- **Thematic area:** Value addition
- **Problem definition/Name of OFT:** Development of plant based low cost herbal gulal

1	Title	Development of plant based low-cost herbal Gulal
2	Problem diagnose	Scientific tests have verified that synthetic dye-based 'holi' powder can cause skin abrasions, eye irritation, allergy and can even trigger asthma.
3	Details of Technologies selected for assessment/refinement	
	Farmer's Practice (FP):	Use synthetic colour and arrowroot powder as ingredients in holi powder
	Technology option I (TO- I)	Use of kitchen products and its residue :- Arrowroot Powder (1 kg) + Beetroot Juice(750 ml)/Raw turmeric paste (300 gm)/Marigold flower paste (750 gm /Flat bean leaves (1 kg)
	Technology option II (TO- II) :	Aqueous solution of food color + Arrowroot Powder of 10% concentrations for three different colour were prepared.
4	Source of technology	DRPCAU, Pusa, Samastipur &AAU, Jorhat, Assam
5	Replication	7
6	Production System & Thematic area	Value addition
7	Critical input	Arrowroot Powder, Beetroot Juice, Raw turmeric paste, Marigold flower paste, Flat bean leaves, synthetic colour and food colour
8	Performance of Technology with performance indicator	Shelf life after 3, 6, 9 and 12 months, Packaging material, B:C Ratio
9	Process of farmers participation and their reaction	One-to-one interaction with farmers and Demonstration

Results: A plant based low-cost herbal Gulal- done with 7 farmers. In which on the basis of evidence it was seen that Technology- I was more accepted by the people. Its initial assessment was 4.7 and BC ratio was 2.0, followed by Technology-II. It is moderately accepted by the people. Its ratio is 1.25. Also Technology-I&II did not show any change in the color quality mentioned above during storage at room temperature in the dark in sealed plastic packets between immediately after manufacture and one year after manufacture. The BC ratio of Gulal made in the practice of farmers is the lowest with a value of 1.14.and when stored in sealed plastic packets at room temperature in the dark, it was observed that the color quality showed changes immediately after manufacturing and within three months of manufacturing.

Table 1: Development of plant based low cost herbal gulal

Treatments	**Sensory evaluation**	**Self life (3, 6, 9 & 12 months)**	**Result: Cost of cultivation**	**Gross return (Rs./kg)**	**Net Return (Rs./kg)**	**BC Ratio**
FP	2.8	3	Rs- 350/ kg gulal	400	50	1.14
T_1	4.7	12	Rs.- 200 / kg herbal gulal	400	200	2.00
T_2	4	12	Rs. – 320/kg food colour based herbal gulal	400	80	1.25

Making herbal gulal as per technology-1 and technology-2 and distribution of ingredients for making herbal gulal.

Technology Option 1

Technology Option 2