(c) if so, the efforts being made by the Ministry to address this problem?

THE MINISTER OF STATE IN THE MINISTRY OF AGRICULTURE AND FARMERS WELFARE (DR. SANJEEV KUMAR BALYAN): (a) ICAR-Central Institute on Cotton Research, Nagpur (CICR) undertakes regular insect resistance monitoring programme on cotton across the country. Based on its survey of during 2014-15 and 2015-16, break down of Bollgard II resistance in cotton against pink bollworm in some parts of Gujarat, Telangana and Andhra Pradesh has been reported.

(b) A meeting was held at National Academy of Agricultural Research Management (NAARM) on 13th December, 2015 coordinated by Acharya NG Ranga Agricultural University, Hyderabad and the strategy to manage the pink bollworm was discussed.

(c) Following efforts are being made:

1. ICAR-CICR advised the use of the parasitoid *Trichogramma bactriae* in bt cotton fields for pink bollworm management.
2. Recommended planting of Desi cotton/conventional non-bt G. *hirsutum* cotton and late planted bhendi as refugia crops to counter build up of resistance.
3. Timely sowing of short duration/ early maturing hybrids for escape of pink bollworm.
4. Avoiding use of synthetic pyrithroids.
5. Termination of crop by December/January.
6. Weekly advisory issued on ICAR-CICR website at *http://www.cicr.org.in/weekly_advisory.htm.* Also Instructions are being offered weekly to the cotton growing farmers.

Indebetedness among cotton growing farmers

994. SHRI AVINASH PANDE: Will the Minister of AGRICULTURE AND FARMERS WELFARE be pleased to state:

(a) whether it is a fact that promotion of cultivation of Bt. Cotton has led to an increase in indebtedness among the cotton growing farmers, especially those of the Vidarbha region in Maharashtra;

(b) if not, the reasons and factors that support this conclusion; and

(c) if so, the measures being taken by Government to study, prevent and compensate the loss occasioned to such farmers?

THE MINISTER OF STATE IN THE MINISTRY OF AGRICULTURE AND FARMERS WELFARE (DR. SANJEEV KUMAR BALYAN): (a) and (b) No, Sir. There is no evidence that spread of cultivation of Bt. Cotton in itself has led to an increase in indebtedness among the cotton growing farmer and in any case adoption of Bt. Cotton by farmers is based on market forces and not due to any promotion by Government.

The rapid voluntary adoption of Bt. Cotton hybrids by the farmers resulted in expansion in area under Bt. Cotton cultivation from 29,000 ha in 2002-03 (0.38% of total cotton area) to about 118.35 lakh ha in 2014-15 (92% of total cotton area). The productivity of cotton in the country increased by almost 3.5 times by adoption of GM cotton hybrids. Cotton production over all increased from 86.24 lakh bales in 2002-03 to 348.05 lakh bales in 2014-15. India is the 2nd largest producer, consumer and exporter of cotton in the world.

The increasing trend towards use by Bt. Cotton seed indicate that there is no significant relation between indebtedness with Bt. Cotton cultivation.

(c) Question does not arise.

Report on decline in production of rice, maize and jawar

†995. SHRI P.L. PUNIA: Will the Minister of AGRICULTURE AND FARMERS WELFARE be pleased to state:

(a) whether it is a fact that a decline in the yield of rice, maize and jawar has been indicated in the report "Climate Change and India: A 4X4 Assessment-A Sectoral and Regional Analysis for 2030" issued by Government of India in 2010, if so, the details thereof; and

(b) the action plan formulated by Government for checking the decline in yield of rice, maize and jawar and increasing the production of these crops, the details thereof?

THE MINISTER OF STATE IN THE MINISTRY OF AGRICULTURE AND FARMERS WELFARE (DR. SANJEEV KUMAR BALYAN): (a) Yes, Sir. The report, "Climate Change and India A 4X4 Assessment-A Sectoral and Regional Analysis for 2030" presents an assessment of the impact of climate change in the 2030s on four key sectors of the economy including agriculture. Four cereal crops of rice, maize, sorghum and wheat besides plantation crop coconut were studied. Depending upon the intensity of change

†Original notice of the question was received in Hindi.