



Higher yields, produce quality, *and* growers' profits



Food Safety

Plant protection product residues below required limits

Marketability

Marketable yields up 12 %

Sustainability

Reduced number of applications of plant protection products

food chain partnership



What was *the market situation?*

Gherkin cultivation and processing started in India in the early 1990s and currently covers over 19,000 acres (nearly 8,000ha) in the three southern states of Karnataka, Tamil Nadu, and Andhra Pradesh, where ideal conditions prevail: adequate water supplies, temperatures of 15–36°C, and the right type of sandy loam soil. Gherkins take 85 days to reach harvesting maturity. Productivity is around 3–4 metric tons per acre. Although the growing season is all year round, the best months are February–March and June–August. Nearly a million people in Karnataka and Tamil Nadu work in cultivating and processing gherkins, which are then pickled in organic vinegar before being exported in bulk containers – 80% of the output to Europe and 20% to North America.

Although the Indian gherkin industry has recorded average growth rates in excess of 20% during the last few years, yields were not improving in the Gajendragad region and importers were still facing residue issues from the plant protection products applied. In 2008, Bayer got involved in this Food Chain Partnership project by organizing training sessions on pest and disease identification, food safety topics, and improving productivity by adopting good agricultural practices.

Ken Agritech is one of the top five gherkin-processing companies in India and exports produce to market leaders in Europe, Russia, the USA, and Australia. Ken Agritech provides all the input to the gherkin growers and buys back the produce at pre-agreed prices. All Ken Agritech's raw material is procured through a contract farming system involving around 3,500 smallholders and marginal farmers.





Challenges:

- Improvements in quality and yields
- Management of fruit borers and fruit flies
- Compliance with MRL and quality standards for export



Solutions:

- Development of a season- and region-specific plant protection protocol
- Expertise obtained from one nutritional and two biological companies
- Training sessions on IPM and the safe use of plant protection products for Ken Agritech staff



Benefits:

- Deployment of the right plant protection solution reduced farmers' expenditure and boosted their profits
- Gherkin quality in compliance with EU and US export requirements
- Improvement in farmers' technical know-how about plant protection products and their safe use

“Active participation in the Bayer Food Chain Partnership has helped us not just to improve gherkin productivity but also to cut costs and deliver safer and better quality products to our customers.”

Pramod Menon, Ken Agritech



What were the challenges?

The main aims of this Food Chain Partnership project have been to increase yields and improve the quality of produce through effective management of insect pests and diseases. A specific challenge was the management of critical defects

in the produce, with fruit borer and fruit fly the key issues. Furthermore, plant protection product residues had to be reduced to meet importers' requirements, while maintaining quality standards.

What was the solution?

Bayer developed a season- and region-specific plant protection protocol to control sucking pests and downy mildew. Demo trials were conducted in all growing locations and seasons. A nutrient management company has been involved in providing nutritional technology know-how, and two biological companies have been supplying

parapheromones for biological management of fruit flies through annihilation of the male population. Many training sessions have been organized to teach Ken Agritech staff and growers to identify, monitor, and manage pests and diseases in gherkins, and to safely handle the respective plant protection products.



“Implementation of good agricultural practices in gherkin cultivation has resulted in residue-compliant produce and added value for every partner in the food chain.”

Jayaramu JT, Bayer





What did *we achieve?*

There was a 12 % increase in average yields across all production centers and seasons. Additionally, applications of plant protection products were reduced, which brought the growers savings of up to 15 % and boosted their profits. Last but not least, the growers learned how to handle plant protection products properly.

The project partner Ken Agritech also benefited from the growers' increased yields, improved gherkin quality, and compliance with EU and US requirements. The benefits for consumers have been high-quality gherkins and residues within the required limits.

These successes were achieved through on-going interactions and meetings between all those involved in the project, regular training sessions for the growers and extension personnel, enhanced technical know-how, and improved knowledge of food safety trends worldwide.

- 12 % increase in marketable yields
- 15 % savings on plant protection product inputs for growers
- 14 % increase in growers' base

About Food Chain Partnership

Consumers are becoming increasingly conscious of the need for healthy nutrition. Food Chain Partnerships help to supply consumers with high-quality fresh produce, which forms the basis of a healthy diet. But such partnerships can only succeed if they involve every player in the food chain – from the farmer and processor to the exporter or importer and retailer. The Crop Science Division of Bayer has the global experience and cutting-edge expertise to create a successful partnership at every level.



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