

1. Technology: Biomass Fired Dryer

- **Scientists associated in developing technology:** M. Din, P.S. Deshmukh, R.C.Srivastava, N. Ravisankar, Grinson, George, M. Balakrishnan and R. Sudha

- **Technology description:** A mechanical dryer with capacity of 1000 coconuts per batch is designed and fabricated using MS frame (2.4 m x 1.2 m x 1.7 m). The drying bed made of M.S bar grill kept at a height of 1.20 m above the ground level. A cylindrical shape heat exchanger was designed and fabricated using a 20 gauge metal sheet. The combustion chamber (2.5 m diameter) is made of 2 mm thick M.S. sheet. Two galvanized pipes have been connected at upper and lower side with combustion and drying chambers. A door is provided for loading and unloading of fuel. Four wheels have been provided at the base of frame for easy transport. Drying took 20 hours from an initial moisture content of 50% to final moisture content of 6.0 % of coconut.



- **Name of Licensee/ Contracting Party:** Shree Hari Fabricators (till 2015)
- **Address and Contact Details of Licensee/Contracting Party:** Shree Hari Fabricators, BathuBasthi (till 2015)
- **Type of Partnership (Technology Licensing/ Consultancy/ Contract Research):** Technology Licensing
- **Benefit:**
 - Using biomass fired copra dryer, the drying time is 50% less than natural sun drying in addition of making good quality copra. It helps in saving time, manpower and energy through use of coconut shell as fuel, thereby enhancing the net return to the farmers.
 - The locally available biomass may be efficiently utilized as fuel for drying and thereby enhancing net return to the farmers.

2. Technology: Coconut Dehusker

- **Scientists associated in developing technology:** M. Din, P.S. Deshmukh, R.C.Srivastava, N. Ravisankar, Grinson, George, M. Balakrishnan and R. Sudha
- **Technology description:** Pedal and hand operated coconut dehusker have been ergonomically designed with aim to easy to operate by an unskilled farmer/farm women. The performance of CARI designed pedal, hand operated dehusker and local tool has been evaluated with different sizes of nuts at 12.5% moisture content. The dehusking capacity of dehusker was found to be 125, 72 and 180 nuts/hr respectively for CARI pedal operated, CARI hand operated dehusker and local tool 'sabbal'. In case of CARI dehusker the height can be adjusted as per operator's requirement. It was observed that the bending cycle stress /pain was experienced after dehusking of 80-90 nuts by 'sabbal', 120-130 nuts by CARI hand operated and 150-160 nuts by pedal operated due to picking up of nuts at ground.



Coconut Dehusker

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- **Address and Contact Details of Licensee/Contracting Party:** Shree Hari Fabricators, BathuBasthi (till 2015)
- **Type of Partnership (Technology Licensing/ Consultancy/ Contract Research):** Technology Licensing
- **Benefit:** It helps the farmer to dehusk with less pain and time.

3. Technology: Spent Chicken meat pickle

- **Scientists associated in developing technology:**

A.Kundu, T.Sujatha, Jai Sunder, S.Jeyakumar

- **Detail description of technology:** Chicken meat pickle is prepared as a value addition to the meat of spent hen. Spent hen was slaughtered at the age of 60 weeks and approximately 500 gm meat could be dissected out from each bird. The meat was cut into optimum sized and marinated with turmeric and salt and sun dried for 10 – 12 hours to reduce the moisture content. Thereafter, cut the meat into small pieces.



- **Marination:**

- Add turmeric and salt
- Keep for 3 hours (under sun is preferred)

- **Ingredient composition for pickle gravy**

- Garlic ginger paste : 50 gm
- Onion paste : 40 g
- Specially designed Mixed masala : 100
- Chilly powder : 50 gm
- Kashmiri chilli powder
- Salt
- Vinegar
- Lemon – 2 nos
- Oil – 1 lit

- **Pickle preparation**

- Deep fry the marinated meat and keep it aside
- Deep fry of onion with garlic ginger paste in oil
- Add masala and boil for 2 minute
- Add the heated and cooled lemon
- Mix the fried meat pieces with fried masala
- Add vinegar
- Ripen for 10 days

4. Technology: Nugget from Culled / spent hens

- **Scientists associated in developing technology:** A.Kundu, T.Sujatha, Jai Sunder, S.Jeyakumar
- **Detail description of technology:** Meat of spent hen (800 g) was minced in a bowl with salt and condiment mix (onion (3) : garlic (1); 40 g) was added and chopped for 30 sec. Vegetable oil at 10 per cent level was added and chopped for one minute. Spice mix @2.5% was added and chopping was done for 30 seconds. Finally binder (maida (20): Wheat (40): gram dal flour (20)) was added and chopped for 1 minute to make emulsion. Intermittently either ice cubes or little water was added. The emulsion was filled in a box instead of sheep casings and cooked in cooker without weight for 45 minutes under boiling water. Cooked nuggets were then cooled to room temperature by immersing in cool water. The prepared nuggets were served and subjected for sensory evaluation. Higher organoleptic scores were noticed by the panelists. Hence the tough spent hen meat by value-addition and processing can be converted into a highly acceptable product and SHGs will be benefitted

Procedure

Mince spent hen meat (1 kg) in a bowl .Add salt and condiment mix {onion (3): garlic (1)} of 50 g, Chop for 5 minutes, Add 20 ml of oil, Chop for 5 minute, Add egg 4 nos, Chop for 5 minutes, Add Spice mix (25 g) was added and chopping was done for 30 seconds.Add binder {maida (25): Wheat (50): gram dal flour (25)}, Chop for 5 minute, Add either ice cubes or little water in between, Fill in a box, cook in cooker without weight for 45 minutes under boiling water.

Spice mix

➤ Coriander	20
➤ Aniseed	15
➤ Black pepper	13
➤ Capsicum	15
➤ Cumin seed	10
➤ Dried ginger	10
➤ Cinnamon	5
➤ Cloves	5
➤ Turmeric	5
➤ Cardamom	2

5. Technology: Pigment Fortified Eggs

- **Scientists associated in developing technology:** T. Sujatha, M.S. Kundu and A. Kundu
- **Detail description of technology:** Designer egg is a technology to exploit products

beyond their traditional food value and is the enrichment of egg retaining their nutritional, functional and sensory qualities. Recent trend in fortification of poultry products is enrichment with natural antioxidants through herbal feed additives since consumer's preferences for natural organic products in their food are increasing. In Andaman & Nicobar Islands, backyard poultry eggs meet out more than 60 per cent of rural requirements of rural people for eggs. Desilaying chicken are generally able to consume grasses and other greens that are rich in carotenoid pigments. Feeding of dried marigold petals up to 3 g per hen per day as supplemental feed



additive for rural poultry could enrich carotenoid pigments in desi eggs and thereby could improve yolk colour of consumer's preference under semi-intensive system of management to meet the growing demand and changing consumers need for enriched poultry produce.

- **Dose:** Dried marigold flower @ 3 gm per 100 g feed.
- **Application:** Applicable to small scale table egg producer, SHGs and rural poultry farmers
- **Benefit:** Carotenoid enriched design eggs enhances the availability of health beneficial lutein pigment to rural farmers

6. Technology: Herbal egg sanitizers for veterinary use

- **Scientists associated in developing technology:** T Sujatha, Jai Sunder, A. Kundu, D. Bhattacharya, Arun Kumar De, K. Abirami and Puro
- **Technology description:** It is inherent practice of hatchery to decontaminate the surface of hatching eggs shortly after each collection. Hatchable eggs are customarily disinfected with phenolic or quaternary ammonium compounds and formaldehyde fumigation. However, chemical disinfectants have been phased out of routine decontamination programs for hatching eggs despite its efficacy as a disinfectant because of concern over health hazards from exposure of farm workers or hatchery personnel to a toxic and potentially carcinogenic compound. Poultry industry is in line herbal and medicinal plants research on alternative to synthetic antibiotics. Aqueous extract of *Euphatorium* and *Vitex trifolia* @1:4 reduces total bacterial count and number of putrefied broken eggs during incubation. This composition of herbal extracts is potent preparation for herbal egg sanitizers in the poultry hatchery to address the issue of health hazards by synthetic disinfectants.
- **Subject Area/ Industry (in which it used):**Applicable to small scale table egg producer, SHGs, rural poultry farmers as well as poultry industry
- **Benefit:** This composition of herbal extracts is potent preparation for herbal egg sanitizers in the poultry hatchery to address the issue of health hazards by synthetic disinfectants.