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# Bioorganic & Medicinal Chemistry

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## Preface

### Modern trends in agrochemistry

Crop Protection and Health Care are fundamental preconditions for survival and quality of life for mankind. During the next decades crop protection will be confronted with challenges of a magnitude never seen before. The ever growing world population needs a dramatic increase in efficiency of crop production to guarantee an adequate production of food in the 21st century. Additionally, the increased desire from people living in developing- and transition-countries for animal protein food sources, leads to an even greater demand for cereals to serve as feed for livestock production. For the first time in history economic plants are being used on a large scale for the production of biomass and biofuel. The competition between food and energy plants has already significantly increased food prices during the past few years with the result that famines in Third World countries are no longer caused only by a shortage of food products but also by the unaffordably high prices which these command.

Another major source of impact on agriculture in the 21st century will be global climate change. Increasing temperatures worldwide will have effects on the productivity of all common crop plants. The nature of plant diseases will change and infestations with insect pests will become an even more serious problem. It is expected that higher temperatures will shorten the generation time of insects and that as a result, resistance to common insecticides will develop more rapidly. While genetically modified crops have already demonstrated progressive solutions to adapt plants to abiotic stresses such as water shortage, extreme temperatures and salinity, chemical crop protection will

remain the predominant strategy for the treatment of biotic stresses such as new or changed plant diseases or pest insects. Crop protection agents will in future need additional qualities such as a selective mode of action, low toxicity to beneficial organisms and be environmental sustainability.

With respect to the multifaceted global challenges mentioned above, this Symposium-in-Print issue highlights several aspects of modern crop protection research, presented by industrial and academic research groups. Following on from a general perspective article discussing the potentially conflicting interests of food-crop and energy plant production, a series of review articles presents various new classes of crop protection compounds which are now in an advanced stage of development or which have recently been introduced to the market. Papers on modern strategies in agrochemistry such as high-throughput synthesis or prediction tools for physicochemical properties are provided as well as natural product and peptide driven approaches. The original research papers cover new synthetic methodologies, structure–activity studies of insect neuropeptides and syntheses as well as the derivatisation of natural products.

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