help growers understand the use and performance of both biopesticides and biological control organisms. Wyn Grant, a political scientist at Warwick University who with Dave Chandler is working on an innovative project investigating the political, regulatory and social hurdles to biopesticide availability, says that expecting biopesticides and biocontrols to show the same degree of effectiveness as conventional pesticides has been a barrier to both registration and use. “For biological agents, efficacy testing represents 50% of total registration costs compared with 10% for conventional chemicals because you need more treatment replication to get the statistics – the products are more variable.” He says PSD is now taking a more ‘flexible attitude’ towards requirements for efficacy testing. “It is required for labelling and for protection against deception but growers in the USA, for example, rarely rely on the official data but prefer to do their own trials.”

There is certainly no shortage of crop protection gaps that a wider availability of biopesticides and biocontrols could help fill, Whittaker points out. “In salads, for example, biological agents already provide robust control but there are no good biologicals for secondary pests such as leafhopper and capsid at the end of the season so you have to use pesticides like deltamethrin which then knocks out the beneficials. Growers need solutions to the secondary pests that are often neglected in the rush to use pesticides against major pests.”

Trials on product effectiveness are an essential part of getting a product into the market, whether or not such data is needed for registration, according to Don Edgecomb, director of US-based biopesticide company AgraQuest. “Growers need to know the product will do what we say it will,” he says.

The company was founded in 1995, already has five biopesticides on the market, and has identified 20 potential new candidates. Edgecomb reckons there’s plenty of scope for more: “Half of all pharmaceuticals, but only 7% of pesticides, are currently derived from plants or microbes,” he says. “We screened 7,000 microbe species to bring four products to market, and each takes about three years to develop. That compares with having to screen 150,000 new synthetic chemicals to get one with pesticide activity and a 10-year product development time.”

AgraQuest’s latest product is a broad-spectrum biofungicide based on a strain of the naturally occurring soil bacterium Bacillus subtilis. It was accepted onto the EU’s approved actives list (Annex 1) earlier this year and the company is pursuing registration in the UK with PSD.

“It is important to realise that experience with chemical pesticides rarely applies to biopesticides,” says Edgecomb. “It is important for growers to be able to apply biopesticides with existing equipment but we know this is not always the most effective way to use biopesticides. There needs to be a lot more R&D on application methods.”

He admits there are challenges for biopesticide manufacturers in changing grower attitudes: “Growers need a compelling reason to change. There is some scepticism and negative perceptions based on experience of some of the older products that may not have performed as growers had been led to expect.”

“Conventional testing protocols often don’t demonstrate the full potential of biopesticides – you need to combine data on pest control, quality and yields to get the full picture. And don’t forget, there are instances where 60 to 70% control of a pest can be very valuable.”

Regulatory authorities in the UK and Europe have in the past been criticised for failing to accept the inevitable differences in performance between biopesticides and the chemical products the regulatory systems were designed to deal with. But attitudes are changing and lessons learned from the USA where the Environmental Protection Agency and the government-sponsored IR-4 minor crops programme work together to encourage registration of biopesticide products to help meet national policies aimed at reducing chemical pesticide use.

Anti-pesticide lobbyists, too, are broadly supportive. Claire Butler Ellis of the Pesticide Action Network says the organisation’s aim is to promote alternatives that help to reduce or eliminate the need for chemical pesticides.

Major retailers have been working with suppliers to eliminate the use of some pesticides and reduce residues of those still used to well below MRLs. But Mark Whittaker says that customers need to be educated in the benefits of biocontrols and biopesticides so they would be prepared to pay more for them, meeting the extra production costs entailed.

Marks and Spencer senior produce technologist Emmett Lunny says that for his company at least, “the cost of production is reflected in our negotiations with our suppliers”. He also points out that unwanted residues can be associated with biological controls, too. “Contamination with beneficial insects on produce is a big source of customer complaints,” he says. “It is the biggest single source of complaint on raspberries, for example.”

Perhaps one of the biggest challenges for the biopesticides industry is that most of the inventors and suppliers are small or medium-sized companies. They don’t have the resources or regulatory expertise of the multinational agrochemical businesses and they will always find it hard to justify investment without clear and consistent policies supporting use of biopesticides, both from government and from the supply chain.

“Registration costs are too expensive for biopesticides which are usually niche-market products produced by smaller companies,” says Butler Ellis. “There also needs to be more help for growers who want to use biopesticides and IPM, which are usually more expensive options than chemical pesticides. The pesticide tax, which has been rejected, could have helped to fund that.”

The seminar ‘Biopesticides: the way ahead’, was organised by Warwick HRI and held in October. It was part of a research project looking at barriers to the development of biopesticides. More information can be found at www2.warwick.ac.uk/fac/soc/par/biopesticides