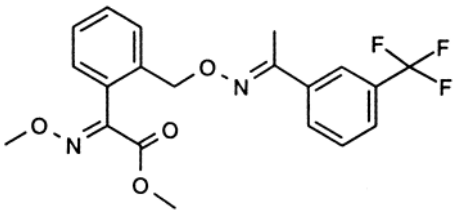
## New strobilurin promises broad spectrum disease control

Novartis has a new strobilurin fungicide, CGA 279202, common name trifloxystrobin, in late development. Described as the next generation of strobilurins, a UK launch is scheduled for spring 2000.



Novartis claims it gives more persistent control (the molecule being absorbed onto the wax layer of the leaf), and better mildew control than current strobilurin products, having a unique 'mesostemic' action. Trifloxystrobin is to be marketed as a straight compound and in a mix with propiconazole for use in wheat and with cyproconazole for barley.

## Methyl bromide alternatives

*….funding in California*

Development of methyl bromide alternatives is the focus of 6 new grants funded by the University of California Sustainable Agriculture Research and Educational Program (SAREP), and is also one of the grant priorities in the latest offer of $600,000 by California EPA's Department of Pesticide Regulation for innovative reduced-risk pest management

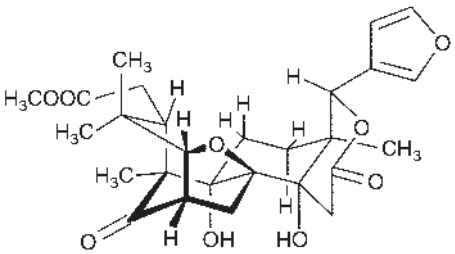
*….barrier films*

Several companies, including Klerck's Plastic products, Dow, Repsol and Polimeri, are developing agricultural films that can conserve methyl bromide fumigant via a barrier, capture specific parts of the light spectrum to foster plant growth and extend the geographic limits of cultivation using colour and coextrusion selection.

## Biopesticides

….the Vittal Mallya Scientific Research Foundation in India, has embarked on a major breakthrough in neem-based pesticide formulations. The formulation, SoluNeem, using an extract of azadirachtin-A (a limonoid from the neem seed kernel), is stable in sunlight and soluble in water. This ingredient serves as an antifeedant, moult inhibitor, oviposition deterrent and causes reduction in fecundity. The new neem pesticide has been tested in paddy farms and field trials on cotton, vegetables, grapes and other fruits are being conducted.

….researchers from the Royal Botanic Gardens, Kew, Oxford, Ohio State, and the University of Greenwich have extracted 4 limonoids from the leaves of the Spanish cedar (*Cedrela odorata*), and determined their structures, *e.g.*



These compounds act as antifeedants against the destructive weevil *Exophthalamus jekelianus*, and it is hoped to select for varieties that have higher quantities of the limonoids in their leaves and would therefore be able to protect themselves against weevil attack.

## Funding to develop better targeted insecticides

The Australian Government has granted A$1 million in funding for a project to develop new insecticides. The project, to be carried out as a collaboration between CSIRO Molecular Science, Dunlena Pty Ltd and the Biomolecular Research Institute, is based on determining the molecular structure of the ecdysone receptors in various insect pests. Because these receptors are specific for each pest, it is hoped to develop products which are targeted to specific pests. Nontargets should be unaffected, high specificity should mean lower dosage rates, and, since the targets are fundamental to the insects' life cycles, resistance development should not be a problem.

## Next-generation paddy fungicide

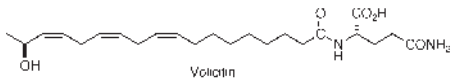
NNF-9850 is a new fungicide for control of rice blast discovered by Nihon Nohyaku. The long-acting material will be specifically developed for use in seedling boxes. It has a different mode of action to other rice blast fungicides and it is claimed to be equally effective. Mixtures are being developed with insecticides for specific applications. The company is planning to introduce the new compound onto the market in South Korea and elsewhere, with commercialisation targeted for 2003.

## Thermal polyaspartate enhances pesticide activity

Speaking at the 3rd Annual Green Chemistry and Engineering Conference in Washington DC at the end of June, Ramon Georgis of the Donlat Corp. reported that polyaspartic acid prepared by the thermal polymerisation of aspartic acid (thermal polyaspartate) can enhance the effectiveness of herbicides and insecticides, affording kills at lower concentrations of active ingredient. In combination with polyaspartate, kill effectiveness was enhanced by up to 3 times for several classes of herbicides in the control of broadleaf weeds, while experiments with red fire ants and tobacco budworm demonstrated that kill effectiveness was enhanced by up to 4 times with certain organophosphate and carbamate insecticides.

## Natural defence compound synthesised

With support from Bayer and BASF, Georg Pohnert and his colleagues at the Max Planck Institute in Jena, Germany, have devised a short stereoselective route to the




specific component (17-hydroxylinolenoyl)-L-glutamine (commonly called volicitin) (*Chemical Communications* 1999, 1087). Volicitin is the component in beet armyworm caterpillar saliva which triggers plants attacked to give off a cocktail of terpenoids which attracts parasitic wasps that kill the caterpillars (*Chemistry in Britain* 1997, 15).

## Ion exchange removal of pesticides

Purolite International, an ion exchange resin producer, has developed an absorbent technology called Hypersol Macronet as an alternative to activated carbon to remove pesticides from potable water sources. Macronets are highly crosslinked synthetic polymers in which the crosslinking takes place in a swollen state giving a structure with a very high internal surface area. The technique has been evaluated by Loughborough University, with pilot testing at a major UK water company. Purolite has obtained approval for its use in the UK and aims to extend this to other countries. Macronet polymers show good absorption of atrazine and substituted urea-type herbicides in the parts per billion concentration range in water.

## Air-exclusion nozzles

The international nozzle manufacturer, Lurmark Ltd. of Longstanton, Cambridge, UK, is cooperating with AgrEvo, Novartis and Silsoe Research Institute in a 2-year research project to find the optimum criteria for application of agrochemicals through air-inclusion nozzles. The 3 companies are supplying products and expertise, while Silsoe is carrying out the research with the aid of a £90,000 Sappio link grant from the UK Ministry of Agriculture.

## Awards

*….pyridine chemistry*

7 scientists from Dow AgroSciences [Etcyl Blair, Cleve Goring, Howard Johnston (deceased), John Peskett, Ray Rigterink, Art Sexton (deceased) and Bill Taplin] have been honoured by the American Chemical Society as "Heroes of Chemistry" for their work in pyridine chemistry dating back to the 1950s which led to the development of chlorpyrifos, picloram, clopyralid, fluroxypyr, haloxyfop and triclopyr.

*….cotton pest control*

A Natural Resources Institute (NRI) project "Cottoning on to a Better Pest Management" on the development of a safe and sustainable strategy for the control of cotton pests in India has become the first recipient of the "RNRKS Annual Award Scheme" introduced by the Department for International Development (DFID). The award is worth £200,000 over a 3-year period.

## Weeds and global warming

At a recent meeting of the American Society of Plant Physiologists, scientists at the USDA-ARS Climate Stress Laboratory at Beltsville, Maryland, USA, reported studies on the effects of elevated carbon dioxide levels on weeds. They grew 3 weed species, redroot pigweed (*Amaranthus retroflexus*), lamb's-quarters (*Chenopodium album*) and quackgrass (*Agropyron repens*) in glasshouses containing current atmospheric levels of $CO_2$ and also in glasshouses containing twice that level of $CO_2$. They then sprayed the weeds with the recommended doses of glyphosate. All 3 weeds stopped growing in the glasshouses with current $CO_2$ levels, but in the $CO_2$-rich atmosphere only the growth of redroot pigweed was completely suppressed; the others continued to grow, though at reduced rates. Lamb's quarters and quackgrass are C4 plants, while redroot pigweed is a C3 plant, who photosynthesis pathways become more efficient when more $CO_2$ is available. Since levels of $CO_2$ are expected to double within 50 years, farmers may need to seek alternative to today's chemical herbicides.

## Fallowing and plant parasitic nematode control

Scientists at the Institut de Recherche pour le Développment in Dakar in Senegal, West Africa, have shown that fallowing acts not only on organisms that are useful to plants, but also on their parasites, like nematodes. Paradoxically it was shown that this increased presence of nematodes was favourable to the development of millet. The results suggested that, in order to control nematodes, it is not necessary to eliminate them physically with nematicides. It is not so much the number of parasites which seems to determine the pathogenic action, as the diversity of the species which make up the community. The more different species that are in a nematode community, in balanced proportions, the lower is its pathogenicity. The improvement in soil fertility caused by fallowing seems to encourage this biodiversity. Fallowing as an ecological management strategy for controlling nematode populations is an interesting alternative to achieve a durable attenuation of the impact of parasitic nematodes on tropical plants. For further information contact Patrice Cadet on patrice.cadet@dakar.ird.sn

## Slime and environmental persistence of pesticides

Chris Brereton and Roger Wotton of University College, London, together with Alan House and Patrick Armitage of the Institute of Freshwater Ecology in Dorset, have discovered that mucous secretions from certain freshwater invertebrates, such as snails, can have an extremely high absorption affinity for several common pesticides (atrazine, cyanazine, desmetryn, fenitrothion, malathion, parathion, prometryn, propazine, simazine and terbutryn) (*Environmental Pollution* 1999, **105**, 55). The researchers found that the distribution coefficients for these pesticides to the mucus from captive snails were orders of magnitude greater than for soil organic carbon, the standard measure used to determine the potential for a pesticide's persistence in the environment. The results show that where such organic surface coatings occur pesticides have a greater potential to be absorbed and be transported in the environment than has hitherto been assumed.