

INTRODUCTION

GrasSat project

The main objective of **GrasSat project** is a fully operational system in form of desktop and mobile application, which provides a complementary tool for managing grassland production, mainly for medium and large farms in **Poland and Norway**. Combining the effectiveness of the application with the support of external advisors is the key to improve grass production management. Experience of the team of remote sensing and grassland specialists will be the firm foundation of the tools to be prepared within the project.

Study area in Poland

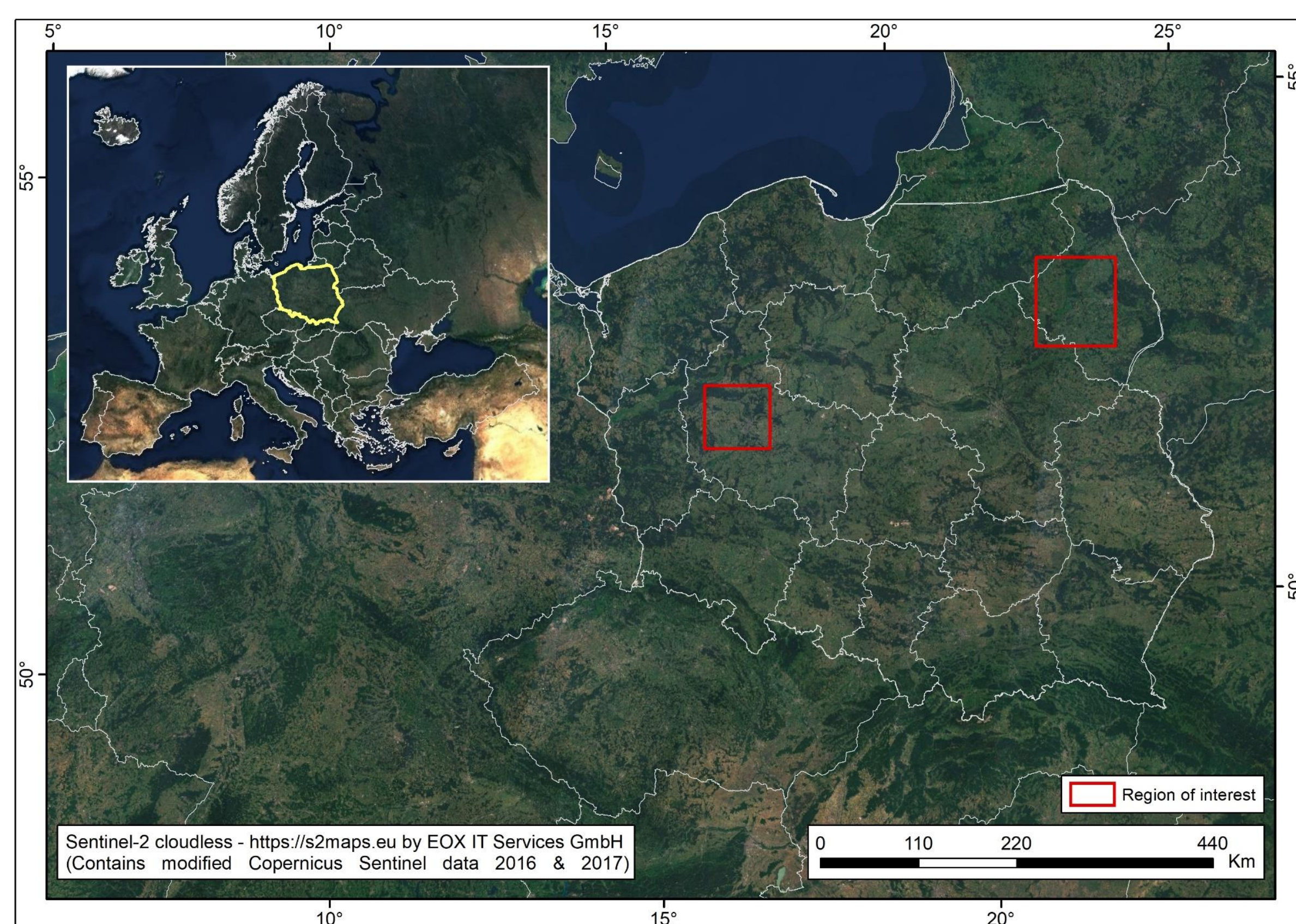


Fig. 1 Locations of test sites in Poland

In Poland PULS and IGiK have been collected in-situ data on selected productive grasslands located mainly in dairy farms in two regions: north-eastern and central-western Poland (Podlaskie and Wielkopolskie voivodship).

EO data



METHODS

In-situ measurements

In the course of field campaigns the following in-situ measurements have been carried out in each test site:

Fig. 2) volumetric soil moisture - TRIME-FM probes and ML3 ThetaProbe Sensor

Fig. 3) Leaf Area Index (LAI) - LAI2200 Plant Canopy Analyzer

Fig. 4) Fraction of Absorbed Photosynthetically Active Radiation (FAPAR) - AccuPAR LP-80

Fig. 5) surface temperature - Infrared Thermometer

Fig. 6) greenness index (SPAD) - SPAD-502 meter

Fig. 7) height of vegetation - Jenquip EC20 Bluetooth plate meter

Fig. 8) fresh and dry matter sward yield collected from 1 x 1 m samples (accomplished in laboratory)

Fig. 9) spectral reflectance - ASD FieldSpec hyperspectral instrument to assess diversity of grass vegetation



Fig. 10 The project is carried out in cooperation with leading seed producers, farmers and the largest dairies.

RESULTS

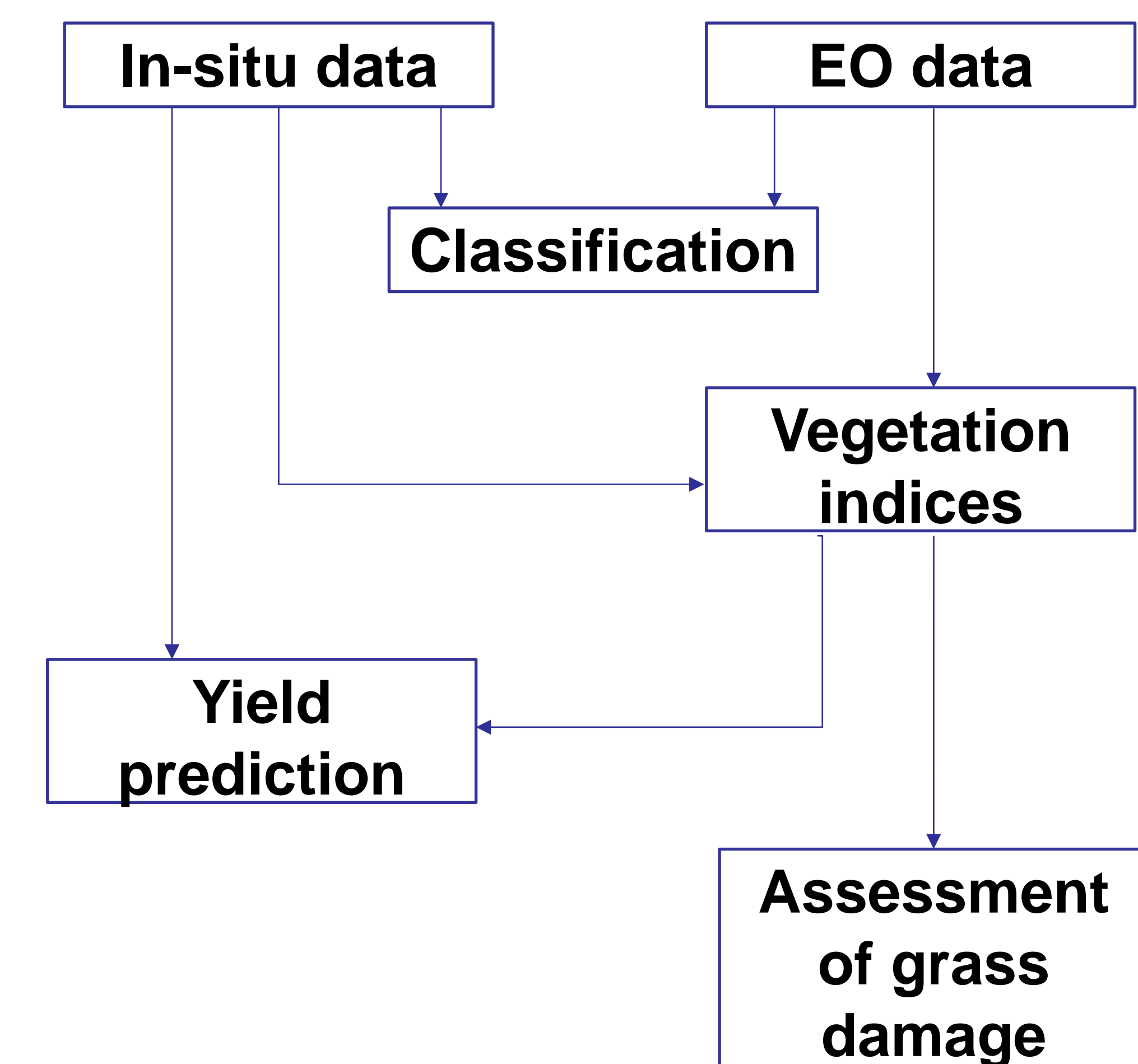


Fig. 11 Scheme of works.

The aim of classification procedure will be to discriminate two basic types of grasslands:

Fig. 12) High productive grasslands,

Fig. 13) Low-yielding unimproved permanent grasslands,



The relationship between the in situ measured parameters and the indices derived from EO data will be determined and subsequently used to predict vegetation parameters from EO data on a weekly basis.

Two indices calculated from Terra MODIS data as the Temperature Condition Index (TCI) and Vegetation Condition Index (VCI) will be applied to describe actual towards historical grasslands conditions and the deduction of drought.

CONCLUSIONS

The ultimate goal of the project is to develop a web portal and mobile application to communicate the project results to farmers and the farming community.