

presence of NAA in medium and it manifested by axillary shoots longer by 52.07 % in comparison with MS+BAP medium. In our experiments the higher number of the vitrified explants was recorded at higher BAP and NAA concentrations. Harris & Mantell (1991) and Buchheim & Meyer (1992) discussed this problem, too. Kyte & Kleyn (1996) recommended to decrease the content of cytokinins and to increase the content of agar in the culture medium at the first appearance of the vitrification phenomena. Franc (1996) published that the multiplication coefficient has to be higher than 2.0 in orders to secure commercial utilisation of the multiplication method. Constantine (1986) reached the multiplication coefficient 2.5 - 3.5 in 4 weeks production cycle. In our experiments the multiplication coefficient of peony axillary shoots was 4.25 on MS medium supplemented with 1.0 mg.l⁻¹ BAP and 4.75 on medium supplemented with 1.0 mg.l⁻¹ BAP + 0.2 mg.l⁻¹ NAA after 5 weeks in culture.

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THE APPLICATION OF THE INTER -GENERIC HYBRIDS AT AGROECOLOGICAL CONDITIONS OF THE EAST – SLOVAKIAN LOWLAND

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Summary

Productive parameters of the inter-generic hybrids of grasses in the monocultures and clover –grasses mixtures were investigated. The field trial with the grasses monocultures and clover-grass mixtures was carried out on the experimental basis of Research Institute of Agroecology Michalovce at Milhostov. Over the three crop years evaluation of the total dry matter production was confirmed, that the clover-grass mixtures were the most productive. Perspective inter-generic hybrids, marked "HŽ 7DK", was the most productive before the inter-generic hybrids marked "PERUN". So the inter-generic hybrids were confirmed the convenience of it's ones growing at the conditions of the East-Slovakian Lowland.

Key words: inter-generic hybrids, monocultures, clover-grass mixtures, dry matter production, the East-Slovakian Lowland

Introduction

An intensification of the fodder crop production presents a measure at raising of plant production and connected animal production, also. The East-Slovakian Lowland has favourable assumes to effective fodder crops production in monocultures, as well as in mixtures. Apart from generally growing clovers and grasses, the inter-generic hybrids can be taken to reflections, too. According to Knotek et al. (1996), from the fodder point of view, the inter-generic hybrids mean the quality overturn, because they are sufficient productive, they have higher sugar contents and they are good ensilaged. At Nitra region, Volosin et al. (1997) reached upon inter-generic hybrid "FELINA" and HYKOR higher yield like were upon the productive grass – fescue (*Festuca arundinacea* Schreb.) and dew-grass (*Dactylis glomerata* L.). Krajčovič, Knotek et al. (1995) suggest to use inter-generic hybrids to clover grass mixtures at the individual regions of Slovakia. According to Gejguš (1997), Gejguš and Kováč (1998) inter-generic hybrids found out their application at regions of the East-Slovakian Lowland.

Material and methods

Over the years 1997 – 1999, the field trial with the grasses monocultures and clover-grass mixtures was carried out on the experimental basis of Research Institute of Agroecology Michalovce at Milhostov, on Efluvi-Eutric Gleysol with high clay particles content. Average composition of arable layer is following: contents of available phosphorus 60 mg.kg⁻¹, contents of available potassium 160 mg.kg⁻¹, contents of available magnesium 230 mg.kg⁻¹, humus contents 2,9 %, pH_(KCL) 7. Average year temperature is 8,9 °C and average year total precipitation is 559 mm at Milhostov.

Table 1 shows twelve variants of grass monocultures and clover-grass mixtures integrated in the field trial. Before seeding mineral fertilizers were applied at the doses N- 30 kg.ha⁻¹ p.n., P- 30 kg.ha⁻¹ p.n. and K- 80 kg.ha⁻¹ p.n.. Nitrogen was applied

in form ammonium saltpetre with limestone, phosphorus in SUPERPHOSPHAT form and potassium as potash salt. The forecrop was spring barley, after barley harvest the skimming was made and the plough was made in autumn 1996. In spring 1997 soil was tilled by cultivator. Sowing was made by seeding machine OYORT. The grass stands were began accrue from in may 10 and it one made use of cutting during three observed crop years.

Results and discussion

The dry matter production of grass monocultures and clover grass mixtures obtained over the crop years is recorded in table 1. In field trial perspective inter-generic hybrids from breeding station Hladké Životice were applied as well as an veriflicated inter –generic hybrids “PERUN” and “BECVA”, Italian rye-grass (*Lolium multiflorum* L.) “LUBINA” and perennial rye-grass (*Lolium perenne* L.) “MUSTANG”. Using of the inter-generic hybrids at two and three-component mixtures with clover were investigated apart from single seeded grasses.

In the 1st crop year (1997) variants of monocultures as well as mixtures were provided high hay yields. At grass monoculture grass hay yields were moved from 7,99 t.ha⁻¹ (“PERUN”) to 9,71 t.ha⁻¹ (“HŽ 12DK”). Production of dry matter at mixtures was lower, apart from mixtures in variant 10 and 12 (8,72 t.ha⁻¹ respectively 9,17 t.ha⁻¹).

In the 2nd crop year (1998) clover grass mixtures were more productive as grass monocultures, yet. High increased sum of precipitation was influenced the dry matter production level. There was achieved total precipitation 739 mm in 1998 against long-term sum of precipitation (559). During vegetation season (IV.-IX.) it was rainfall 535,6 mm, that was more about 187,6 mm as long-term normal. This utility year was sharing the most evidently on total yield. The inter-generic hybrid “HŽ 7DK” was the most productive from grass monocultures (18,63 71 t.ha⁻¹) before of inter-generic hybrid “PERUN” (17,03 t.ha⁻¹). At clover mixtures the highest yield was in variant “BESKYD” + “HZ 7DK” (21,63 t.ha⁻¹), only about little below yield offered variant “BESKYD” + “PERUN” (21,34 t.ha⁻¹).

In 1999 - the 3rd crop year – dry matter production was decreased evidently in comparison with last crop year. At monocultures of inter-generic hybrids yield differences were not important (5,15 - 5,77 t.ha⁻¹). At Italian rye-grass “LUBINA” and perennial rye-grass “MUSTANG” the yields were under level 5 t.ha⁻¹. At clover grass mixtures dry matter production was the most significant (9,21 t.ha⁻¹) in variant 12 (“MARGOT” + “LOFA” + “LUBINA”). The highest dry matter production was reached in variant 12 (39,15 t.ha⁻¹).

Table 1 Single variants and dry matter production v t.ha⁻¹

Variant	Species	Variety	1997 I. crop year	1998 II. crop year	1999 III. crop year	Total	Order
1.	IGH	HŽ 7DK	9,33	18,63	5,76	33,72	6.
2.	IGH	HŽ 8DK	8,57	15,58	5,13	29,28	10.
3.	IGH	HŽ 12DK	9,71	15,50	5,48	30,69	9.
4.	IGH	Perun	7,99	17,03	5,77	30,79	8.
5.	IRG	Lubina	9,00	15,33	4,67	29,00	11.
6.	PRG	Mustang	9,16	13,76	4,03	26,95	12.
7.	IGH Clover	HŽ 7DK Beskyd	6,06	21,63	8,37	36,06	4.
8.	IGH Clover	HŽ 8DK Beskyd	6,50	16,65	8,52	31,67	7.
9.	IGH Clover	HŽ 12DK Beskyd	7,67	19,06	7,85	34,58	5.
10.	IGH Clover	Perun Beskyd	8,72	21,34	8,92	38,98	2.
11.	IGH Clover IRG	Bečva Margot Lubina	7,07	20,50	8,90	36,47	3.
12.	IGH Clover IRG	Lofa Margot Lubina	9,17	21,13	9,21	39,51	1.

Legend: IGH – inter-generic hybrid,

CY – crop year, IRG – Italian rye-grass,
 PRG – Perennial rye grass

The second most productive mixture was 10 (“BESKYD” + “PERUN”) 38,98 t.ha⁻¹. At grass monoculture inter-generic hybrid “HŽ 7DK” was the most productive (33,72 t.ha⁻¹). The second one was inter-generic hybrid “PERUN” (30,79 t.ha⁻¹) and third

one inter-generic hybrid "HŽ 12DK" (30,69 t.ha⁻¹). Achieved hay yield of dry matter were confirmed the high productive parameters of inter-generic hybrids and their good representative device to clover grass mixtures, that is consisted with results by Volosin et al. (1997). The notions for suitable of their exploitation in condition of the East-Slovakian Lowland were confirmed too (Gejguš, Kováč 1997) not only in the field trial, but also at large-scale production of condition at agricultural farms Tušice, Nižný Hrušov, Staré and Choňkovce.

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THE INFLUENCE OF NUTRITION ON THE CHANGES OF QUANTITATIVE AND QUALITATIVE PARAMETERS OF SUGAR BEET

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Summary

The influence of fertilization on the changes of quantitative and qualitative parameters of sugar beet cultivation was observed in the yield stationary experiments accomplished in 1996–1998 on the Eutric Fluvisol and Fluvi - Eutric Gleysols. The problems was followed at the variety Ibis on the followed variants of fertilization: 1st-method of balance, 2nd-method of electro-ultrafiltration, 3rd-variant without fertilization. The quantitative and qualitative parameters of roots were statistically significantly dependent from variant of fertilization, soil types and year of cultivation. The effect of fertilization was reflected in increasing root yield from 9,34 to 9,78 t.ha⁻¹, the production of polarizing sugar from 1,26 to 1,66 t.ha⁻¹ and the production of refined sugar from 0,51 to 0,96 t.ha⁻¹ in comparison to the control without fertilization. The higher digestion and refined sugar yield were obtained at the 2nd and 3rd variants. At reciprocal comparison of fertilizing variants were higher yield and superior qualitative parameters roots were found on the 2nd variant.

Keywords: sugar beet; fertilization; root yield; digestion; ash; α -amino N; refined sugar yield; production of polarizing sugar; production of refined sugar

Introduction

The nutrition and fertilization of sugar beet are specific because they have to ensure not only high yield but as well as suitable the qualitative parameters. Realized of fertilization system must be economic advantageous and has to hold the nature soil fertility.

The sugar beet fertilization is made by the methods which may be to save the harmony relations between nutriment in soil environment and their requirement of stand (KOVÁČOVÁ, 1997; ŠOLTYSOVÁ, 1999). To control of fertilization is important because high offer of the soil nutrition lower qualitative parameters of sugar beet. The fertilization of nitrogen lower digestion root of sugar beet and it cause increase nitrogenous matter and ashes.

The aim of the contribution presented was to evaluate the influence of rationally fertilization on the quantitative and qualitative parameters of sugar beet cultivated on the soils of East Slovakian Lowland.

Material and methods

The problems of sugar beet nutrition was followed in years 1996–1998 by stationary experiments of Research Institute of Agroecology in the condition of Eutric Fluvisol (EF) in Vysoká nad Uhom and Fluvi-Eutric Gleysols (FEG) in Milhostov. The detailed characteristic of the place is described in the thesis of Šoltysová (1999).

The sugar beet variety Ibis was grown in the crop rotation at the traditional tillage. The forecrop of sugar beet was winter wheat. The quantitative and qualitative parameters of sugar beet were observed at three different variant of nutriment: 1st-method of balance, 2nd-method of electro – ultrafiltration, 3rd-variant without fertilization.