GOVERNMENT OF INDIA
MINISTRY OF FISHERIES, ANIMAL HUSBANDRY AND DAIRYING
DEPARTMENT OF ANIMAL HUSBANDRY AND DAIRYING
RAJYA SABHA
UNSTARRED QUESTION NO. 1979
TO BE ANSWERED ON 17TH DECEMBER 2025

ANNATTO AS A NATURAL COLOUR FOR THE DAIRY SECTOR

1979. DR. AJEET MADHAVRAO GOPCHADE:

Will the Minister of Fisheries, Animal Husbandry and Dairying be pleased to state:

(a) what initiatives have been implemented by the Ministry, in collaboration with National Dairy Development Board (NDDB), the Central Food Technological Research Institute (CFTRI), the Ministry of Agriculture and State Governments, to promote the use of Annatto as a natural colouring agent in dairy products;
(b) what specific actions have been taken by the Ministry, in partnership with State Governments and other stakeholders, to encourage cultivation of Annatto to ensure sufficient supply for the dairy sector; and
(c) whether Government recognizes that Annatto cultivation requires minimal water and fertilizers, making it an economically beneficial for farmers?

ANSWER

THE MINISTER OF FISHERIES, ANIMAL HUSBANDRY AND DAIRYING

(SHRI RAJIV RANJAN SINGH ALIAS LALAN SINGH)

(a) and (b) As informed by the Council of Scientific and Industrial Research (CSIR), the CSIR–Central Food Technological Research Institute (CSIR–CFTRI), Mysuru–a constituent laboratory of the Council of Scientific and Industrial Research (CSIR) had undertaken four Grant-in-Aid projects related to the study and development of annatto. Out of the four projects three were funded by Ministry of Food Processing Industries (MoFPI) and one by Department of Biotechnology (DBT). The institute is also participating in the CSIR Mission Mode project titled "Bioresource Conservation & Prospection (CSIR-BioCap)" which envisages the development of Vitamin-E enriched annatto oil for use in food and cosmetic applications, among others. CSIR–CFTRI has developed and successfully demonstrated following post-harvest technologies related to annatto:

Annatto Dye Preparation – The developed process involves the batch type percolation technique using counter current extraction of annatto seeds with selective solvents and further solvent recovery and vacuum dehydration of concentrated dye to crystal like form. The crystal-like dye can be further used in the formulations in the form of water soluble, oil soluble and refined powder.

Annatto Seed Separator - A small, continuous power operated machine was designed and developed for the separation of annatto seeds from pods. The machine was conceived as a low-cost, easy-to-dismantle and easy-to-fabricate device for removing the seed from the annatto pod with the machine capacity of 100 kg/hr having seed output of 40 kg/hr .

In addition to the above, CSIR–CFTRI has undertaken studies by visiting relevant industries and by engaging experts in various commercial and traditional food sectors to explore the application of different annatto-based formulations such as oil-soluble, water-soluble, propylene glycol (PG)-based, sugar-based and acid-soluble colorants. Colour concentrations

for these formulations were standardized to obtain the required shades across different food sectors, and the dye concentration and suitability were evaluated for a variety of commercial and traditional food products. Tailor-made formulations based on water-soluble carbonate systems were found suitable for use in hard-boiled candies, vermicelli, gold fingers, and fast foods such as biriyani and vegetable manchurian. Similarly, PG-based tailor-made formulations were found suitable for traditional sweetmeats such as boondi laddu and motichoor laddu, as well as dairy and bakery products including butter, cheese, biscuit cream, bakery cream, and icing cream. The sugar-powder formulation was found convenient for application in hard-boiled candies, jalebi, jangri, and boondi laddu.

(c) As, informed by the Tamil Nadu Agriculture University, Annatto is a moderately drought tolerant and requires less water. Planting is done during the monsoon season (June to September). Forest college and Research Institute (FC & RI), Mettupalayam has developed precision silvicultural practices and canopy management practices for maximizing seed yield in Annatto.

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