

Table of contents

Plenary session

How close is close enough?	17
----------------------------	----

Soil electrical conductivity

Stability of patterns of apparent electrical conductivity in dry versus wet soil conditions	31
---	----

Comparison of apparent electrical conductivity measurements on a paddy field under flooded	43
--	----

and drained conditions

Water Supply and Soil Textures Influence Corn Response to In-Season Nitrogen Rates: A Study Using Spatially Variable Irrigation	51
---	----

FloSSy: A floating sensing system to evaluate soil variability of flooded paddy fields	60
--	----

Remote sensing

Monitoring corn nitrogen variability by remote sensing data	69
---	----

Airborne thermography of discontinuous canopy like vines: effect of the atmosphere and mixed pixels on the temperature of the canopy	79
--	----

Hyperspectral waveband selection for detecting floral pear buds	90
---	----

Hyper-spectral and thermal images for evaluating nitrogen and water status in potato fields	99
---	----

Image analysis

Application of Color Indices and Canopy Cover Derived from Digital Camera Image	111
---	-----

Analysis to Estimation of Growth Parameters of Rice Canopy	
--	--

Green citrus detection using Fast Fourier Transform (FFT) leakage	122
---	-----

A novel algorithm to recognize and locate pomegranate on the tree for the harvesting robot using stereo vision system	133
---	-----

Estimating quality and quantity of new shoots for green tea in field using ground-based hyperspectral image	143
---	-----

Management zones

Zoning of agricultural field using a fuzzy indicator model	157
--	-----

Delineation of homogeneous field zones based on soil fertility indices in a durum wheat - chickpea rotation	164
---	-----

Simulating the influence of crop spatial pattern on canola yield	180
--	-----

Management zones delineation using fuzzy clustering techniques in vines	191
---	-----

Weed & disease (1)

Measuring yield effect of weeds and herbicide application in small annual grains and maize using the Precision Experimental Design	203
--	-----

Orange yield and plant gaps mapping caused by diseases	213
--	-----

Tracing boundaries of weed microplants growing on cultivation medium	222
--	-----

Classifying cruciferous weeds in cereal and legume crops using discriminant analysis	234
--	-----

Weed & disease (2)	
Comparison of Aerial and Quickbird image for mapping cruciferous weeds	245
Economic feasibility of site-specific management of Sorghum halepense in maize fields in Spain	256
Hyperspectral imaging of foliar sugar beet diseases and automatic classification by the Spectral Angle Mapper algorithm	264
Soil variability	
Characterization and Quantification of Spatial Variability of Soil Properties and Fruit Yield in Wild Blueberry Field	275
Case studies on the accuracy of soil pH and lime requirement maps	289
Are precision agriculture tools and methods relevant at the whole-vineyard scale?	302
Swiss Controlled Traffic Farming Trial – Preliminary Results 2008-2010	312
Crop nitrogen	
Crop nitrogen level identification and yield estimation of common bean crop using multi- and hyper-spectral vegetation indices	327
Evaluation of plants nitrogen status by colorimetric characteristics of crop canopy presented in digital images	341
Evaluation of Variable Rate Fertilization Technology with the help of geospatial processing programs	352
NDVI response of cotton to nitrogen application rates in Georgia, USA	358
Technology	
Evaluating the need for an active depth-control system in direct seeding in Portugal	371
Multi-robots formation in outdoor environments	382
Analysis of load displacement in grape harvesters and corresponding effect on dynamic weighing system	390
Round balers with variable chamber and possibility for straw and forage yield mapping	400
Economics & modelling	
Optimizing routes on agricultural fields minimizing maneuvering and servicing time	411
A waypoint-based mission planner for farmland coverage with an aerial robot – A precision farming tool	427
Modeling spatial data for precision agriculture and remote sensing	437
Determination of machinery performance for random and controlled traffic farming	449
Sensor performance	
Combining on-the-go soil sensing and a wireless sensor network to increase irrigation water use efficiency	459
Active-Crop Sensor Calibration Using the Virtual-Reference Concept	469
Impact of individual sensor performance when array sensor number is reduced	480
Competence center SenGIS – exploring methods for multisensor data acquisition and handling for interdisciplinary research	491

Crop sensors	
Crop-Canopy Sensors for In-Season Nitrogen Management of Irrigated Maize	503
Comparison of two active remote canopy sensors to develop N fertilizer algorithms	514
Detecting abiotic stress in soybean with a proximal canopy sensor	523
Active remote sensing for rapid evaluation of apparent nitrogen use efficiency in winter wheat (<i>Triticum aestivum</i> L.) genotypes	533
Soil & quality sensors	
Multiplex*: An innovative optical sensor for diagnosis, mapping and management of nitrogen on wheat	547
Predicting lime requirements by fusion of proximal soil sensors	562
Using a fluorescence proximal sensor to study spatial variability of grape phenols in a Tempranillo vineyard	577
On-the-go soil sensing and the future of precision agriculture – Results of field measurement in UK farms	585
Yield variability	
Modeling systems, not factors, in cropping systems experiments	595
The relationship of topography and yield in relation to weather conditions	606
Yield prediction in a commercial apple orchard by analyzing digital and multispectral images of trees during flowering period	617
Online measurement of yield and dry matter content of wilted grass with two forage harvesters - comparison with and verification of reference measurements	628
Keyword Index	639
Author Index	642