Form (ENG):	AGR/02 − Agronomy and Field Crops		Year: 2016
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N.	Research: main topics and strategic initiatives	Notes
	MAIN TOPIC 1. HIGH INPUT AGRICULTURAL SYSTEMS – Development of efficient and innovative agricultural systems and improvement of their environmental sustainability	
	Strategic initiatives – Group 1: Optimization of cultural techniques and improvement of product quality	
01	Study of efficient and innovative agricultural systems and analysis of their ecosystem services	
02	Analysis of relations among cultural techniques, physical soil properties and GHGs emissions	
03	Application of microrganisms (bacteria and mycorrhizae) and fungicides in the soil-seed-root system for the yield improvement and protection of cereals	
04	Study and reduction of negative effects of flooding events and anoxia on crop root growth, plant tolerance	
05	Effects of minimum / no tillage on weed flora, water runoff, sediment erosion and associated transport of herbicides	
06	Effectiveness of vegetative buffer strips and vegetated ditches in reducing herbicide runoff	
07	Optimization of cultivation of novel medical herbs	
	Strategic initiatives – Group 2: Implementation of innovative technologies	
08	Utilization of geophysical and proximal/remote sensing technologies in precision agriculture	
09	Utilization of innovative methods of physical soil properties (x-ray tomography, ERT, real-time gas monitoring systems)	
10	Utilization of NIR for optimizing N fertilization	
11	Modelling of turf weed seedling emergence and early growth aiming at developing new Decision Support Systems (DSS) for reducing herbicide input	
12	Using of sensory analysis for food quality evaluation	
13	Development of investigative methodologies on the root apparatus in adverse environemts	
14	Techniques of HPLC analysis for the detection of synthetic molecules	
	MAIN TOPIC 2. LOW INPUT AGRICULTURAL SYSTEMS – Study of seminatural grassland for biodiversity conservation and production of forages suitable for typical dairy products	
	Strategic initiatives	

15	Study of environment, yield, conservative management and restoration of abandoned and degraded semi-natural grassland
16	Study of sexual reproduction of herbaceous species of semi-natural grassland

Laboratory: Experimental farm, Greenhouse, Chemical lab, Soil physics, Crop ecophysiology lab, Root lab, Sensory analysis lab, Forage crops lab.

Species: Maize, wheat, barley, alfalfa, soybean, sugarbeet, oilseed rape, sunflower, colza. Medical herbs: Scutellaria alpina, Perilla frutescens and other species of alpine origin. Turfgrass species: Native species of seminatural grassland.

Technologies/Metodologies: Field, greenhouse and laboratory trials. Lysimeter, dynamic gas chamber; Greenseeker; chemical analyses, sensory analysis, HPLC, NIR spectroscopy; x-ray tomography, electrical resistivity tomography, porosimetry/BET, hydraulic properties; extraction of herbicides from water and soil (rotary evaporator, nitrogen concentrator, SPE glass column processor), seed germination and growth tests; GIS and image acquisition and analysis also for roots; numerical modelling of cropping systems.

Main ERC fields and subfields: LS9, LS9_3, LS9_4, LS9_5

Notes: