Calendula as agronomic raw material for industrial applications (carmina)

Fact Sheet

Project Information

CARMINA

Grant agreement ID: FAIR983713

Project closed

Start date
1 April 1998

End date
31 March 2001

Funded under
Specific research, technological development and demonstration programme in the field of agriculture and fisheries (including agro-industry, food technologies, forestry, aquaculture and rural development), 1994-1998

Total cost
€ 2 835 050,00

EU contribution
€ 1 469 996,00

Coordinated by
Dienst Landbouwkundig Onderzoek
Netherlands

Objective

Objectives To develop new and to extend known industrial application possiblities of Calendula oil and its derivatives; to optimise and develop oil recovery techniques in order to meet the specific requirements imposed by the different end users; to identify uses for the seed by-product in animal feeds; to develop Calendula officinalis towards an economical feasible crop management systems for the main production areas of

Europe; to develop cost-effective crop management systems for these areas; to improve genetic stocks for desirable agronomic characteristics.

The project is divided into two working units:
1. Primary production Calendula genotypes investigated in the VOSFA programme showed considerable diversity in flower structure and size, stem branching, crop height, flowering period and maturity. However, the results indicated potential for integration into current crop production systems, utilising existing equipment. Several constraints remain to be solved before this crop can be grown economically. By applying modern breeding technology, performing crop physiology studies, studying genotype x environment interactions, and investigation of seed cleaning and processing systems capable of meeting the specifications of the oil extraction processes, improved cultivars and production systems will be developed for the main processes will be developed areas of Europe. Furthermore, technology to meet the seed cleaning specification of oil extraction production.
2. Processing, refinement and industrial applications The extreme reactivity of calendic acid makes Calendula oil interesting for several industrial applications but at the same time causes difficulties in processes related to extraction and refinement. These problems can be overcome by using mild process techniques especially designed for the production of extremely reactive oils. CARMINA is directed towards the development of the best technology to process speciality oil (Calendula oil) from seeds. Refinment methods will be investigated in order to produce different oils that meet the various requirements of the specific applications investigated in this programme (i.e. Paints, surfactants, polyurethane foams, lubricants). Functional ingredients present in flower-head extracts may be of interest for application as food and/or feed ingredients. Based on the present knowledge further research activities are proposed to identify specific high value applications. In addition, the utilisation of Calendula meal as livestock feed ingredient will be investigated. Calendula oils were produced and tested in the VOSFA programme. Only a limited use in paint formulations was possible due to suboptimal quality of the oil. Major improvement is expected when oil will become available from mild extraction and refinement processes. In CARMINA these oils will be made and tested. Other industrial research activities conducted in CARMINA are related to the synthesis and characterisation of speciality surfactants for application in lubricants, pharmaceuticals, disinfectant, agrochemical and cleaning products. Finally, the production of high performance polyurethane foam products from Calendula oil will be tested and evaluated. In CARMINA the production, processing and testing of Calendula oil will be integrated through continuous quality monitoring, product evaluation and information feedback up the production chain.

Fields of science (EuroSciVoc)

engineering and technology > mechanical engineering > tribology > **lubrication**

medical and health sciences > basic medicine > pharmacology and pharmacy > **pharmaceutical drugs**

natural sciences > chemical sciences > polymer sciences > **polyurethane**

agricultural sciences > agriculture, forestry, and fisheries > **agriculture**

agricultural sciences > animal and dairy science > domestic animals > animal husbandry > **animal feed**

Programme(s)

FP4-FAIR - Specific research, technological development and demonstration programme in the field of agriculture and fisheries (including agro-industry, food technologies, forestry, aquaculture and rural development), 1994-1998

Topic(s)

1.2 - The "green" chemical and polymer chain

Call for proposal

Data not available

Funding Scheme

CSC - Cost-sharing contracts

Coordinator

Dienst Landbouwkundig Onderzoek

EU contribution

No data

Total cost

No data

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EU contribution

No data

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Total cost

No data

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