

GOVERNMENT OF INDIA
DEPARTMENT OF ATOMIC ENERGY
LOK SABHA
UNSTARRED QUESTION NO.1857
TO BE ANSWERED ON 07.03.2018

RADIATION TECHNOLOGIES FOR THE PREVENTION OF FOOD LOSS

1857. SHRIMATI MEENAKASHI LEKHI:
SHRI C.S. PUTTA RAJU:

Will the PRIME MINISTER be pleased to state:

- (a) whether the Government is conducting any research to develop technologies that prevent food loss in post harvest stage and if so, the details and the outcomes thereof;
- (b) whether use of radiation techniques has helped in increasing the food production in the country, if so, the details thereof; and
- (c) whether any proposal is pending with the Government to extend this facility across the country and if so, the details thereof and if not, the reasons therefor?

ANSWER

THE MINISTER OF STATE FOR PERSONNEL, PUBLIC GRIEVANCES &
PENSIONS AND PRIME MINISTER'S OFFICE (Dr. JITENDRA SINGH) :

- (a) Yes, Sir. Department of Atomic Energy (DAE) & Bhabha Atomic Research Centre (BARC) in particular is engaged in extensive research on use of radiation processing for extending shelf life of food products. Irradiation is very effective in treating agricultural produce to enhance its shelf life. Shelf life extension of agriculture produces is very much dependent on the produce, variety and storage conditions. Irradiation and proper storage substantially increases shelf life of fresh agricultural produce. Unique advantages of radiation processing of products (including fruits, vegetables, cereals, pulses, spices, sea foods and meat products) are:
 - Cold (no temperature increase) and clean process (no chemical residue)
 - Effective elimination of harmful bacteria and insects/pests
 - Treatment after final packaging to avoid recontamination
 - Significant increase in shelf life.

Research work on radiation technology at BARC has resulted in shelf life extension of potato, onion and phytosanitary treatments of fruits (like Mango, Pomegranate, etc). In case of potato and onion, sprouting during storage results in loss of quality and nutritional values. Mango irradiation was started in 2007.

Around 1150 tons of mangos were radiation treated in 2017 for export to USA. Recently the harmonisation of food irradiation rules with the international regulation has taken place in India. This has provided class wise clearance of irradiated food items which will enable the large scale deployment of this technology.

- (b) Yes, Sir. Application of nuclear techniques has helped in increasing productivity and production in agriculture. Experience gained by BARC has shown that using radiation for crop improvement is an efficient plant breeding method complementing the conventional methods.

DAE has developed 42 new varieties of crops using radiation induced mutation (and conventional) breeding. These include 15 varieties in groundnut, 3 in mustard, 2 in soybean, 1 in sunflower (total 21 in oilseeds), 8 in mungbean, 5 in uradbean, 5 in pigeonpea, 1 in cowpea (total 19 in pulse crops), 1 each in rice and jute. The major desirable traits in these crops include higher yield, seed size, improved agronomic and quality traits, early maturity and resistance to biotic and abiotic stresses. Several of these varieties enjoy high patronage among the farming community. Several of these varieties are extensively cultivated in the country & contribute substantially to the total agricultural production in the country. BARC is also involved in breeder seed multiplication of its released varieties in the case of crops such as groundnuts & pulses.

Nuclear techniques have benefited the farmers, traders and end-users and will continue to play a significant role in addressing food and nutritional security of our country.

- (c) Two technology demonstration plants were set up based on R&D carried out at BARC:

- i. First is KRUSHAK at Lasalgaon, Nashik, Maharashtra for low dose radiation treatment to take care of sprout inhibition and quarantine treatment of fresh produce (such as mango).
- ii. Second is at Vashi, Navi Mumbai, Maharashtra (Radiation Processing Plant, RPP) for high dose irradiation with the purpose of microbial decontamination of products (such as spices, herbal products and pet food).

Success of these plants led to the subsequent establishment of one plant each by the Government of Gujarat (Gujarat Agro at Bavala) & Maharashtra (MSAMB at Vashi, Navi Mumbai) and eleven irradiation plants in the private sector. Fifteen plants established in country to cater to the demands of the internal market as well as for exports (refer Annexure-1). These plants are set up under the guidance of Board of Radiation & Isotope Technology (BRIT) under the Department of Atomic Energy.

Answer for Lok Sabha Unstarred Question No.1857

S. No.	Name of the Plant	Purpose	Commissioning Year
1	Radiation Processing Plant, BRIT, Vashi, Navi Mumbai	Food and allied products	2000
2	*KRUSHAK Irradiator, Lasalgaon, Nashik ,Maharashtra	Food Products	2002
3	M/S Organic Green Foods Ltd., Dankuni, Kolkata, West Bengal	Food, Packaging & Medical Products	2004
4	M/S A.V. Processors Pvt. Ltd., Ambernath (E), Thane, Maharashtra	Food & Medical Products	2005
5	M/S Universal Medicap Ltd., Vadodara, Gujarat	Food & Medical Products	2005
6	M/S. Microtrol, Bangalore, Karnataka	Food & Medical Products	2006
7	*M/S Agrosurg Irradiators, Vasai, Thane, Maharashtra	Food, Packaging & Medical Products	2008
8	M/S Gamma Agro Medical Processing, Hyderabad, Telangana	Food & Medical Products	2008
9	*M/S Jhunsons Chemicals Pvt Ltd., Bhiwadi, Rajasthan	Agro, Medical & Packaging Products	2010
10	M/S InnovaAgri Bio Park Ltd., Malur, Dist. Kolar, Karnataka	Food & Medical Products	2011
11	*M/S Hindustan Agro Co-Operative Ltd., Rahuri, Ahmednagar, Maharashtra	Onion & Other Agricultural Produces	2012
12	M/S Impartial Agro Tech (P) Ltd., Unnao, Lucknow, Uttar Pradesh	Food & Medical Products	2014
13	*M/S Gujarat Agro Industries Corpn. Ltd, Bavla, Ahmedabad, Gujarat	Food Products	2014
14	M/s Aligned Industries, Dharuhera, Rewari, Haryana	Food Products	2015
15	*Maharashtra State Agricultural Mktg. Board, Navi Mumbai, Maharashtra	Food Products	2015

*Facility for low dose irradiation (for mango, Onion, Potato etc.)