

## Development and Validation of IPM

- ✓ Cost effective and adoptable IPM modules have been validated in cotton, rice, mustard, chickpea, pigeonpea, groundnut, cabbage, tomato, apple and mango under farmers' participatory mode over larger areas ranging from 10-200 ha, in cluster of villages under NATP, TMC and NCIPM sponsored programmes.
- ✓ Under in-house research programme, IPM technology has been successfully implemented in different crops; scented rice in western UP and Haryana; conventional and transgenic cotton areas of rainfed in southern Maharashtra and irrigated cotton in Haryana. Better Cost Benefit Ratio in western UP (IPM 1:3.16 and FP 1:2.12) proved quite encouraging and led to horizontal expansion of IPM. Similarly, in the case of cotton, use of chemical pesticides has been reduced from 6 to 2 applications with increased Benefit Cost Ratio (IPM 3.03 as against 2.0 in FP). In the case of cotton, various region specific IPM educational tools have been developed and popularized under Technology Mission of Cotton (TMC-MMI) through 48 villages covering an area of 10,000 ha in addition to establishment of plant health clinics. The IPM technology was demonstrated over 2,687 ha of hybrid cotton and 565 ha of Bt cotton, benefitting 2,400 farmers in villages spread over 8 States.
- ✓ Effectiveness of IPM strategies (especially HaNPV) for the management of pigeonpea podborer has been demonstrated through farmers' participatory mode covering more than 100 ha in cotton based cropping system in southern Maharashtra. Adoption of IPM in chickpea has led to increase in yield by 74.3% in IPM (17.4 q/ha) vis-à-vis FP (9.89 q/ha) apart from increasing natural parasitization (dominated by *Campoletis* spp) from 5.22 to 11.69% in Maharashtra. IPM also proved sustainable with higher Benefit Ratio of 4.79 against 2.37 in FP.
- ✓ Timely sowing and use of *Trichoderma viride* as seed treatment input has resulted in less aphid infestation and lower disease incidence of *Alternaria* and white rust in mustard. Higher yield has been achieved in IPM plots (17-18 q/ha) as compared to the FP plots (13-16 q/ha) in all the test centres of Rajasthan. Field validation of IPM module for groundnut was also carried out in Rajasthan. Use of *Trichoderma* seed treatment and application of NSKE resulted in lowering pest incidence and increasing Benefit Ratio to 3.69 from 3.20 in conventional farming.
- ✓ IPM strategies for organically grown Taroari rice has been field validated in Kaithal area in Public-Private partnership against major diseases and insect pests. Effectiveness of microbials such as *Trichoderma*, *Pseudomonas*, *Beauveria*, release of *Trichogramma*, fixing of Yellow Stem Borer pheromone traps and neem as botanical biopesticides has been clearly demonstrated against biotic stress. Farmers adopting IPM practices were able to get higher yield and better Cost

## ACHIEVEMENTS 2002-2007

Benefit (C:B) Ratio (3.16t/ha, 1:5.63) in comparison to conventionally chemical dependent farmers (3.09 t/ha, 1:4.45). IPM has resulted in better conservation and promotion of natural enemies such as spiders, crickets (egg predators), damselflies, ants, beetles, wasps and mermithids.

- ✓ Validation and promotion of biointensive IPM module was also successfully carried out on *kharif* okra, brinjal, tomatoes, cauliflower and cabbage in Ghaziabad (UP) and Sonapat (Haryana). Use of neem products, *Trichoderma*, *Trichogramma* and spot application of chemical pesticides has reduced the number of chemical sprays and increased Benefit Cost Ratio in okra (1.58), brinjal (2.36), cauliflower (4.29), and cabbage (3.23).

- **NCIPM's Cotton team has received ICAR Award for Team Research for the Biennium 2001-02 for outstanding research contribution in the field of "Pest Management".**
- **NCIPM's Rice Team got ICAR Award for Outstanding Interdisciplinary Team Research for the Biennium 2005-06.**