GOVERNMENT OF INDIA
DEPARTMENT OF ATOMIC ENERGY
LOK SABHA
UNSTARRED QUESTION NO.781
TO BE ANSWERED ON 20.12.2017

BHABHA ATOMIC RESEARCH CENTRE

781. SHRI Y.V. SUBBA REDDY:
SHRIMATI DARSHANA VIKRAM JARDOSH:

Will the PRIME MINISTER be pleased to state:

(a) whether the Bhabha Atomic Research Centre (BARC) has developed a technology to purify groundwater and if so, the details thereof;

(b) whether the above mentioned technology has been demonstrated and proved successful and if so, the details thereof including the details of States with specific districts where the said technology is being used;

(c) whether the Government is aware of the fact that the groundwater in Prakasam district in the State of Andhra Pradesh is reportedly contaminated with fluoride, arsenic, stratium etc. and if so, the efforts taken by the Government to address the issue;

(d) whether BARC is actively involved in research and development activities in the field of agriculture in the country and if so, the details thereof; and

(e) the details of various initiatives/ projects/works under taken by the BARC in Gujarat during the last three years and the current year?

ANSWER

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

(a) Yes, Sir. Bhabha Atomic Research Centre (BARC) has developed several membrane assisted technologies for desalination and purification of contaminated water for drinking purposes at domestic and community level. This includes purification with respect to microbiological decontamination, arsenic removal, iron removal, defluoridation, salinity and hardness removal.

BARC has also developed a safe, simple and low cost technology for the remediation of fluoride from fluoride contaminated ground water to make it potable, using rare earth material as absorbent. The method requires addition of the adsorbent to the fluoride contaminated water; the fluoride is taken up by the adsorbent that settles at the bottom of the tank. The water is then filtered through terracotta filter and is ready to drink. This method is superior in several respects to some of the other methods currently being employed. The advantages of this method are:

- Does not require use of additives which can lead to residual contamination.
- Does not use expensive Electrolysis, Membrane Filtration or RO systems.
- Does not require electricity to operate the system and can be conveniently used in remote areas as well.
- The cost of consumables is minimal as the adsorbent can be easily regenerated.

(b) BARC has transferred the technical knowhow of all membrane assisted technologies to several private entrepreneurs on non-exclusive basis for commercial production and field deployment. Several private entrepreneurs who are licensees of BARC for these technologies are producing and marketing these membrane based water purification devices.

(c) No, Sir.

(d) The Department of Atomic Energy through its research, development and deployment activities in nuclear science and technology has been contributing in the field of food and agriculture. Radiation and radioisotopes are used in agricultural research to induce genetic variability in crop plants to develop improved varieties, to manage insect pests, to monitor fate and persistence of pesticides, to study fertilizer use efficiency and plant micronutrient uptake and also to preserve agricultural produce. Using radiation induced mutation (and conventional) breeding, DAE has developed 42 new varieties of crops. These include 15 varieties in groundnut, 3 in mustard, 2 in soybean, 1 in sunflower (total 21 in oilseeds), 8 in mungbean, 5 in urdbean, 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 and are extensively cultivated in the country and 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 ground nuts and pulses.

(e) Using both mutation and cross breeding, BARC has developed 42 crop varieties, which have been released and notified for commercial cultivation across the country. For Gujarat state, 5 groundnut (TAG 24, Somnath, TG 26, TG 37A, TPG 41), 3 pigeonpea (TT 6, TT 401, TJT 501) and 1 mungbean (TARM 1) varieties have been released through active collaboration with Indian Council of Agricultural Research (ICAR) and Junagadh Agricultural University, Junagadh. Besides, recently released

Trombay groundnut varieties such as TG 38, TG 39, TLG 45 and TG 51 (released elsewhere) are also popular among the Gujarat farmers. TAG 24 and TG 37A are high-yielding varieties, having moisture stress tolerance; TG 51 is with early maturity and TG 39, TPG 41 and TLG 45 are large seeded varieties, suitable for export and confectionary purposes.

Recently, seven new groundnut breeding lines having high yield, large seed and early maturity, developed by DAE, are being evaluated for their superiority at Junagadh Agricultural University. Some of these lines have shown promising initial performance. Earlier, DAE, through Board of Research in Nuclear Science (BRNS), funded groundnut research project of Directorate of Groundnut Research, Junagadh. Collaborative research with Navsari Agricultural University in agriculture relevant to the state is undertaken by BARC.

BARC has supplied more than 300 quintals of breeder seed (basic seed) of these varieties in the last five years to Directorate of Groundnut Research, Junagadh Agricultural University, Gujarat State Seed Corporation, seed companies, NGOs and farmers. These agencies, after seed multiplication, are distributing thousands of quintals seeds of Trombay varieties to Gujarat farmers. Feedback about performance of BARC groundnut varieties from farmers in Gujarat is highly encouraging.

Nisargruna technology, which has been developed by BARC, is used by a number of agencies in Gujarat for hygienic disposal of biodegradable wastes (along with generation of kitchen gas) generated in municipalities and other establishments. There are about 190 Nisargruna plants installed at various locations all over the country. BARC has signed MOUs with Municipal Corporation of Rajkot and built a 5 tons/day plant for treatment predominantly of cow dung generated in a gaushala. A similar plant (1 ton/day) is operational at IIT, Gandhinagar for treating kitchen waste. A 5 tons/day plant at Baroda is used for hygienic disposal of animal carcasses.

BARC has entered into an MoU with the Ahmedabad Municipal Corporation for setting up the first dry sludge hygienisation plant for treatment of municipal wastes in the country.

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