



# SABRES

## Services to Agri-Business by Remote Sensing



SABRES was initiated in September 1998 by the European Commission, with partners in Belgium, France, Germany and the United Kingdom. SABRES aims to estimate the applicability and the efficiency of the utilisation of very high resolution satellite images (VHRSI) for agricultural management and decision making. The research focus more specifically on the evaluation of the adequacy of IKONOS images.

The results of the project will contribute to the commercial exploitation of VHRSI in agriculture.



Duration of the project: September 1998 to February 2001



Shared Cost Pilot Project of EC Commissions, DG - XII  
Framework IV, Environment and Climate Programme

# Introduction

The prospect of very high satellite resolution imagery (VHRSI) from IKONOS provided an opportunity to assess the value of this data for farm and crop management. This is particularly relevant at a time when there is increasing interest in the spatial variation of crop growth within fields and there is the technical capability to apply inputs selectively, a technique that has become known as precision farming. Although the availability of IKONOS imagery was delayed until February 2000, the project has been able to evaluate the potential of VHRSI, 4m multispectral and 1m pan. A number of new VHR satellites are proposed within the next few years, including SPOT 5 which will have 5m multispectral resolution compared with the current 20m. The results from the SABRES project will contribute significantly to the commercial exploitation of VHRSI in agriculture.

## Objectives

The research objectives of the SABRES project are:

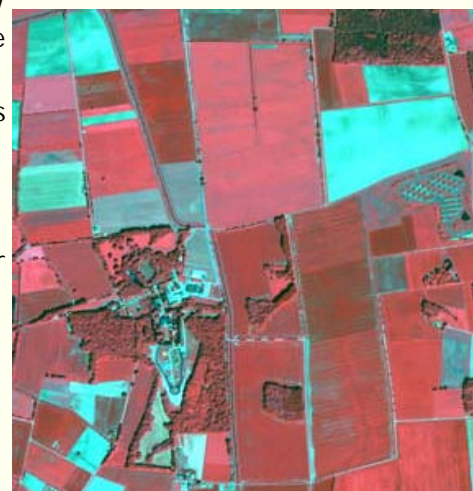
- evaluate the practical issues in acquiring timely VHRSI,
- establish the information required by potential customers (farmers and agribusinesses),
- investigate the feasibility of extracting the required information and making it available in the appropriate format and at the right time,
- develop a prototype subscription and distribution service to enable users to order and receive images and interpreted information over the internet within a few days of image acquisition,
- assess the real and potential commercial benefits of remotely sensed information in relation to the costs of providing agribusiness with these services.



## Earth Observation

Three key elements were identified to optimize the satellite images utilisation:

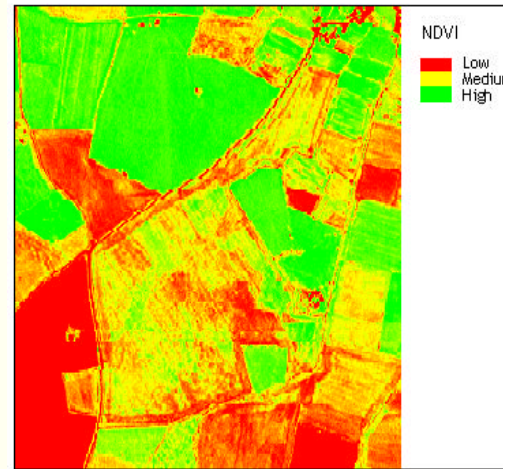
- 1 **Timing of acquisition:** to be cost efficient, time windows of images acquisition have been determined. The first image is a bare soil image –for soil patterns mapping. The following images are acquired during the growing season to be matched with particular key growth stages, prior to input decision. The acquisition time of these may thus vary according to the crop type and the location.
- 2 **Acquisition and delivery:** the efficiency of satellite products depends on the possibility to acquire the images fast and timely. The reliability and consistency of images delivery are therefore key factors in the utilisation of satellite products in agriculture as well as the rapidity of images processing –the project has demonstrate it is possible to deliver satellite products on farm within 7 days of the data acquisition.
- 3 **Targeting of customers requirements:** following feedback, high priority requirements relating to crop management have been identified. These are:
  - Tactical field inspection - targeting field effort to problem areas identified from imagery
  - Management zones - identification and delineation
  - Weed mapping
  - Crop canopy development - nitrogen, fungicide and growth regulator regimes
  - Disease/pest monitoring and treatment



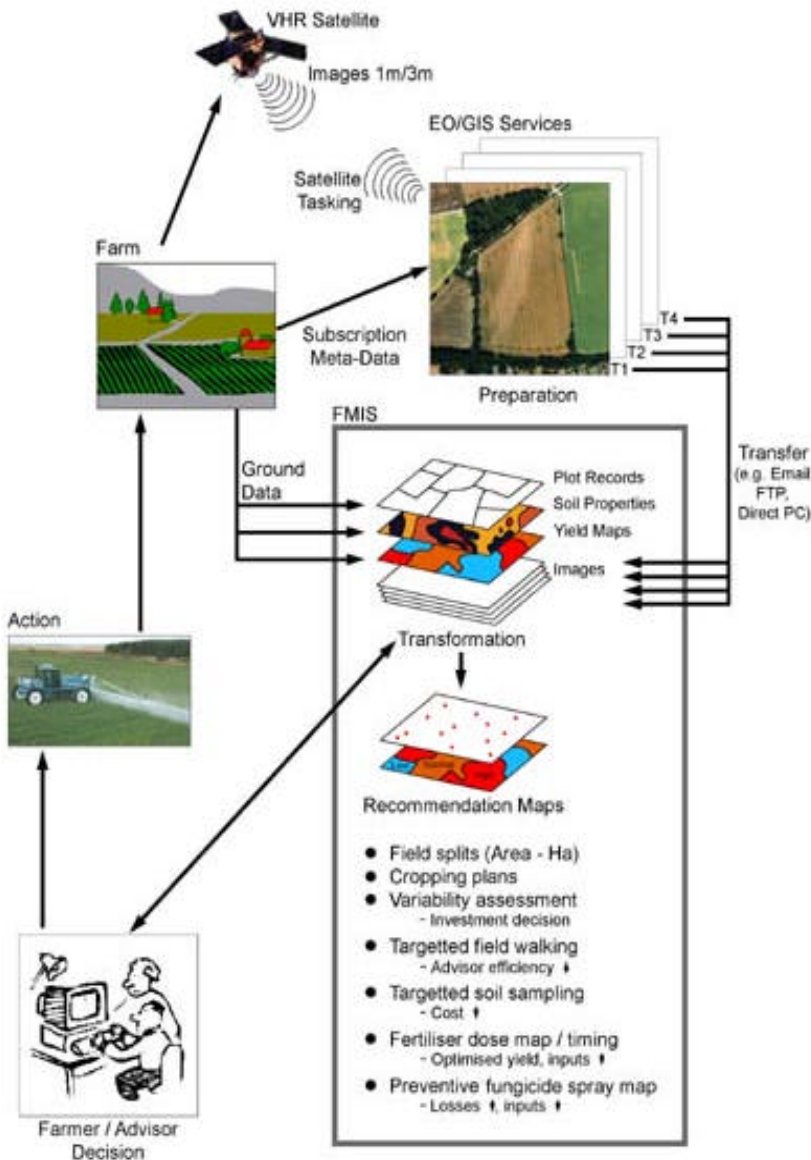
# The Research

The research of SABRES has been concerned with:

- **The integration of very high resolution satellite images into a farm management information system (FMIS):** a customized FMIS has been developed to combine data from different sources to produce application maps.
- **The management of agrochemical inputs:** a research element of the project has been the development of advanced thematic maps (e.g. nitrogen fertiliser application maps) based on a combination of field information and ground data. The challenge has been to develop models that can consistently and reliably correlate vegetation indices derived from satellite data with ground measurements.
- **The definition of management zones:** a comparison between several satellite images make it possible to identify areas with consistent trends relating to crop establishment, vigour and yield. Once these areas have been accurately delineated into management zones, the field inspections can be more precisely targeted and the impact of different input regimes can be assessed.



## SABRES



Schematic representation of the integration of EO services into the farm decision making process.

## The service

Very high resolution imagery has the potential to meet many of the customer requirements identified in the project and it is now technically possible to integrate images and products with other data sources on farm. Cost reduction can be realised by involving as many farms as possible within an individual satellite scene. Consultancies and other agribusinesses servicing the farming community will be able to achieve this economy of scale and are well placed to develop the expertise to utilise the data in their advisory activities.






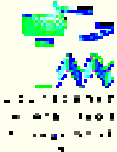
The latest part of the project consist thus in the implementation of a prototype subscription and distribution service. This provides a simple centralised system where customers can register their farms and order satellite images and products. The subscription/distribution process can be summarized in five steps:

- Registration of the farms and providing of spatial details.
- Order of images out of a proposed list
- Redirection of the order to the appropriate value added retailer (VAR)
- Notice by Email that the order is available
- Download of the product

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You can also visit our web site : <http://www.rsacl.co.uk/sabres/>