Disease control

Fusarium control

Bayer claims excellent fusarium control for its new fungicide JAU, which is planned for test marketing in the UK in 2003. *Microdochium* is also controlled and when used in co-formulation with Bayer's new strobilurin HAC (fluoxastrobin) the fungicide offers the prospect of combined eyespot and foliar disease control.

Powdery mildew control

According to Dow AgroSciences, its newly approved sugar beet fungicide quinoxyfen offers growers longer lasting powdery mildew protection giving maximum margin over input cost under high disease pressure, although no rust control.

Weed control

A new antidicotyledon herbicide

In Autumn 2002, BASF will launch a new herbicide in France based on picolinafen, a completely new active ingredient from the aryloxypicolinamide family of chemicals. The compound works synergistically with other active ingredients. A broad spectrum broad-leaf herbicide, Celtic contains 16 g/litre picolinafen and 320 g/litre pendimethalin. The product is also effective against some grasses (such as meadow grass, foxtail and bent grass). It is absorbed through the leaves and roots and quickly breaks down in the soil.

New glyphosate firmulation

Monsanto has launched a new formulation of glyphosate called Roundup Gold. Patented adjuvant technology known as TransSorb, widely used in US formulations, is claimed to increase uptake of the active ingredient 60% above that of generic products within 2 hours of application. Together with a higher content of glyphosate (450 g against 360 g/litre in the standard product) 2.4 litre of Gold is as efficacious as 6 litre of the standard product. A 20-litre fast pour container costs about £75. Monsanto will continue to sell Biactive but some minor brands are likely to be dropped (http://www.monsanto.com)

Insect control

Deltamethrin

The British Beekeepers Association has endorsed Decis (deltamethrin) as a bee-friendly option for pest control in oilseed rape, pulses, and cereals during flowering. Trials have shown that the product repels bees initially but does not harm the insects once the spray has dried. Four insecticides have now gained such approval, which depends upon strict adherence to label guidance. Off-patent deltamethrin is the active ingredient in several other products on the market, but Decis only is produced in such a way as to permit the British Beekeepers Association's endorsement.

Neonicotinoids

…Takeda Chemical Industries agro company has developed clothianidin, a novel neonicotinoid insecticide, which has a wider spectrum of activity than the company's nitenpyram (trade name: Bestguard). The company expects global sales of Yen 5 bn/y in 2005. The company has exclusive sales rights in Hungary, Poland, Romania, South Korea, and Taiwan and has filed for regulatory approval in the EU, Canada, Australia, and the US (launch planned for 2003 in these countries).

…Mitsui Chemicals has launched a new nitroguanidine neonicotinoid insecticide dinotefuran (Alubarin and Starckle) for use on rice, fruit, and vegetables.

Slug control

New methiocarb formulation

Bayer has introduced a new formulation of methiocarb for the control of slugs. The standard pellet formulations Draza and Decoy have been joined by Wetex, a product containing durum wheat bran. The Wetex pellet is smaller than the standard pellet, more resilient, resistant to rainfall and retains its high palatability longer.

Biopesticides

Mycorrhizae

Biobest will shortly be the exclusive distributor, in Belgium, the Netherlands, France, Morocco, Spain, Bulgaria and Hungary, of three new plant protection products developed by Mykomax GmbH. The products EktoMax, EndoMax and EriMax, are formulated from some strains of mycorrhiza, each showing a specific activity. EktoMax is formulated from Ecto-Mycorrhiza and forms a protective layer around roots, protecting them against infection. EktoMax is suitable for use with conifers. EndoMax, which protects roots from penetration by mycelia, is suitable for use with ornamentals, shrubs, vegetables and fruit trees. EriMax is suitable for ericaceous plants (http://www.biobest.be/)

Lipochito-oligosaccharides

BioAgriculture Inc (headed by Donald L Smith, a plant science professor at McGill University) is to use the discovery that nitrogen fixing bacteria can adapt habitats to encourage plant growth to develop commercially useful products. Smith's research on soybeans found that young plants give off chemicals which are attractive to bacteria. In response, the bacteria give off chemicals (lipochito-oligosaccharides) which encourage cell division in the plant's root tissue. Further research on other plants yielded similar results. Smith went on to establish that putting lipochito-oligosaccharides on roots, leaves or seeds accelerated germination and growth and boosted photosynthesis.

Bioinsecticide

BioProspect (BPO) (Bentley, Western Australia) unveiled positive results of a test involving its Qcide natural insecticide product (extracted from Queensland eucalypts), which confirms the non-toxic nature of the product. The company said Qcide's high level of potency and non-toxic properties give it a strong potential in the market for insecticides in both domestic and industrial applications. New tests are presently underway, and are aimed at obtaining data on how Qcide acts. These tests will be completed simultaneously with the product's full patent application in May 2002. Possible applications of the product include animal health, ant and termite control, industrial and domestic household pest control, horticulture and broad-acre cropping. (http://www.bioprospect.com)

Against dry rot in potatoes

USDA scientists based in Peoria, Illinois, have identified bacteria that prevent the loss of potatoes in storage to the dry rot causing pathogen *Fusarium sambucinum*. Selected strains of *Pseudomonas* and *Enterobacter* have been found to protect the stored crop and some have even been shown to prevent potato sprouting.

Grain mycotoxin control

According to the UK's IACR Rothamsted there are new prospects for natural control of grain mycotoxins. Moderate fusarium ear blight can be controlled by fungicides but these do not necessarily prevent grain toxins. IACR scientists have identified strains of non-pathogenic fungi that effectively out-compete fusarium when sprayed onto cereal ears.

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Adjuvants

Loveland Industries has introduced the new adjuvant Liberate, which is a neutral formulation that can be used in conjunction with sulfonylurea herbicides and other pH-sensitive chemistries. Liberate boosts the uptake of plant systemic chemistry through the combination of a deposition agent, a penetrating surfactant and drift retardant. (http://www.lovelandindustries.com)

Mormon crickets

Data from a study at Dinosaur National Monument in Colorado, USA, may help scientists predict which areas are most at risk for invasion by bands of Mormon crickets – a species of katydid. Under outbreak conditions, bands of up to 100,000 flightless crickets roam across the land, devouring crops, grasses and ornamentals. Last year, Mormon crickets caused more than $25 million in damage in Utah alone. Experts believe this year's losses could be even worse because of the mild winter and hot, dry weather since the spring.

During the study – a collaborative research project between the ARS' Northern Plains Agricultural Research Laboratory in Sidney, Montana, and the University of Toronto at Mississauga in Ontario, Canada – researchers will use a combination of radio telemetry and harmonic radar to keep track of migratory cricket bands in and around the Colorado park. They hope to discover the environmental cues that determine which direction the bands move in, and how far and fast they travel. If the scientists can gather enough data, they may be able to develop models for predicting band movements during future outbreaks, thereby increasing the efficiency of pesticide applications and reducing pesticide exposure of nontarget species (http://www.sidney.ars.usda.gov/ or http://www.utm.utoronto.ca/)

Receptor for symbiosis

In separate papers in a recent issue of *Nature*, Martin Parniske and colleagues at the John Innes Centre in Norwich, UK, and Gyorgy Kiss and colleagues of the Hungarian Academy of Sciences in Szeged reported the cloning of a receptor kinase that is crucial in establishing symbiotic relationships in lotus, peas and the model legume Medicago. Surprisingly, this protein is needed for both rhizobial bacteria (involved in fixing nitrogen) and mycorrhizal fungi (involved in fixing phosphorus) to enter plants. There is great interest in the possibility of extending the nitrogen-fixing capacity of legumes to crops like rice and wheat to reduce the requirement for commercial fertilisers.

Stracke, S. *et al.* A plant receptor-like kinase required for both bacterial and fungal symbiosis. *Nature*, 2002, **417,** 959–962; Endre, G. *et al.* A receptor kinase gene regulating symbiotic nodule development. *Nature*, 2002, **417,** 962–966.

Herbicide from noxious weed

Researchers at Colorado State University, USA, have isolated catechin from the invasive weed, spotted knapweed, the release of which into the soil kill competing broad-leaf plants and weeds. The scientists have sprayed catechin on plants or added it to the soil and found it as effective as 2,4-D against pigweed, lamb's-quarters *etc*. They are also conducting biotechnology experiments to see if the catechin-producing gene can be transferred into beneficial plants, giving them a built-in resistance mechanism against weeds.

EPA and the American Chemistry Council

A joint research effort has been announced by the EPA and the American Chemistry Council. The focus of the research will be the effect of chemicals on wildlife populations, especially the effects on developing immune systems and endocrine disruption. This research is part of the three-year Long Range Research Initiative addressing chemical effects on human health and the environment. A new technology called gene array technology is being used to study endocrine disruption in ecological systems.

Protective fruit coating

Charles Wilson of USDA-ARS Appalachian Fruit Research Station and Ahmed El Ghaouth of Micro Flo Co. of Memphis, Tennessee are developing new coatings for fruit to protect against postharvest pathogens. They are combining various natural antimicrobial compounds, such as chitosan, with a different antagonistic yeast, *Candida saitoana*. This yeast is normally found on the surface of fruit and is benign to people. This work has resulted in several patents the latest involving the combination of *C. saitoan*a and chitosan with a softener, and the combination of lysozyme with *C. saitoana*.

Australian research alliance

In a strategic move, CSIRO Entomology and the Grains Research and Development Corporation (GRDC) have formed a A$20 million research alliance to pre-empt a potentially devastating range of pests and diseases infesting the grains industry.

New name for Rothamsted

At its meeting on 26 June 2002 the Rothamsted Board agreed to a change of name as a consequence of the merger of the Institute of Arable Crops Research Rothamsted and Long Ashton sites and their consolidation at the re-developed Rothamsted site. The new name will be "**Rothamsted Research**".

Methyl bromide alternatives

The US EPA has awarded two "Stratospheric Ozone Protection Awards" to Dow AgroSciences LLC at the Earth Technologies Forum in Washington D.C. for the development of alternatives to methyl bromide. The awards were made for the development of the soil fumigant Telone which is already replacing methyl bromide in some crops, and sulfuryl fluoride, a gas fumigant for post-harvest protection.

UK trees under attack

…the first-ever occurrence of the horse chestnut leaf miner has been discovered in Wimbledon. Larvae of this leaf miner feed on the leaves of horse chestnuts and have already caused devastations to the trees in mainland Europe. Although they do not cause the trees to die, the leaves they inhabit turn brown and fall prematurely, and conkers are not produced.

…a ban on imports of plants from parts of the USA and added controls on wood have been imposed by the UK government to protect native trees and shrubs from *Phytophthora ramorum*, a fungus which causes a rapid wilting disease known as 'sudden oak death', which is killing native oak trees and other plants in California and Oregon.