

Use of Integrated Pest Management in Scottish Soft Fruit Production

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Soft fruit cultivation is an important component of Scottish horticulture. Whilst the area grown has not increased over the last decade (Figure 1) fruit production has doubled, due to greater use of poly-tunnels, and market value has trebled to £60-80 million per annum.

Soft fruit has high pesticide inputs (Table 1); ca. 20 tonnes of active ingredients are applied to crops each year, around three quarters of which are fungicides. Despite this, pesticide availability is limited for some targets, encouraging growers to use all available pest control methods to maximise production efficiency.

Scottish growers use a range of integrated pest management (IPM) techniques (Table 2). Although there are limited data about level of uptake, SASA monitors some aspects of non-chemical horticultural practice.

Over the last decade the use of ground mulches to suppress weeds has remained stable at around 25% of the crop (50% of strawberry crops)⁴. Whilst the use of poly-tunnels increased from use on 12% of the crop in 2001 to 56% in 2012 (29 to 85% for strawberries)⁴. The rise in tunnel use has been associated with increased adoption of biological pest control (Figure 2), from no reported use in 2001 to application to 30% of the crop in 2012 (Figure 2). Almost 60% of the strawberry crop was treated with a biological in 2012.

In addition to increased uptake, the targets of biological control have changed over time as new products have been developed; initially use was solely for insect control but by 2012 three quarters of biological control was to combat crop disease (Figures 2 and 3).

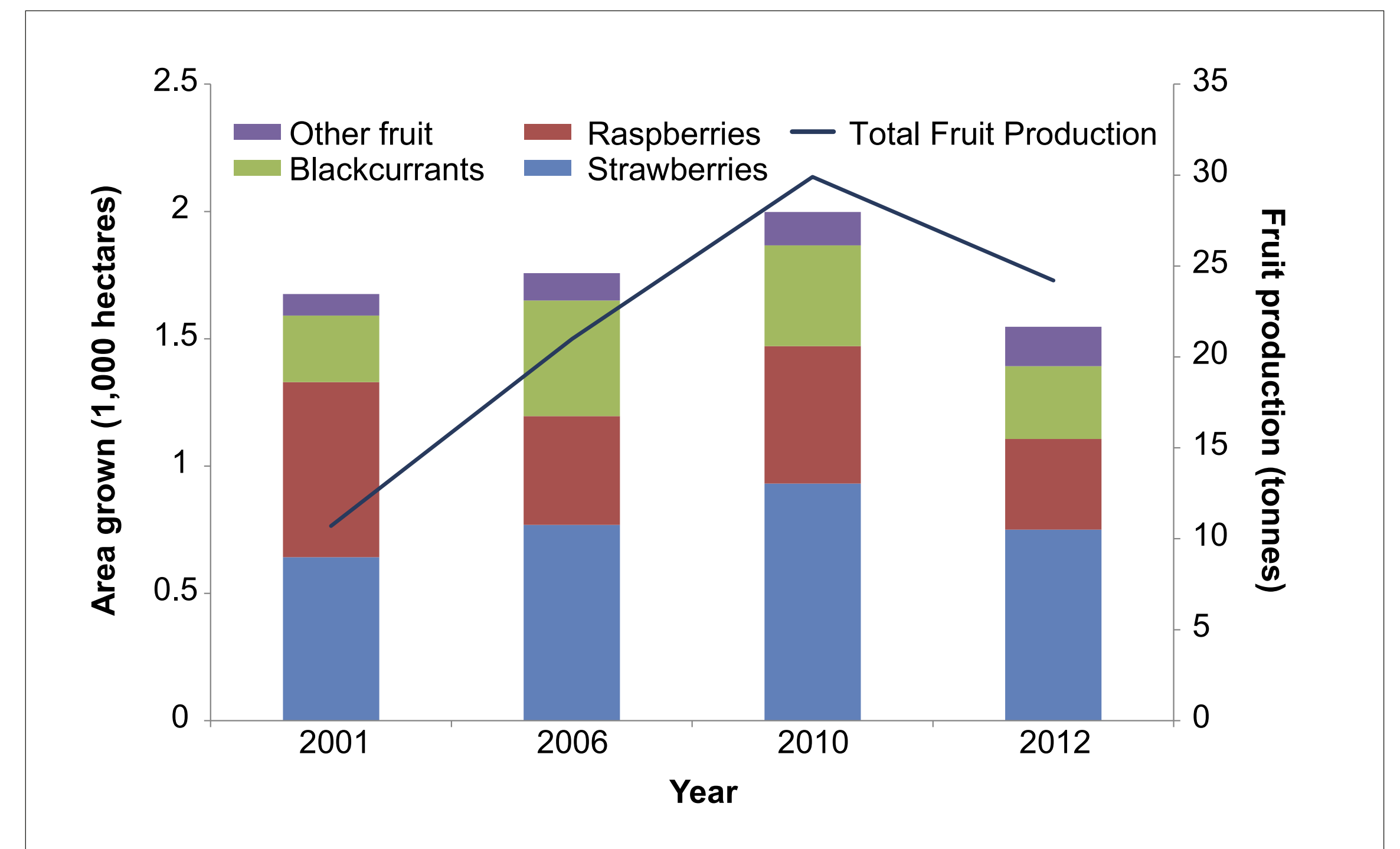


Figure 1. Area of soft fruit crops and fruit production in Scotland^{1,2}

Table 1. Mean pesticide active ingredient input in Scotland³

Crop Type	Pesticide Input (kg/ha)
Soft fruit	12.9
Potatoes	8.8
Other vegetable crops	3.3
Cereals	2.3

Table 2. IPM methods used by Scottish soft fruit growers

Method	Impact
Resistant varieties	Reduce need for chemical pesticide application
Ground mulches	Opaque mulches retard weed growth reducing herbicide applications
Covering mulches (low covers and tunnels)	Advance crop growth, protect crop from hail, promote use of biological control, reduce incidence of moisture related diseases, allow targeted pesticide applications (less weather dependant)
Soil free systems (hydroponic, peat, coir)	Reduce need for chemical sterilisation of soil
Mechanical cutting of strawberry runners	Reduce herbicide use for runner control
Insect trapping and use of thresholds	Allow pesticide input to be targeted and optimised
Biological control	Reduce pesticide input and provide alternative control in pre-harvest periods

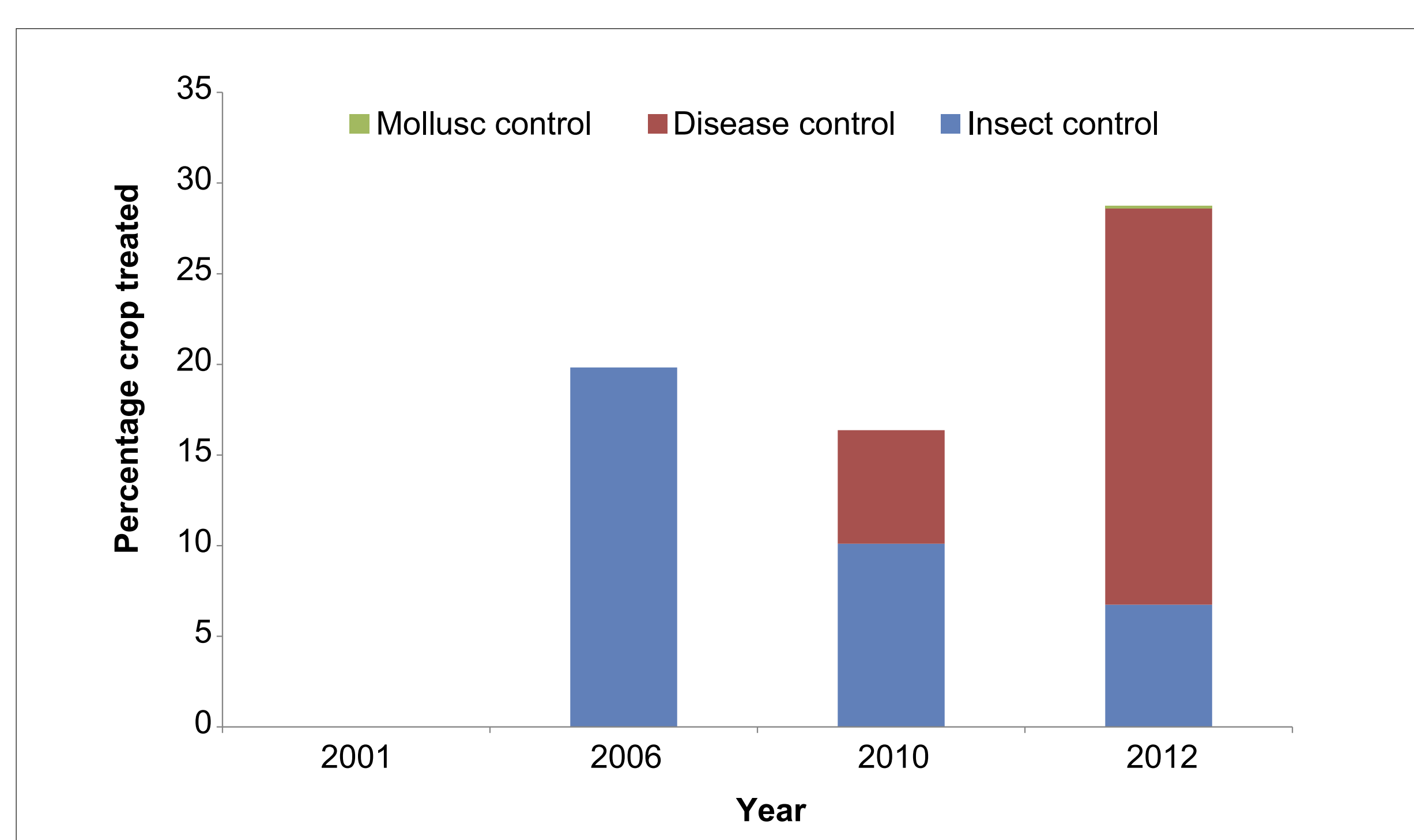


Figure 2. Percentage of soft fruit crops treated with biological control agents (and target type) in Scotland³.

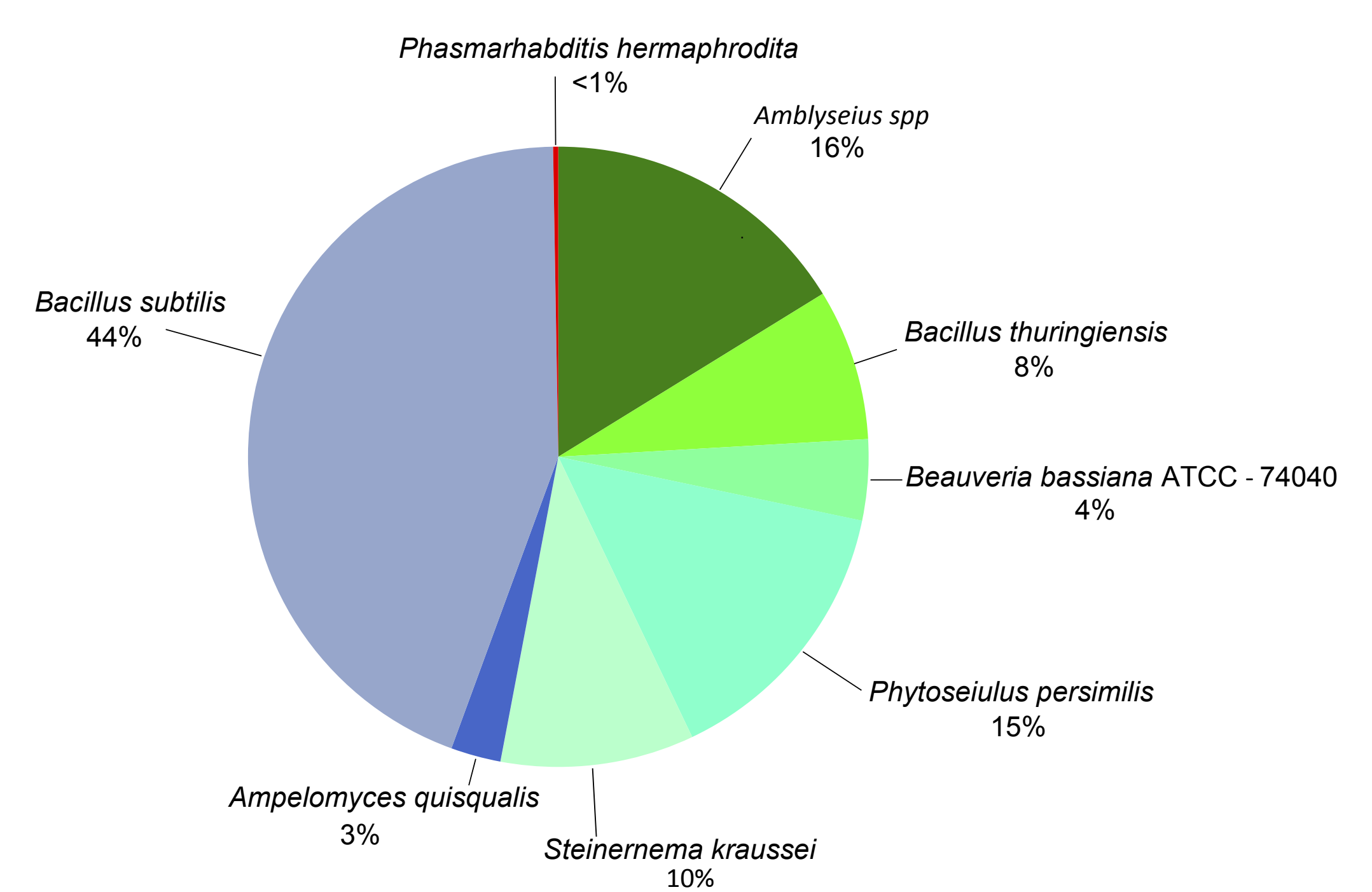


Figure 3. Bio-control agents encountered in soft fruit surveys 2006 to 2012 (total area applied, fungicides blue, insecticides green, molluscicides red)³.

Whilst Scottish soft fruit growers are already using IPM, these techniques are likely to become increasingly important in future due to the potential loss of several major use pesticides resulting from the implementation of the EU pesticides approval regulation (EC 1107/2009) and the Water Framework Directive (2000/60/EC). As the soft fruit sector has few chemical alternatives available to mitigate for pesticide loss, both yield and economic impacts could be considerable. Producers need sustainable, practical non-chemical methods to allow them to continue to produce stable, marketable yields. The agrochemical industry is increasingly investing in bio-pesticide development which may help provide solutions for the soft fruit trade. Under (EC 1107/2009) Member States must promote the use of IPM and future SASA surveys will collect detailed information about IPM activities in this sector to document changes in IPM uptake over time.

References

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2. Economic Report on Scottish Agriculture 2013 <http://www.gov.scot/Publications/2013/06/5219>
3. Data compiled from SASA pesticide surveys <http://www.sasa.gov.uk/pesticides/pesticide-usage/pesticide-usage-survey-reports>
4. Unpublished SASA PSU sample data. For details contact PSU@sasa.gsi.gov.uk

