1	2	3	4
Castor	5	1500-2200	28
Safflower	1	1400-2000	53
Pulses			
Chickpea (20)	20	1300-2400	11141
Mung bean (16)	16	900-1500	1343
Urdbean(18)	18	1000-1400	1031
Lentil (12)	12	1400-2000	718
Field pea (10)	10	2000-3000	959
Pigeon pea (9)	9	1500-2400	1317
Rajmash (1)	1	1500-2000	5
Horse gram (3)	3	700-1000	3
Cluster bean (5)	5	900-1600	425
Cow pea (7)	7	900-1200	37
Lathyrus (1)	1	1600	-

(*) Yield in tons per hectare.

Introduction of GM crops for commercial farming

†2824.SHRI RAGHUNANDAN SHARMA: Will the Minister of AGRICULTURE be pleased to state:

(a) the number of GM crops introduced for commercial farming and the research has been/is being done by ICAR regarding such crops;

(b) whether any objections were raised by certain parties regarding farming of Bt. cotton;

(c) if so, the details thereof and the reaction of Government thereto;

†Original notice of the question was received in Hindi.

(d) whether the objectives of increasing the production of these crops and lessening the use of pesticides and insecticide have been achieved;

(e) if so, the details thereof and the benefit farmers have got from this; and

(f) the measures taken/proposed to be taken by Government to tackle their likely ill effects on the health of human beings?

THE MINISTER OF STATE IN THE MINISTRY OF AGRICULTURE (SHRI TARIQ ANWAR): (a) Bt. cotton is the only transgenic crop approved for commercialization in India. Indian Council of Agricultural Research (ICAR) is undertaking agricultural research projects related to bio-technology and GM crops like cereals, pulses, oilseeds, cotton and vegetables through its Research Institutes.

(b) Yes, Sir.

(c) From the inception of the Bt. cotton, there has been a sustained objection from some of the Non-Governmental Organizations besides Civil Society, Technical Expert Committee (TEC) constituted by Hon'ble Supreme Court, Parliamentary Standing Committee on Agriculture, etc. on the grounds that (i) Biosafety assessment of Bt. cotton before its introduction and post release monitoring of Bt. cotton is not adequate; (ii) Bt. cotton is not suitable for cultivation in rainfed areas which has adversely affected the economy of small farmers, and (iii) Cattle death and farmers' suicides have been attributed to introduction of Bt. cotton in some regions such as Warangal and Vidarbha.

The objections have been very speculative, without any reasonable assessment of the technological strengths of Bt. cotton. In spite of the controversy regarding Bt. cotton, the ground reality is that during the last decade, area under cotton cultivation (approx. 12 million hectares of which 90% is under Bt. cotton) and productivity of cotton has gone up significantly. During the post Bt. cotton era, Indian economy has benefited as India is the second largest exporter of cotton. Pursuant to the release of Bt. cotton in 2002, the Genetic Engineering Approval Committee (GEAC) of Ministry of Environment and Forests had sought the views of the State Governments in 2005 on whether approval for Bt. cotton cultivation should be renewed or not. So far, the Ministry of Environment and

Forests has not received any request from any of the State Government to withdraw the approval for Bt. cotton cultivation in the cotton growing States. There is no scientific evidence to show that Bt. cotton has adversely impacted the bio-diversity or human/cattle health.

(d) Yes, Sir.

(e) The main purpose of Bt. cotton was to control the dreaded insect pests, *viz.,* bollworms. Bt. cotton effectively controls bollworms, especially *Helicoverpa armigera*, thus preventing yield losses from an estimated damage of 30 to 60% each year in India. The biggest gain from the technology was in the form of reduced insecticide usage for bollworm control. Prior to the introduction of Bt. cotton, about 9,400 metric tonnes of insecticides were used for bollworm control in cotton during 2001-02, while only 222 metric tonnes were used for bollworm control in 2011-12. Yields are estimated to have increased at least by 30% due to effective protection from bollworm damage.

(f) The Government of India is following a policy of case by case approval of genetically modified (GM) crops. Extensive evaluation and regulatory approval process takes place before any GM crop is approved for commercial cultivation. This includes generation of relevant biosafety information, its elaborate analysis to ensure food, feed and environmental safety. The environmental safety assessment includes studies on pollen escape, out-crossing, aggressiveness and weediness, effect of the gene on non-target organisms, presence of protein in soil and its effect on soil micro-flora, confirmation of the absence of terminator gene and baseline susceptibility studies. A final view on the commercialization of GM crop plants is taken only when there is a clear economic and technical justification besides suitability for environment and human consumption.

Use of banned pesticides

2825. SHRI PANKAJ BORA: Will the Minister of AGRICULTURE be pleased to state:

(a) whether Government is aware that farmers are using banned pesticides to grow fruits and vegetables;