GOVERNMENT OF INDIA
MINISTRY OF AGRICULTURE AND FARMERS WELFARE
DEPARTMENT OF AGRICULTURAL RESEARCH & EDUCATION

LOK SABHA
STARRED QUESTION NO. 96
TO BE ANSWERED ON 22/11/2016

PROMOTION OF GENETIC RESEARCH

***96. SHRI ASHWINI KUMAR CHOUBEY:**

Will the Minister of AGRICULTURE & FARMERS WELFARE
कृषि एवं किसान कल्याण मंत्री be pleased to state:

(a) whether adequate steps have been taken by the Government to encourage Genetic Engineering particularly in the fields of agriculture, floriculture, fisheries during the last three years and the current year and if so, the details thereof;

(b) whether quality/standards are maintained for assessing the safety and nutritional quality of genetically engineered food and if so, the details thereof;

(c) whether workshops/seminars were conducted by the Government for awareness of the same and if so, the details thereof; and

(d) the funds allotted for the genetic research during the last three years along with the outcomes of the research thereof?

ANSWER

THE MINISTER OF AGRICULTURE AND FARMERS WELFARE
कृषि एवं किसान कल्याण मंत्री **(SHRI RADHA MOHAN SINGH)**

(a) to (d): A Statement is laid on the Table of the House.

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STATEMENT IN RESPECT OF PARTS (a) to (d) OF LOK SABHA STARRED QUESTION NO. 96 TO BE ANSWERED ON 22/11/2016 REGARDING "PROMOTION OF GENETIC RESEARCH"

(a) To encourage Genetic Engineering particularly with a view to enable development in the fields of agriculture, floriculture and fisheries, the Government is providing technical and financial support through schemes and research projects of various Ministries/ Departments and also evolved necessary guidelines and standing operating procedures (SOP). In addition, the Indian Council of Agricultural Research (ICAR) has launched a Plan Scheme entitled 'Network Project on Transgenics in Crops' (NPTC) wherein a total of 67 projects, 37 on functional genomics and 30 on transgenic development, have been sanctioned and implemented through ICAR institutes and State Agricultural Universities (SAUs). These projects are involved in development of transgenic rice, sorghum, watermelon, tomato, papaya, sugarcane, groundnut, mustard, brinjal, castor, potato etc., and field trials were conducted for evaluation of insect, fungal and viral resistance, abiotic stress tolerance, reduction of cold-induced sweetening and delayed fruit ripening. In fisheries science, during last 3 years ICAR has undertaken research in the areas of RNA interference based methods for promoting captive maturation of marine tiger, controlling morphotype differentiation in giant freshwater prawn Macrobrachium rosenbergii, shrimp Penaeus monodon, promotion of captive spawning in indigenous catfish Clarias magur, development of biocistronic DNA vaccine construct against Edwardsiella tarda, development of White Spot Syndrome Virus (WSSV) and Macrobrachium rosenbergii nodavirus, (MrNV) vaccines for shrimp, Myostatin gene disruption studies of Indian major carps for improving skeletal muscle growth and gene characterization to develop ornamental transgenic of freshwater indigenous fish species.

(b) India has well defined regulatory mechanisms for assessing for food, feed and environmental safety of GM food. Strict rules and guidelines are followed for bio-safety evaluations of GM crops. Institute Biosafety Committee (IBSC) at the institute level, Review Committee on Genetic Manipulation (RCGM) under Ministry of Science & Technology and Genetic Engineering Appraisal Committee (GEAC) under Ministry of Environment, Forest and Climate Change look after evaluation of GM crops and implementation of rules and guidelines.

During entire research and development process, all Genetically Engineered (GE) crops undergo elaborate Food and Environmental safety assessment following regulatory guidelines and Standard Operating Procedures under Rules-1989 of Environment (Protection) Act-1986. GM foods are also regulated under Food Safety and Standards Act, 2006 which consolidates laws for manufacture, storage, distribution, sale and import to ensure availability of safe and wholesome food for human consumption and for matters connected herewith or incidental thereto.

(c) Department of Biotechnology (DBT) and ICAR, in association with Biotech Consortium India Ltd. (BCIL), regularly conduct workshop for the awareness on Genetic Engineering. ICAR launched a web portal (http://biosafety.icar.gov.in) on GM crop biosafety, and designates two scientists from research institutes as 'Biosafety Officer' to acquire and disseminate knowledge on GM crop biosafety. DBT conducts regular workshops for creating awareness on Genetic Engineering to officials of State Agriculture Departments, Faculties of State Agriculture Universities and other organizations involved in recombinant DNA (rDNA) research.

(d) It is difficult to estimate the details of funds earmarked year-wise to research facilities by various agencies for genetic engineering activities since genetic engineering is an integral part of many major programmes/ schemes involving other conventional approaches and technologies. Department of Biotechnology, Government of India has allocated Rs. 650 lakhs to ICAR during the last three years for genetic-engineering research towards development of transgenic plants for both abiotic and biotic stress tolerance, improvement of fruit quality and shelf life, generation of male sterility, to understand the mechanism of plant developmental pathways in crop plants such as tomato, chilli brassica and wheat and for development of rose cultivars and determining the diversity and genetic relationship in order to strengthen the rose breeding programme. So far as Department of Agricultural Research and Education is concerned, Under the 'Network Project on Transgenics in Crops', ICAR, about Rs. 959 lakhs, Rs. 850 lakhs and Rs. 750 lakhs were utilized for the FY 2013-14, 2014-15 and 2015-16, respectively and, there are two institutes working exclusively on Genetic Engineering/ Bio-technology, namely Indian Institute of Agriculture Biotechnology (IIAB), Ranchi and National Research Centre for Plant Biotechnology (NRCPB), New Delhi function under the aegis of the Indian Council of Agricultural Research (ICAR) and their fund allocations are given below:

Table-1: Budget provided by ICAR for two Biotechnology based Research Institutes during last three years and the current year

				Rs. in Lakhs
Institute	**RE (2013-14)**	**RE (2014-15)**	**RE (2015-16)**	**BE (2016-17)**
IIAB, Ranchi	243.00	294.33	183.00	1105.00
NRCPB, New Delhi	450.00	430.00	600.00	520.00

As regards the outcome of the research, in mustard crop, based upon the biosafety measures and biosafety research level –I trial (BRL-I), GEAC permitted to conduct BRL-II trial of DMH 11. The said BRL –II trial of transgenic mustard hybrids DMH 11 was conducted during 2014-15 season at IARI, New Delhi, PAU, Ludhiana and PAU Regional Research Station Bhatinda. The test hybrid DMH- 11 out yielded the checks and had an average 25-30%yield superiority.

The status of the other crops ready for the Biosafety Research Level- I trials is given in the following table:

Table: 2: Status of crops ready for BRL-I trial:

Sl. No.	**Crop**	**Gene**	**Trait**
1	Sorghum	*Cry 1 B*	Stem borer resistance
2	Brinjal	*Cry 1 Ac*	Fruit and shoot borer resistance
3	Banana	*Ace-AMP 1*	Fusarium wilt resistance
4	Tomato	*Cry1 AC*	Fruit borer resistance
5	Tomato	*BcZAT12*	Abiotic stress tolerance
6	Castor	*Cry 1 Aa*	Insect pests resistance

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