GOVERNMENT OF INDIA
DEPARTMENT OF ATOMIC ENERGY
LOK SABHA
UNSTARRED QUESTION NO.3617
TO BE ANSWERED ON 08.08.2018

IRRADIATED SEEDS

3617. SHRI KRUPAL BALAJI TUMANE:
SHRIMATI BHAVANA PUNDALIKRAO GAWALI PATIL:

Will the PRIME MINISTER be pleased to state:

(a) whether advanced varieties of seeds have been developed by Department of Atomic Energy (DAE) using radiation and if so, the details thereof;

(b) the number of such varieties of seeds developed using this technology;

(c) whether these seeds are potentially hazardous to health of humans and if so, the details thereof; and

(d) the precautions taken / being taken by the Government to avoid such health risks?

ANSWER

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

(a)&(b) Yes, Sir. Using radiation induced mutagenesis along with cross breeding, BARC has developed 42 notified varieties of oilseeds (15 varieties of groundnut, 3 varieties of mustard, 2 varieties of soybean, one variety of sunflower), pulses (8 varieties of mungbean, 5 varieties each of pigeonpea and urdbean and one variety of cowpea), one variety each of rice and jute, which have been released and notified for commercial cultivation across the country. Details are given at Annexure-1. Some of the desirable traits in these crops include higher yield, seed size, improved agronomic and quality traits, early maturity and resistance to biotic and abiotic stresses.

(c) No, Sir. Crop varieties developed through mutation along with cross breeding are not hazardous to human beings. From the genetic changes brought by radiation based mutagenesis, only desirable changes in crop plants which are beneficial to the farmers and are suitable to different agro-climatic regions, are incorporated and carried forward. After stabilization of desirable changes, new crop lines are tested rigorously in national or state evaluation trials over the seasons and across the locations. Only those lines which have superiority over the local, zonal and national check varieties are released and notified for commercial cultivation.

(d) The new breeding lines developed using radiations (mutants) are evaluated along with the lines developed by other research centres in the trials conducted by the Indian Council of Agricultural Research (ICAR) and/or different State agriculture universities in their respective agro-climatic zones. Hence, mutants are commercialized only after systematic evaluation, their superiority over existing varieties, and approval by the recommendation committees as per the norms set by Central and State Variety Release Committees. In view of the above, there is no health risks associated with the mutant varieties.

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Annexure-1

Annexure referred to in reply to part (a) and (b) ofLok Sabha Unstarred Question No. 3617 regarding"Irradiated Seeds" to be answered on 08.08.2018.

Trombay crop varieties released and notified for commercial cultivation in India

Variety	Year of release	States	Special features
OIL SEEDS			
Groundnut			
TG 1	1973	All India	High yield, large seed, more branches, 50 days seed dormancy
TG 17	1985	Maharashtra	No secondary branches, 30 days seed dormancy
TG 3	1987	Kerala	High Yield
Somnath (TGS 1)	1991	Gujarat	Large seed (70-80 g/100 seeds), Semi-runner type
TAG 24	1992	Maharashtra, Orissa, Karnataka, West Bengal, Rajasthan	Semi-dwarf, Small dark green thick leaves, Earliness (95-100 days), high harvest index, high partitioning %, wider adaptability
TG 22	1994	Bihar	Medium large seed (55-60g/100 seeds), 50 days seed dormancy
TKG 19A	1996	Maharashtra	Large seed (70-75g/100 seeds), 30 days seed dormancy
TG 26	1996	Gujarat, North Maharashtra, Madhya Pradesh	Earliness (95-100 days), high harvest index, 20 days seed dormancy, Smooth pods, Salinity tolerance
TG 37A	2004	Haryana, Rajasthan, Punjab, UP, Gujarat, Orissa, West Bengal, Bihar, North Eastern states	High yield, smooth pods, collar rot and drought tolerance, wider adaptability
TPG 41	2004	All India	Large seed (75-80g/100 seeds), Medium maturity (120 days), 20 days seed dormancy, High oleic acid (60%).

Variety	Year of release	States	Special features
TG 38	2006	Orissa, West Bengal, Bihar, North Eastern states	High shelling % (78%), more 3-seeded pods, more round seeds
TLG 45	2007	Maharashtra	Large seed (75-80g/100 seeds), Medium maturity (115-120 days)
TG 39 (Trombay Bikaner) TGLPS 3 (TDG 39)	2008	Rajasthan	Large seed (75-80g/100 seeds), Medium maturity (115-120 days), high oleic acid (59%), more number of branches
	2009	Karnataka	
TG 51	2008	Orissa, West Bengal, Bihar, North Eastern states	Early maturity (90 days), medium large seed (50-55g/100 seeds), high shelling% (78%), more 3-seeded pods.
TG 47 (Bheema, RARS-T-1)	2011	*Andhra Pradesh*	Large seed (65-70g/100 seeds), Maturity of 110-115 days
Mustard			
TM 2	TM 2	TM 2	TM 2
TM 4	TM 4	TM 4	TM 4
TPM 1	TPM 1	TPM 1	TPM 1
Soybean			
TAMS 38	TAMS 38	TAMS 38	TAMS 38
TAMS 98-21	TAMS 98-21	TAMS 98-21	TAMS 98-21
Sunflower			
TAS 82	TAS 82	TAS 82	TAS 82
PULSES			
Mungbean			
TAP-7	1983	Maharashtra, Karnataka	Tolerant to powdery mildew
TARM-2	1992	Maharashtra	Resistant to powdery mildew

Variety	Year of release	States	Special features
TARM-1	1995	Maharashtra, Gujarat, MP, AP, Kerala, Orissa, Karnataka, Tamil Nadu	Resistant to powdery mildew
TARM-18	1995	Maharashtra	Resistant to powdery mildew
TMB-37	2005	Uttar Pradesh, Bihar, Jharkhand, Assam, WB	Tolerant to yellow mosaic virus
TJM-3	2007	Madhya Pradesh	Resistant to powdery mildew, Yellow mosaic virus and *Rhizoctonia*root –rot diseases
TM-96-2 (*TrombayP esara*)	2007	Andhra Pradesh	Resistant to powdery mildew and *Corynespora*leaf spot
TM-2000-2 Pairymung	2010	Chhattisgarh	Suitable for rice fallow and resistant to powdery mildew
Pigeonpea			
TT-6	1983	MP, Maharashtra, AP, Gujarat, Karnataka, Kerala	Large seed
TAT-10	1985	Maharashtra	Early maturing
TT-401	2007	Madhya Pradesh, Maharashtra, Gujarat, Chhattisgarh	High yielding, tolerant to pod borer and pod fly damage
TJT-501	2009	MP, Maharashtra, Gujarat, Chhattisgarh	High yielding, tolerant to *Phytophthora*blight, early maturing
PKV-TARA	2013	Maharashtra	Resistant to wilt and sterility mosaic
Urdbean			
TAU-1	1985	Maharashtra	Large seed
TPU-4	1992	Maharashtra, MP	Large seed
TAU-2	1992	Maharashtra	High yielding
TU 94-2	1999	Andhra Pradesh, Kerala, Karnataka, Tamil Nadu	Resistant to yellow mosaic virus
TU-40	2013	AP, Karnataka, Orissa, TN	Suitable for rice fallows and resistant to powdery mildew
Cowpea			
TRC-77-4 (Khalleshwari)	TRC-77-4 (Khalleshwari)	TRC-77-4 (Khalleshwari)	TRC-77-4 (Khalleshwari)
RICE			
Hari	1988	Andhra Pradesh	Slender grain type
JUTE			
TKJ-40 (Mahadev)	1983	Orissa	High yielding

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