Apples have been grown in New Zealand since Europeans first settled in the country. Although the fruit were initially grown for domestic consumption, growers were quick to realize the export potential. When it is summer in New Zealand, it is winter in Europe. Exports to the UK began in the 1890s. About 75% of New Zealand's apples are exported with an export value of around $400 million year.

Pesticides are used in New Zealand apple orchards in order to – first, produce the high quality fruit necessary for good financial returns; and second, to ensure complete absence of key pests and diseases in order to satisfy the phytosanitary requirements of importing countries [1]. There is zero tolerance for live codling moth in New Zealand apple exports to Taiwan, China, Japan, Thailand and India. Beginning in the 1960s, pest management was based on regularly scheduled use of broad spectrum organophosphate insecticides and protectant fungicides. Codling moth and five leafroller species are the key insect pests while black spot (scab) is the key fungal problem in the moist New Zealand climate. With only rare exceptions due to isolation of individual trees, black spot and codling moth cause heavy damage to neglected trees wherever they are grown in New Zealand.

In 1996, the New Zealand apple industry launched the Integrated Fruit Production (IFP) program which introduced major changes to insect and disease management. This included a shift from calendar schedules of insecticides and fungicides to justified use, based on pest and disease monitoring systems and treatment threshold-based applications of new selective insecticides. A national network of weather stations provides data for black spot infection risk to time curative fungicide sprays. In addition, forecast weather information is used to time protectant fungicide sprays in advance of likely infection periods. All New Zealand apples are now grown under either IFP methods (91%) or organic production systems [2].

Implementation of IFP reduced the number of insecticide sprays by 40-50% to 4-6 from 1996 to 2003 depending on variety and region [3]. However, the average number of insecticide applications increased in 2007-08 and 2008-09, which was prompted by a reduction in the threshold for spraying codling moth [4]. In the IFP program, the fungicide loading has decreased by 45% [2]. Although the number of fungicide applications remains high (16-20), many protectant sprays in IFP orchards have been replaced by lower-rate curative sprays. However, overall fungicide use volume in New Zealand apple orchards has increased from 31 kg/ha to 34 kg/ha due to the high rates of lime sulfur used in organic orchards [2].

Organic growers have to make frequent application of protectant fungicides for black spot. IFP growers have an advantage because they can apply curative chemicals [5].

The use of insecticides and fungicides in the IFP program has assured high quality apples from New Zealand for the export market. Loss of control of codling moth or black spot in a difficult season can result in export rejects of around 25% and at worst, 80%[5].

References