RESEARCH REGARDING THE INFLUENCE OF THE LEVELLING OF SANDS FROM THE LEFT PART OF THE RIVER JIU UPON THE ENERGY BALANCE IN THE CASE OF GROWING BLACK-EYED PEAS

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ABSTRACT

The energy balance is primarily influenced by the levelling of soils. Considerable crop production of the black-eyed peas on the sands on the left side of Jiu was obtained when the water and fertilizer factors were provided.

INTRODUCTION

The intensive use of sandy soil has raised the issue of dune levelling, for the use of agricultural equipment and irrigation with higher yield. In view of these considerations, the research aims to establish the influence of leveling upon the sands and plants.

MATERIAL AND METHOD

At the basis of the calculation of the energy balance, we used the methodology used by the Institute of Agricultural Economics within A.S.A.S. Bucharest (Teşu I, and Baghinschi V. 1984; Zaharia M., 1981).

In order to analyse the efficiency of the experienced factors, due to the fluctuation of prices, it was chosen to usethe energy criterion that is as universal as the value one without having momentary influences of negative or positive costs. In this case, the energy produced and consumed in agriculture was assessed on the basis of a system of indicators specific to this kind of analysis, following the crops and at the level of each production factor assigned within

the technological processes. The calculation was made by determining:

- The total energy produced in Mcal / ha;
- The energy consumed in Mcal/ ha;
- The energy balance, in Mcal / ha,
- the energy yield;
- The average energy yield on an unlevelled and levelled ground:
- energy consumption in Mcal/ kg product.

Balence and energy yield on fasolite culture (Average over the trhee years os research).

RESULTS AND DISCUSSIONS

The black-eyed peas is the culture that achieves large and constant green mass production on sandy soils, especially when important factors, such as water and fertilizers, are provided.

On unlevelled ground, the amount of energy produced by the black-eyed peas culture was from 12509 Mcal / ha to the unfertilized variant at l8974 Mcal / ha when the maximum dose of fertilizer $N_{200}P_{60}K_{40}$ (Table 71 and Fig.93) was provided.

Due to the low volume of work, the energy consumed was also low on the fertilization levels applied from 1630 Mcal / ha to 7214 Mcal/ ha.

In this context, the energy balance recorded high values from 10879 to 11760 Mcal/ha, but with low increases in the doses of mineral fertilizer applied and some fluctuations for doses N_{100} $P_{30}K_o$ and N_{150} $P_{60}K_o$,

The calculated energy yield showed values that decreased from 7.67 to 2.63 as the fertilizer factor assigned has increased quantitatively, the average of this energy indicator being 3.89.

The energy consumption achieved to obtain one kg of black-eyed peas has also increased with increasing fertilizer doses from 0.09 to 0.26 Mcal.

By growing black-eyed peas on levelled ground, even under fertilization conditions, the amount of energy produced was lower compared to the unlevelled ground, with the values ranging from 8987 to 14045 Mcal / ha .

The energy consumed recorded higher values from 2134 to 7718 Mcal/ha as a result of increased consumption by levelling work but also by maintaining the volume of the fertilizer factor with only one exception for the dose of $N_{100}P_{30}K_0$. The value of the energy balance was lower from 6853 to 4930 Mcalha, but for the last maximum dose of fertilizers, due to increased energy production, the value of this energy parameter was 6,327 Mcal / ha.

The calculation of the energy yield indicated lower values from 4.21 to 1.82 and diminished as the consumed energy increased. The average energy efficiency per levelling was 2.36. The energy consumption in Mcal'kg of product found indicated high values from 0.16 to 0.41, except for the maximum fertilizer dose that recorded 0.38 Mcal / ha (Table1).

Table 1

Variant	Production Kg/ha	The energy produced Mcal/ha	The energy consumedMcal/ha	Energy balance Mcal/ha	Energy efficiency	Randament energetic mediu	Energy consumption Mcal/kg product
Psamosol Unleveled							
$N_0P_0K_0$	18261	12509	1630	10879	7.67	3.89	0.09
$N_{50}P_{30}K_0$	19707	13499	3080	10419	4.38		0.16
$N_{100}P_{30}K_0$	22030	15090	4394	10696	3.43		0.20
$N_{150}P_{60}K_0$	23427	16048	5844	10204	2.75		0.25
$N_{200}P_{60}K_0$	25629	17556	7018	10538	2.50		0.27
$N_{200}P_{60}K_4$	27700	18974	7214	11760	2.63		0.26
Psamosol Leveled							
$N_0P_0K_0$	13120	8987	2134	6853	4.21	2.36	0.16
$N_{50}P_{30}K_0$	13732	9406	2584	5822	2.62		0.26
$N_{100}P_{30}K_0$	14919	10219	4899	5320	2.09		0.33
$N_{150}P_{60}K_0$	16508	11308	6349	4959	1.78		0.38
$N_{200}P_{60}K_0$	18179	12453	7523	4930	1.65		0.41
$N_{200}P_{60}K_4$	20503	14045	7718	6325	1.82		0.38

CONCLUSIONS

The growing of double crop black-eyed peas for green fertilizer on psamosols is of particular importance because it produces a large amount of energy (from 12509 to 18974 Mcal / ha on unlevelled ground and from 8987 to

14045 Mcal/ ha in levelling conditions) with a low energy consumption (from 1630 to 7214 Mcal/ ha and 2134 to 7718 Mcal/ ha respectively) and the yield value is high.

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