01.	**Experiment number and title**	:	**15.5.3.37** **Standardization of processing technology for dried Broccoli (*Brassica oleracea* var. italica*)***
02.	**Budget Head**	:	B.H. 12935
03.	**Collaborative department, if any**	:	Nil
04.	**Location and Agro-climatic sub region**	:	Centre of Excellence on Post Harvest Technology, NAU, Navsari
05.	**Investigators**	:	PI: Er. A. K. Senapati Co-PI: Er. P.S. Pandit, Harish G Suthar Associates: Dr.Dev Raj and F. M. Sahu
	Background Information		Broccoli is an edible green plant in the cabbage family whose large flower head is eaten as a vegetable. Broccoli is a crop that has an advantageous nutritional composition with respect to proteins, fiber and ash. Around 20 million tonnes of broccoli is produced worldwide every year from 1.6 million hectares (FAO, 2016). China and India are the biggest producers around 8.9 and 6.7 million tonnes/year respectively which represents 74% of world production.Broccoli(100 g) consists of water 89 g, Carbohydrates 6.64 g,sugar 1.7 g, Dietary fiber2.6 g, protein 2.84,fat 0.37 g, Vitamin C 89 mg, Ca 47 mg and Mg 21 g. Broccoli may be eaten raw and also used as boiled or steamed. Broccoli is also a source of many substances called photochemical, or plant chemicals, which may have anticancer properties. Broccoli displays have great potential to avoid a wide range of degenerative diseases, such as cancer (Mahnet et al., 2012). Fresh broccoli is greatly perishable vegetable in the fresh state leading to waste and losses for the harvesting period. Broccoli has the highest food safety risk and has the shortest shelf life among fruits and vegetables because they have high metabolic reactions which cause to loss in weight, quality, food and economic values (Mrkic et al., 2007). Therefore, various methods have been used to develop the post harvest life of intact including refrigeration, frozen and dehydration for all the year round usage (Doymaz, 2014). Drying is one of the most economical methods for preservation of broccoli for longer time. The growing interest in achieving processed products with characteristics similar to those of the fresh products has been the reason behind the improvement in processing techniques. When dealing

			with dehydrated foods, pre-treatments, together with the drying method and the storage conditions, influence the quality of the product. Food texture, rehydration ability and colour are among the most widely considered quality parameters in dehydrated foods. So, present study is going to be undertaken with the following objectives:
	Objectives		1. To standardize the drying parameter for broccoli in tray drier 2. To find out packaging materials for storage of dehydrated broccoli 3. To evaluate the quality parameters of dehydrated broccoli during storage 4. To evaluate cost of economics of the dehydrated broccoli
06.	**Year of commencement**	:	2019-20
07.	**Season**	:	-
08.	**Crop and variety**	:	Crop: Broccoli(*Brassica oleracea* var. *italica)* Variety: Shishir
9.	**Experiment details**	:	Experiment No. I **Optimization of suitable drying process for dehydration of Broccoli** **Treatment detail:** Tray Load:3 Level L_1= 1.5 kg/m^2 L_2= 2.0 kg/m^2 L_2= 2.5 kg/m^2 Temperature :3 Level, T_1= 50^0 C T_2= 55^0 C T_3= 60^0 C
			1.Sample size:1 kg per treatment 2.Pre treatment 500 ppm citric acid + 1000 ppm KMS 3.Quantity: 50 g dried Broccoli per treatment per repetition 4.Storage: Ambient temperature
	a. Design	:	FCRD
	b. Treatment	:	9
	c. Repetitions	:	3
			Treatment detail: Tray Load:3 Level L_1= 1.5 kg/m^2 L_2= 2.0 kg/m^2 L_2= 2.5 kg/m^2

			Temperature :3 Level, T_1= 50^0 C T_2= 55^0 C T_3= 60^0 C
	a. Design	:	FCRD
	b. Treatment	:	9
	c. Repetitions	:	3
			Experiment No. 2 : Evaluation of packaging material for dried Broccoli
	Experiment details		: Packaging material
			Treatment Details 1.High density polyethylene 400 gauge 2. Aluminium laminates foil
	a. Design	:	Two sample T-test
	b. Treatment	:	2
	c. Repetitions	:	12
10.	Observations to be recorded	:	• Physico-Chemical Characteristics {moisture content (%),protein, crude fiber, ash contents, sugar, water activity, dehydration ratio, recovery (%), rehydration ratio, ascorbic acid, acidity, Drying rate} • Sensory Evaluation (colour, flavour, texture, overall acceptability) • Microbiological parameter (total plate count) • Economics of the processed products
16.	Other information	:	Storage condition : Ambient Temperature Storage study : 0, 1, 2, 3, 4,5 and 6 months **Process Flow Chart for Preparation of dried Broccoli:** Collection of Broccoli ↓ Washing in tap water for removal of foreign body ↓ Pieces floret to suitable size ↓ Blanching at 80^0C for 2 min ↓ Pre treatment(500 ppm citric acid+ 1000 ppm KMS) for 10 min ↓ Drying in tray dryer as per treatment to constant moisture

			Packed dried broccoli floret as per treatment ↓ Stored at ambient condition for further analysis and uses