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Effect of integrated pest management technology on production of cotton in Western Maharashtra

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ABSTRACT
The Integrated Pest Management (IPM) Technology was introduced and demonstrated in one of the villages in Dhule district of Western Maharashtra during 2002-03. The present investigation is an attempt to assess the economic efficiency of IPM in cotton during 2004-05. The results of the study based on the data collected from 30 adopters and 30 non-adopters of IPM indicated that the factors like education, farm size and income of the cotton growers have significant influence on the adoption of IPM. The yield of cotton was increased by 11 per cent. Whereas, 20 and 39 per cent higher gross and net returns were obtained due to adoption of IPM over non-IPM situation. IPM emerges as a cost reducing strategy and has an economic potential to substitute predominantly chemical pest control strategy.

Key words: IPM, Cotton, Cost and returns, Awareness, Adoption.

INTRODUCTION
In recent years the use of pesticides in agriculture have come under severe criticisms because of their technological failure of pest resistance, resurgence and secondary outbreak, and potential hazards to ecology and human health. The resultant effects on farm economy have been escalation in the cost of production, increase in crop losses and reduction in farm profitability. The reduction in pesticide use without effective technological alternatives may results in decline in crop yields and output prices. To address these concerns, the focus of plant protection research is gradually shifting towards development of environmentally safe and economically feasible alternatives to chemical pesticides using biotechnological approaches. Cotton is an important cash crop grown in the State of Maharashtra with on an average area of 28.4 lakh hectares. Dhule is one of the major districts has shared 3.52 per cent of the area under cotton in the State. The crop has occupied an important place in the cropping pattern of the district. Cotton crop also consumes heavy chemical pesticides. In order to reduce the heavy use of chemical pesticides the scientists from the Entomology Section, College of Agriculture, Dhule one of the constituent colleges of Mahatma Phule Krishi Vidyapeeth, Rahuri had introduced and demonstrated the Integrated Pest Management technology for cotton in two villages in the district one viz., Budaki, Tahsil Shirpur in the year 2001-02 and another viz., Henkalwadi, Tahsil Dhule in the year 2002-03. The present investigation is an attempt to examine the effect of IPM technology on production of cotton in the district.

MATERIALS AND METHODS
Sampling and farm characteristics :
The study was undertaken by selecting the second village viz., Henkalwadi tahsil and district Dhule purposively where the IPM technology was introduced and demonstrated in the year 2002-03. The total sample of 60 cotton growers comprised of 30 adopters and 30 non-adopters of IPM technology were selected randomly. The average size of holding of adopters was 2.30 and of non-adopters 2.68 hectares. The proportion of net cultivated area (92.60 per cent) and the irrigated area (13.91 per cent) was relatively higher on IPM adopter farms than non-adopter farms. The average per farm gross cropped area was 2.63 hectares in the case of adopter farms and 2.98 hectares on non-adopter farms. The proportion of area under cotton in the gross cropped area was higher (45.25 per cent) in the case of adopter farms as compared to non-adopter farms (39.26 per cent). The area under food grain crops was by and large the same on both the categories of farms. All the cotton growers use the seed of Nanded-44 variety. The cropping intensity in both the cases of adopter and non-adopter farms was more or less the same.

Analytical approach :
The data on the aspects on awareness, level of adoption and costs and returns of IPM adopters and non-adopters of cotton were collected from the selected cotton growers with the help of specially designed schedules. The data were collected by survey method for the year 2004-2005. For analysis of data partial budget approach was adopted to assess the economic efficiency of IPM. Only variable inputs have been considered for estimating the costs and returns, per quintal cost of production as well as the expenditure on pesticide inputs and total expenditure on plant protection measures for making comparison between both IPM and non-IPM situations on cotton farms. The analysis was further extended to examine the influence of the various factors on adoption of the IPM technology. The results of the study are summarized as under.

RESULTS AND DISCUSSION
Awareness and adoption of IPM technology :
Table 1 represents the information on extended awareness and adoption of IPM technologies on the sample farms.

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