Valavan**

Broad outline of the Technology : This cage have two compartments, can rear 50 Japanese quail layers from 7-40 weeks of age.

Half inch mesh is provided on the floor of the layer cage to avoid egg breakage.

A nipple drinker is installed inside the cage and a linear feeder is fixed outside.

Utility of Technology

- Low cost native Japanese quail layer cage is meant for keeping Japanese quail.
- More feeding space is available and better ventilation than conventional cages.
- The cage can be easily dismantled and easy to carry.
- It is more suitable for Japanese quail egg production.

Cost of Technology : 2,760 per unit.

Contact Details : **The Professor and Head**

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TANUVAS – ILFC - Poultry Waterer with Heater

Name of the Technology : **Poultry Waterer with Heater**

Name of the Scientists : **Dr. P. Tensingh Gnanaraj, Dr. A. Sundaresan and Dr. S. Ezhilvalavan**

Broad outline of the Technology : Poultry waterer with heater is made up of HDPE and 2.5 liter capacity.

Poultry waterer with heater consists of a heating element, thermostat and indicator.

Utility of Technology

- Poultry waterer with heater is used to heat the drinking water.
- The thermostat cut off temperature at 80^{0}C, after reaching room temperature, the water will be given to chicks.
- No need to add water sanitizer.
- It is portable and washable.

Cost of Technology : Rs.1,100/-

Contact Details : **The Professor and Head**

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TANUVAS – ILFC - Incubator for Poultry (147 Eggs)

Name of the Technology : **Incubator for Poultry (147 Eggs)**

Name of the Scientists : **Dr. T. Geetha, Dr. P. Tensingh Gnanaraj and Dr. A.Sundaresan**

Broad outline of the Technology : Incubator made up of high insulation expanded polystyrene styrofoam core with Fiber reinforced plastic panel bonded on both side.

Aluminium powder coated extrusions.

Heaters: 400 Watts x 2: 800 Watts

Fan Motors: 60Watts x 1: 60 Watts

Turning motor (for turning of eggs) : 15 Watts x 1: 15 Watts

Dimensions: Height-2 feet, Width-2.25 Length-2 feet

Utility of Technology

- Push-in type racks made of expanded polystyrene styrofoam and imported eggs flats.
- A motor with fan is fixed to regulate the inlet of fresh air. Heaters attached to provide warmth to the eggs.
- Temperature and humidity is controlled by electro-mechanical controller/ digital controllers.
- Inverter is attached for power backup.
- Total connecting power is less than one Kilowatt.
- 147 eggs capacity; all automatic digital controlled Incubator and hatcher, designed for all types of poultry eggs .
- Complete fitting, low weight and portable.

Cost of Technology : Rs.49,800 per unit

Contact Details : **The Professor and Head**

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TANUVAS – ILFC - Low Cost Native Chicken Layer cage

Name of the Technology : **Low Cost Native Chicken Layer cage**

Name of the Scientists : **Dr.P.Tensingh Gnanaraj, Dr.V.Ramesh Saravana Kumar and Dr. A.Sundaresan**

Broad outline of the Technology : This cage can accommodate 8 birds of 19-72 weeks of age in 2 compartments.

Half inch mesh is provided on the floor of the layer cage to avoid egg breakage.

A nipple drinker is installed inside the cage and a linear feeder is fixed outside.

Utility of Technology

- Low cost native chicken layer cage is meant for keeping native chicken.
- More feeding space is available and better ventilation than conventional cages.
- The cage can be easily dismantled and easy to carry.
- It is more suitable for native chicken production.

Cost of Technology : 2,760 per unit.

Contact Details : **The Professor and Head**

Instructional Livestock Farm Complex - MVC
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Madhavaram Milk Colony, Chennai - 600 051
Phone : 044-2555 1571; e-mail : urf@tanuvas.org.in

TANUVAS – ILFC - Rat proof chicken feeder for backyard poultry

Name of the Technology : **Rat proof chicken feeder for backyard poultry**

Name of the Scientists : **Dr. A. Shanmuga Sundaram, Dr. P. Tensingh Gnanaraj, and Dr. S. Ezhil Valavan**

Broad outline of the Technology : Two PVC feeders are implanted at both sides of the stand to avoid infighting.

The pole supporting the feeder is made smooth so as to avoid climbing of rat and squirrel.

5 ½" perch made of MS flat is proved at both side for comforting the chicken during feeding.

Utility of Technology

- Rat proof chicken feeder is designed to prevent wastage of feed by rat menace.
- Helps in easy feeding of concentrate feed to adult poultry reared under deep litter system and free ranging system.
- Prevent waste of feed by rat and squirrel menace.
- Ideal for small, medium scale poultry farmers for feeding poultry.

Cost of Technology : Rs.2,370 per unit.

Contact Details : **The Professor and Head**

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TANUVAS – ILFC - Auto Cradle Incubator for Poultry (98 eggs)

Name of the Technology : **Auto Cradle Incubator for Poultry (98 eggs)**

Name of the Scientists : **Dr. A.Sundaresan, Dr.P.Tensingh Gnanaraj and Dr.V.Ramesh Saravana Kumar**

Broad outline of the Technology : The hatching eggs are set in horizontal position, with automatic turning of eggs in cradle motion is unique of its kind, A 6 rpm motor with fan is fixed to regulate the inlet of fresh air, and tow heaters attached inside will provide warmth to the eggs. 88 chicken eggs can be set.

The dimension: Height 10 inch x width 17 inch x length 28 inch.

Utility of Technology

- This is a less weight, portable, fiber made incubator designed for all types of poultry eggs.
- A conventional type thermometer was fixed inside and digital display fixed outside to know the temperature.
- Water requirement to maintain humidity: 200 ml for 1-18 days and 500 ml for 19-21 days of incubation.

Cost of Technology : Rs.16,560/-

Contact Details : **The Professor and Head**

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TANUVAS – ILFC - Compartmental linear nest box for layer chicken

Name of the Technology : **Compartmental linear nest box for layer chicken**

Name of the Scientists : **Dr. P. Tensingh Gnanaraj, Dr. A. Shanmuga Sundaram and Dr. A. Sundaresan**

Broad outline of the Technology : The linear nest box consist of seven individual nest boxes with both side opening along with 6" wooden perch for easy entry of chicken

The bottom of the nest box is made of 0.5X0.5" GI Weld mesh

The entire Linear nest box is mounted on MS L-angle

The individual nest box has a dimension of 10''X12'' X 12"

Utility of Technology

- Compartmental linear nest box for layer chicken is designed for backyard chicken rearing
- Provides conducive environment for laying of eggs by layer chicken
- Seven compartment are designed so as to avoid infighting between the layers for laying of eggs
- The bottom of the nest box is designed with weld mesh to enhance free flow of litter materials so as to avoid stagnation of litter and aeration
- The roof of the entire structure is made both side slopes so as to avoid breakage of roof due to perching of chicken
- Wooden perches of 6" width is proved at both side entrance throughout the length for easy entry of chicken into the individual nest box
- Ideal for small and medium scale poultry farmers for backyard chicken rearing for egg purpose.

Cost of Technology : Rs. 4,800 per unit

Contact Details : **The Professor and Head**

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TANUVAS – ILFC - Low Cost Battery Cage for Japanese Quail Layer

Name of the Technology : **Low Cost Battery Cage for Japanese Quail Layer**

Name of the Scientists : **Dr.P.Tensingh Gnanaraj, Dr. A.Sundaresan and Dr.V.Ramesh Saravana Kumar**

Broad outline of the Technology : Each layer cage can accommodate 200 Japanese quail layer of 6-48 weeks of age in 2 compartments.

One-fourth inch mesh is provided on the floor of the layer cage to avoid egg breakage.

Linear warterers and feeders are installed outside.

Utility of Technology

- Low cost battery cage for Japanese quail layer is meant for rearing Japanese quail egg production.
- More feeding space is available and better ventilation than conventional cages.
- The cage can be easily dismantled and easy to carry.
- It is more suitable for small scale Japanese quail egg production.

Cost of Technology : Rs.3,960 per unit.

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TANUVAS – ILFC - Backyard Poultry Shelter (BPS) with nest box

Name of the Technology : **Backyard Poultry Shelter (BPS) with nest box**

Name of the Scientists : **Dr. P. Tensingh Gnanaraj, Dr. A. Sundaresan and Dr. S. Ezhilvalavan**

Broad outline of the Technology : The size of the shelter is 12.5 X 7 ft.

Length : 39 inch Width : 15 inch

Front height : 15 inch Back height : 23 inch

Utility of Technology

- Backyard poultry shelter (BPS) is to protect the birds from predators.
- BPS consists of two nest boxes, two perch and a run. The roof is made of wire netting. The perch is made up HDPE mat on which the chicken can stand. The run is fenced with net and net supported by PVC pipes. The roof is surrounded by a net.
- The nest box helps in production of safe and clean eggs.
- Specification of the nest box

Cost of Technology : Rs.16,000

Contact Details : **The Professor and Head**

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For more information please contact

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