RESEARCH CONCERNING THE OPTIMISING OF TOBACCO CROP TECHNOLOGY IN CLUJ AREA

Duda M.M., D.I. Vârban

University of Agricultural Sciences and Veterinary Medicine Cluj-Napoca, mduda@usamvcluj.ro

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Abstract. In this paper there are presented the results of the research concerning the fertilization and fixing the optimum thickness at tobacco growing, the TN 86 sort, in Cluj-Napoca, year 2004. 10 versions of fertilization with N, P, K and Mg were studied in different doses. 7 versions were studied in the thickness case, with different space between the lines and the plants.

INTRODUCTION

The tobacco is a culture containing an important potential for the Romanian farmers. During the time the tobacco was a fascinating species for many people (Muendl, 2001). The species has been known and cultivated in our country since the XVIth century (Anita and Marinescu, 1993). In this paper we present some results concerning the influence of fertilization and the thickness of the tobacco plants on the leaf production in don of some ample researches made in 2004 at Cluj-Napoca concerning the optimizing of tobacco crop.

MATERIAL AND METHOD

The research took place in the experimental field from “Șapca Verde” on a faeoziom soil having the next analytic dates (Table 1):

- a soil with a weak alcaline reaction;
- moderate carbon at the upper side of the soil and lots of it in the depth;
- moderate humuss at the upper side of the soil and little in the depth;
- moderate nitrogen in the first 40 cm of soil and little in the depth;
- ratio between carbon and nitrogen (C/N) indicates a humuss of mull Ca type;
- the granulometric analysis characterises the soil as beein with a delicate texture in the upper side and a midst one in the depth;
- the degree of aproversation with mobile phosphorus indicates a very good suppliment at the upper side, and midst in depth;
- midst provided with potassium in the first 50 cm.

The tobacco sort was TN 86, from the Burley tipe.

The research have observed the effect of the nitrogen fertilizants, phosphorus, potassium and magnesium over the produvction and the the charatceristics of the tabacco leafs.

The experimental variants were:

V1, natural agrofondul, whithout suplimentary fertilization.
V2, supplementary fertilization with 80 kg N, 100 kg P$_2$O$_5$ and 140 kg K$_2$O / ha.
V3, supplementary fertilization with 40 kg N, 50 kg P$_2$O$_5$ and 70 kg K$_2$O / ha.
V4, supplementary fertilization with 120 kg N, 150 kg P$_2$O$_5$ and 210 kg K$_2$O / ha.

V5, supplementary fertilization with 160 kg N, 200 kg P$_2$O$_5$ and 280 kg K$_2$O / ha.
V6, supplementary fertilization with 160 kg N, 200 kg P$_2$O$_5$ and 140 kg K$_2$O / ha.
V7, supplementary fertilization with 80 kg N and 100 kg P$_2$O$_5$ / ha.
V8, supplementary fertilization with 40 kg N, 50 kg P$_2$O$_5$ and 140 kg K$_2$O / ha.
V9, supplementary fertilization with 40 kg N, 50 kg P$_2$O$_5$ 140 kg K$_2$O and 47 MgO / ha.
V10, supplementary fertilization with 40 kg N, 50 kg P$_2$O$_5$, 280 kg K$_2$O and 94 MgO / ha.

The variants contained 4 repetitions and were put after the Latin rectangle method (with randomised hodings). The fertilisations were applied manually on the tobacco rows, at the middle between two plants, incorporated at about 10 cm.

Because of the big doses of nitrogen that were applied at the 5 and 6 variants you can observe from the production evolution at the 2-4 pillars, that a delay of the leafes grown up appeared. Even if so, the final production was bigger at the varieties that were fertilised with bigger doses of NPK, respectively the 4, 5 and 6 variety, that had a big difference vis a vis the witness (Fig. 1.).

At the beginning of October we calculated the entire mass of the leafes (g/cm²) at a number of 20 leafes just grown up from the upper side of the plants, from each variety. We sectioned through the middle of the round leaf a rectangle that represented the medium structure of the leaf (with the principal and secundar veins). After this we revolved them on an electronic balance with a precision of 2 zecimals and we made the average on each variety.

The research of the optimum density of plants were cultivated according to the virillity of the soil and we settled 7 varieties of cultivation on the next distances:
V1 – 70 cm between lines and 65 cm between plants on a row (21,978 plants/ha), considered the witness density that was applied in the gradal fertilization experiment.
V2 – 70 * 60 = 23,810 plants / ha
V3 – 70 * 50 = 28,571 plants / ha
V4 – 80 * 50 = 25,000 plants / ha
V5 – 80 * 60 = 20,833 plants / ha
V6 – 90 * 45 = 24,691 plants / ha
V7 – 90 * 50 = 22,222 plants / ha.

At this experiment, the fertilization was uniform, and the usual sustenance works.
We applied the simple blocks’ method with 4 repetitions.
We determined the harvested leafes production from each experimental holding and the dates were interpretated through the variation analysis.

RESULTS AND DISCUSSIONS

The results of the 10 production varieties with different fertilization are presented in Fig.1.

![Bar chart showing production results](image)

V1 - V9

V1 - V9

DL (p 5%) = 287.7; DL (p 1%) = 388.45; DL (p 0.1%) = 517.3.

Fig.1. The production results at gradual fertilization

We observed big productions, with big differences vis a vis the witness, at varieties 5 (N_{160}P_{200}K_{280}), 6 (N_{160}P_{200}K_{140}) and 4 (N_{120}P_{150}K_{210}). At these doses of fertilizers are the biggest.

The production values obtained at the experiment with different densities of the plantation are presented in Fig.2.
It was observed that due to the plants adaptation to the nutrition space, in the case of smaller thicknesses (V5, V1, V7), the leaves were bigger and the production per plant was bigger. That’s why, after the statistics, there are no big differences between the variants, except variant number 3, where the thickness was very big. In the case of this variant, the leaves, although were smaller, their number per hectare was bigger and the production was much bigger then to the other ones.

CONCLUSIONS

1. For the obtaining of a competitive tobacco production it is recommended to assure the necessary number of fertilizant resources. On a midst fertile soil are needed doses of 120-160 kg N, 150-200 kg P₂O₅, 210-280 kg K₂O and 50-70 kg MgO.
2. The optime thickness recommanded for the TN 86 soil in the Cluj-Napoca’s conditions is 28-29 thousands plants for a hectare, having the distance of 70*50 cm between the plants.

BIBLIOGRAPHY