

Annex I: Project Progress Summary

Project Progress Summary

<u>Section 1: PROJECT IDENTIFICATION</u> Information to be provided for project identification		NOT CONFIDENTIAL
Title of the project Fate and Toxicity of Allelochemicals in Relation to Environment and Consumer		
Acronym of the project FATEALLCHEM		
Type of contract R & D		Total project cost (in euro) 2,504,539 €
Contract number QLK5-CT-2001-01967	Duration (in months) 36 Months	EU contribution (in euro) 1,492,338 €
Commencement date September 1, 2001		Period covered by the progress report September 1, 2001- August 31, 2002
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Key words (5 maximum - Please include specific keywords that best describe the project.). allelochemicals, fate, toxicity, wheat, crop protection,		
World wide web address (the project's www address) http://fateallchem.dk		

List of participants All partners are contractors.

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Annex I: Project Progress Summary

Section 2: Project Progress Report

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Objectives: The overall objective of our project is to perform an environmental and human risk assessment of exploiting the allelopathic properties of wheat in modern farming and to develop a framework for future assessments of allelopathic crops. This objective will be reached through the following: I) to quantify the amount of allelochemicals and their metabolites a) in wheat of different origins and grown under different environmental conditions and b) in the surrounding soil environment, II) to generate dose-response relationships of major wheat allelochemicals on important target weeds and insects, III) to assess the risk to environment and consumers of wheat allelochemicals and their metabolites in comparison with synthetic pesticides and IV) to compare the empirical results with theoretical results using rules-based prediction of toxicity and rule-based prediction of environmental transformation.

Results and Milestones:

Validated analytical method for MBOA, BOA, HBOA, HMBOA, DIMBOA, DIBOA, DIMBOA-glc and DIBOA-glc has been developed. Several international publications are being prepared.

A number of transformation products in soil of MBOA and BOA have been detected, of which the confirmation still is pending.

The studies on herbicidal effects with pot experiments and with incorporated plant material until now did not reveal any significant differences between the chosen varieties. However, the pot experiments suffered from a very poor germination of some of the weed seeds, and the experiments incorporating high amounts of plant material in soil showed difficulties in obtaining the contact between soil and weed seed required for germination. These experiments will thus be repeated.

Using a new method, the Equal-Compartment-Agar-Method, a significant allelopathic effect was seen of all the varieties unless a significant difference between these was not seen. The EQAM also revealed that only living plants were allelopathic and a higher effect was seen when sowing of the test plant was delayed.

The broad activity bioassay showed that Astron and Ritmo had the highest weed suppressive activity and Stakkado had the lowest.

The studies on insecticidal effects that until now were performed for aphids showed that Stakkado, Ritmo and Bill (growth stage 14) decreased the population development of *Rhopalosiphum padi* but that Solist, Portal and Astron (growth stage 14) decreased the population development of *Sitobion avenae*. These results are not consistent. However, this is not extraordinarily strange since we have to do with two different aphid species with their own demands of food.

When comparing the results on insecticidal effects, herbicidal effects and bioassays no general conclusion can be made up to now. Different wheat allelochemicals can influence more on weeds than on insects or vice versa, or the matrixes in which the trials are performed can lead to transformations of the hydroxamic acids that vary between the matrixes.

Benefits and Beneficiaries:

Farmers, end user groups, regulatory agencies, scientists, are among the beneficiaries of this project. However it is too early to define the details on how the beneficiaries can exploit the results

Future Actions (if applicable):

Until now only minor changes to the original plan are needed.