THE INFLUENCE OF SLUDGES FROM MUNICIPAL WASTEWATER TREATMENT PLANT ON PRODUCTION AT MEDICAGO SATIVA SPECIES.

Narcis BAGHINĂ, Alexandru MOISUC

Banat's University of Agricultural Sciences and Veterinary Medicine Timisoara
Faculty of Agriculture

Abstract: *Sludges from the municipal wastewater treatment plant may have valuable agronomical properties. Using sludge in agriculture is encouraged, as long as it is properly handled and it doesn't cause damage on the quality of the soil and agricultural products.(5) Using such sludges in the case of perennial fodder cultures may bring some financial and ecological advantages but only under rational use and after some thorough chemical tests have been carried out. The present paper presents some preliminary data on the evolution of some productive features of the specie Medicago sativa where different doses municipal sludges have been used. It is to be mentioned that these doses have not exceeded the maximum allowed by the EU and national legislation. Lucerne is a well-regarded plant due to its usefulness for various purposes but its usage as a fodder plant represents the most important role. The superiority of lucerne over other fodder cultures is firstly explained by large yields of forage, by the high quality of the forage and by its capacity of production over the years without being reseeded. The main characteristics have been studied regarding quality and quantity of fodder. The main characteristic taken under study was the production of green mass, depending on the sludge doses used, between 70 and 80 of green masst/ha. The second productive characteristic taken under study was the height of the plant, this being determinant in what regards the quantity of fodder obtained. The height of the lucerne plants varied according to the sludge doses used, between 73cm and 96 cm. Another characteristic regarding the quality and the quantity of fodder is the content and the production of dry matter obtained per unit of surface. The quantity of dry matter varies between 15 and 19 tons of dry matter obtained per hectare.*

Key words: *Medicago sativa, municipal sludge, production, influence, usage.*

INTORDUCTION:

Sludges from the municipal wastewater treatment plant may have valuable agronomical properties. Using sludge in agriculture is encouraged, as long as it is properly handled and it doesn't cause damage on the quality of the soil and agricultural products. (5)

With lucerne the fodder production is the result of the interaction between the ensemble of hereditary plant features and vegetation conditions. (4)

Lucerne is a well-regarded plant due to its usefulness for various purposes but its usage as a fodder plant represents the most important role. The superiority of lucerne over other fodder cultures is firstly explained by large yields of forage, by the high quality of the forage and by its capacity of production over the years without being reseeded. (4)

MATERIAL AND METHOD

The specie *Riviera Vicentina* in the lucerne culture was takes under study.

Research were carried out in pedoclimatic conditions of the West Plain during 2011-2012 (years I-I of production).

Regarding the climatic conditions, there was a deficit in precipitations during June and August 2011, during July and September 2012.

The surface of the parcel was 12 m^2.

Table 1

Sketch of the experimental field
Medicago sativa – Lucerne

R III V_3	V_1	V_2	V_0
R II V_2	V_3	V_0	V_1
5 m **R I** V_0 3 m	V_1 15 t/ha (22,5 kg sludge)	V_2 20 t/ha (30 kg sludge)	V_3 40 t/ha (60 kg sludge)

Production capacity was determined by the method of repeated mowing, the plant height was measured with a centimetre by taking into account 100 plants per variant and then the average of measurements was made.

The quantity of dry matter was determined by using the thermoscale SCALTEC.

RESULTS AND DISCUSSIONS:

Using such sludges in the case of perennial fodder cultures may bring some financial and ecological advantages but only under rational use and after some thorough chemical tests have been carried out. The present paper presents some preliminary data on the evolution of some productive features of the specie Medicago sativa where different doses municipal sludges have been used.

It is to be mentioned that these doses have not exceeded the maximum allowed by the EU and national legislation.

The main characteristics have been studied regarding quality and quantity of fodder. The main characteristic taken under study was the production of green mass, depending on the sludge doses used, between 70 and 88 of green mass/ha. Figure 1 shows that the green mass production in the case of doses 15t/ha respectively 20t/ha of sludge are much higher that the witness variant, the biggest difference being in the case of maximum doses of 40 de t/ha.

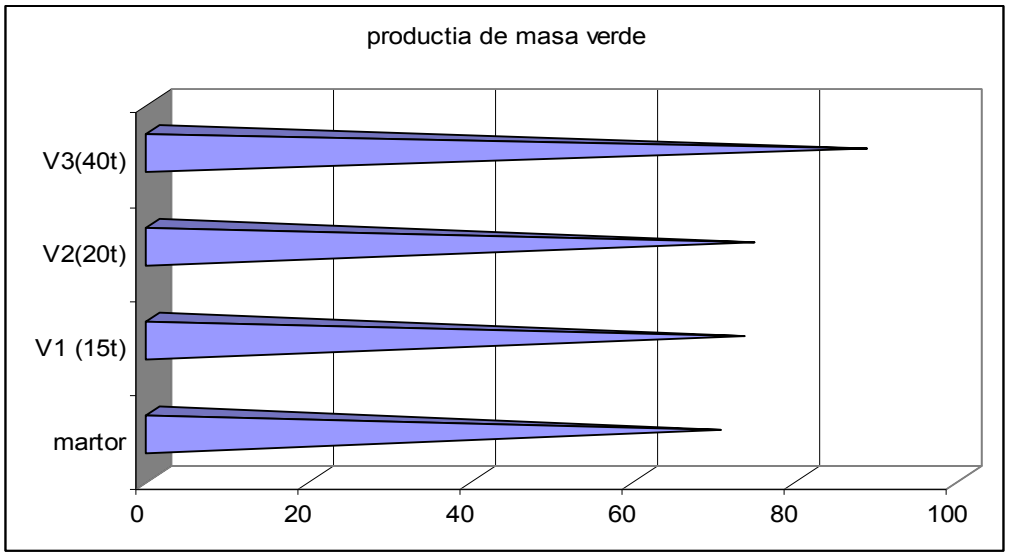

Fig.1. The graphic representation of green mass according to the dose of sludge used.

The second productive characteristic taken under study was the height of the plant, this being determinant in what regards the quantity of fodder obtained. The height of the lucerne plants is present in figure 2. The height of the plants varied according to the doses of sludge used, this varying between 73cm and 96cm.

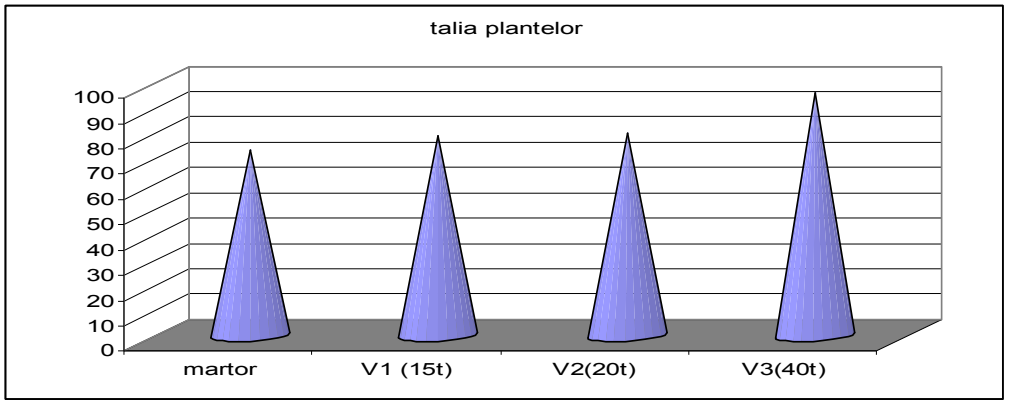

Fig.2 The graphic representation of lucerne plant height according to the dose of sludge used.

Another characteristic regarding the quality and the quantity of fodder is the content and the production of dry matter obtained per unit of surface. The quantity of dry matter varies between 15 and 19 tons of dry matter obtained per hectare (fig.3). All the three characteristics taken into account had a similar evolution, as being influenced by the quantity of sludge used per unit of surface.

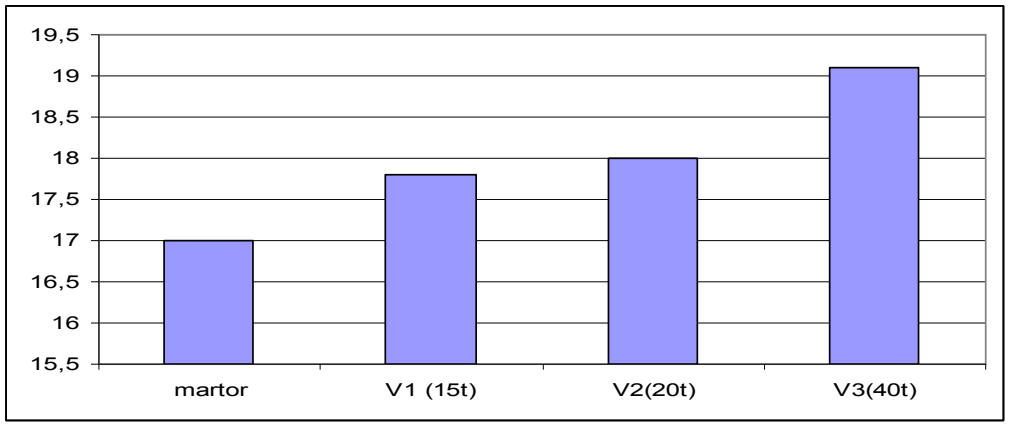

Fig.3. The graphic representation of dry matter production according to the dose of sludge used.

CONCLUSIONS

According to results analysis regarding the doses of municipal sludge over the productive characteristics at specie *Medicago sativa* the following conclusions arise:

- the green mass production is positively influenced by the amount of sludge used
- the height of the plants is directly and positively connected to the production of green mass
- the quantity of dry matter is also connected positively to the amount of green mass obtained

ACKNOWLEDGMENTS

This work was published during the project "POSTDOCTORAL SCHOOL OF AGRICULTURE AND VETERINARY MEDICINE", POSDRU/89/1.5/S/62371,co-financed by the European Social Fund through the Sectorial Operational Programme for the Human Resources Development 2007-2013.

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