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Grassland – a European Resource?

Book of Abstracts

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for the other doses. In regrowth, there were also different models for N_{50} (linear plateau), N_{100} (linear) and N_{200} (linear plateau). Biomass accumulation as a function of PAR_a presented different models depending on sward condition (establishment and regrowth) and N fertilization. Therefore, the accumulation of biomass can be estimated using parameters describing the time-evolution of LAI, the absorption efficiency of PAR and the local ratio between the global solar radiation and PAR.

1.1.04 Production of different forage leguminous shrubs growth in the Canary Islands

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Four species of leguminous shrubs endemic to the Canary Islands (Spain) – *Chamaecytisus palmensis* (tagasaste), *Teline canariensis*, *Teline osyrioides sericea* and *Teline osyrioides osyrioides* – were evaluated from 1999 to 2008 as a source of forage. Plant survival, edible green matter / inedible matter fraction (EGM/IM) and production of edible dry matter (EDM) were evaluated at three cutting heights (30, 50, 70 cm above ground level). Samples were taken annually during these ten years. Significant statistical differences related to EDM production ($P < 0.05$) were observed among all species, except between *T. o. osyrioides* and *T. canariensis*. The highest production was found in *C. palmensis*: 2.28, 4.64, 4.02 Mg EDM ha⁻¹ per year for each cutting height (30, 50 and 70 cm, respectively). EGM/IM ratio showed significant lower values for *C. palmensis* (1.50) related to the three *Teline* species (from 2.98 to 3.25).

1.1.05 Biomass production and forage quality in multispecies swards

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Multispecies mixtures of legumes and grasses offer potential advantages over the perennial ryegrass monocultures and binary white clover-perennial ryegrass mixtures usually sown in temperate pastures. These include greater productivity, increased resistance to unsown species invasion and improved forage quality. An experiment comprising eight experimental communities containing different proportions of birdsfoot trefoil (*Lotus corniculatus*), red clover (*Trifolium pratense*), a high-sugar perennial ryegrass (*Lolium perenne*) and timothy (*Phleum pratense*) was established and results are presented from three years of measurements.

1.1.06 Effect of grass species and ploidy on clover content in grass-clover mixtures

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Tall fescue (*Festuca arundinacea* Schreb.) is of increasing interest in Western Europe, mainly because of its good drought resistance. Agronomic data on this species are relatively scarce and little is known about the compatibility of tall fescue with clover. We established field trials in 2009 to compare the yield, botanical composition, feeding value and N-fixation of different grass species associated with clover. A first trial compared tall fescue, diploid perennial ryegrass (*Lolium perenne* L.) and tetraploid perennial ryegrass sown with white clover (*Trifolium repens* L.). A second trial compared tall fescue, diploid Italian ryegrass (*Lolium multiflorum* L.) and tetraploid Italian ryegrass sown with red clover (*Trifolium pratense* L.). In all plots 5 cuts were taken in both 2010 and 2011 and the yield, botanical composition, nitrogen content and digestibility of the harvested material were determined. Preliminary conclusions show no effect of grass species on white clover content in the mixtures. Red clover content in turn was consistently higher in combination with tall fescue than with Italian ryegrass.

1.1.07 Discrimination of pure species of grassland species using Hyperspectral Imaging NIR

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The objective of this study was to discriminate by hyperspectral imaging system, SWIR ImSpector N25E, different pure grassland species (*Festuca rubra* L., *Trifolium repens* L., *Agrostis capillaris* L., *Hieracium aurantiacum* L., *Arnica montana* L.) into grassland species mixtures. All the samples were collected from natural meadows of the National Apuseni Park, Apuseni Mountains, Gârda area (Romania). The samples were air-dried, then prepared using the protocol for NIRS analysis adapted on the scanning linear system. For images acquisition, the HyperPro program was used. Then a model build under MatLab (PLS-DA) was used to discriminate pure species from the mixtures of two or three species. This analysis was carried out in order to see, on images obtained previously from the floristic composition of experimental parcels, if the pure species are or are not recognized according to the spectral data base. More than 99% correct predictions for species discrimination were obtained. This study should guide us to verify if a toxic species is present or not in natural meadows used