YEAR EFFECT ON SWITCHGRASS BIOMASS PRODUCTION

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ABSTRACT: Switchgrass, a warm-season (C_4) grass, has been proposed as a herbaceous perennial plant suitable for biofuels production. The objective of this research work was to evaluate ten switchgrass varieties (upland and lowland) for a period of six years (1998-2003) in central Greece. Biomass yields were determined by a single winter harvest (2 m^2 per plot) each year when the moisture content was less than 30%. The establishment, a key stage for switchgrass cultivation, was quite successful for all under study varieties. All varieties performed their pick yields in the second (17.8 t/ha) and the third growing season (17.9 t/ha). A mean reduction of 20% in terms of dry yields was recorded in the fourth year that fluctuated between 7% (SL 93-3) to 44% (Summer). A further reduction was recorded between the fourth and the fifth year that came up to 38%. Thus, in the fifth year the achieved yields were 48% lower compared to the peak yields of the second and the third year of the trial. It should be also pointed out that the mean dry yields in the fifth growing season were lower that the ones recorded at the establishment year (9.3 t/ha versus to 11.5 t/ha). In the sixth growing season the yields were quite similar to the previous year (9.6 t/ha). In five out of the six years the lowland varieties (Cathage, Kanlow, SL-93-2, SL 93-3 and SL 94-1) were more productive than the upland ones (Caddo, CIR, Forestburg, SU-94-1 and Summer) and this superiority came up to 15%.

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