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Sugarbeet Growing in Albania: the Official Aspects

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Abstract. Extension activities in sugar beet production is carried out by agricultural stations, research institutes and sugar factories under the leadership of the Ministry of Agriculture and district state organs, so that they are not completely free from political influence. The real efficiency of extension services has been limited due to the lack of material means (machines, fertilizers, pesticides, etc.) and resulted in a low exploitation of the natural potential resources for sugar beet growing. This is reflected in low economic figures for sugar: a limited area grown with sugar beet, 20–40 tons of roots per hectare (about 10% wsc).

1. History

In Albania, sugar beet growing starts from 1948, at the same time as the establishment of a sugar factory. In 1951, in Maliq, near Korça, another sugar factory was built, first with a daily capacity of 1,000 tons and later of 2,400 tons.

Agrotechnical experiments had been carried out in 1953 in the state agricultural farm of Maliq. At first, diploid multigermin varieties were grown but, after 1973, polyploid varieties were gradually imported. Monogerm varieties have been cultivated in about 15% of the total area grown with sugar beet. In 1979, the Sugar Beet Station in Korça began to develop domestic varieties. As a result, during the years 1986, 1987, 1988, 1989, and 1990, domestic varieties were grown covering 100, 900, 1,200, 1,700, 24,000 ha respectively.

In Albania, sugar beet occupies 5,000–10,000 ha, 80% of which is in the district of Korça, the rest in that of Elbasan. Obviously sugar beet production depends on the weather conditions. Adequate rainfall and sugar beet production are very closely linked (low rainfall being one of the limiting factors of production during the summer period).

Growers usually harvest 20–40 tons roots/ha. Outstanding farms normally harvest about 50 tons/ha, while in some special plots the yield is 60–100 tons/ha. The sugar content is usually higher than 16%. Sugar factories can obtain a white sugar concentration of 9%–14% (usually about 10%) and produce 20,000–30,000 tons of sugar per year. Some years ago, this amount covered 50% of the domestic consumption, the rest being imported. The per capita annual consumption was 15–20 kg, apparently lower than that of EC countries. Yet, the exact statistical figures of Albania's sugar production are difficult to obtain because, as for other countries of eastern Europe, the official figures have been exaggerated to suit special purposes.

2. A Very Close Crop Rotation till Now

The basic consideration in field selection should be crop rotation, since this is the most practical means of avoiding the apparition of harmful diseases and insects. Planting sugar beet for several consecutive years in the same field or in a very close crop rotation results in the apparition of soil-born insects diseases likely to affect yields seriously.

We therefore recommend growers to plant sugar beet only once in a cropping sequence—which may range in length from three to five years. But, it comes unfortunately to a very close crop rotation following in every two years, in about 70% of the surface grown with sugar beet and cereals. Considering the following rotation schemes: a) cereals–potato–sugar beet, b) alfalfa–cereals–sugar beet, c) alfalfa–sugar

beet–cereals–potato, etc., we can say that these occupy less surface than the total cultivated with sugar-beet. What will happen in the future? Obviously, there will be much more place for a sound crop rotation.

3. When is the Soil to be Ploughed?

Ploughing is the oldest and most common practice used to achieve the primary goals of early seedbed preparation. While ploughing can be accomplished whenever the soil is adequate and weather conditions favourable, the best ploughing period is in the fall rather than in the spring. Done in the fall, ploughing has the advantage of getting a head start in the decomposition of residues and organic matters and reduces the work left to be done in the spring. In addition, in our region with low rainfall during the summer, ploughing in the fall contributes to moisture conserving during the winter.

Several problems may appear in soil preparation in the spring. Travelling on wet soil results in soil compacting and less desirable soil structure, giving a poor environment for the emergence and growth of sugarbeet seedlings. In spring, weather conditions in Albania are very changeable, and a pelting rain may cause serious damage to seedbed preparation, especially if the soil to be ploughed is heavy.

We usually recommend a deep ploughing (at a depth of 41–45 cm) early in the fall and a common ploughing (at a depth of 20–30 cm) in late winter or, only if necessary, in early spring. Growers would take this advice, but do not always put it into practice due to the lack of material means. They therefore have to plough more than is needed in the spring.

4. Seedbed Goal and its Completion

The goal in seedbed preparation is to provide a physical soil environment in which every planted seed will be assured to germinate as quickly as possible and every germinated seedling can continue for a full season of maximum uninterrupted growth. This can be achieved, if the seed is placed on a firm moist base, covered by a fine aggregate of moist soil, deep enough to prevent drying out, but not so deep as to cause excessive loss of vigour or death of seedling before emergence.

5. What Should be the Depth of Drilling?

It is recommended that growers drill in-depth (2–4 cm). In good conditions, adequate warmth and moisture, seedling emergence will be rapid and vigorous; the period between germination and establishment will be reduced choosing a shallow drilling (2 cm). In poor conditions for germination, if the drilling is accomplished later when the soil is more likely to dry out, the choice has to be for deeper drilling (over 3 cm).

6. What about the Chances of Drilling Depth Choice to Growers?

Unfortunately, most sugar beet drilling machines cannot control the depth of seed planting. As a result, the drilling depth is decided much more by the planter than by the grower.

7. High Root Yield or High Sugar Content?

Due to the unsatisfactory co-operation among sugar beet growers, sugar factories and state experiment institutions, adapted varieties have often been neglected. When the Sugarbeet Station recommended to cultivate half of the area with sugar beet of N-Type, 25% of E-Type and 25% of Z-Type, the sugar factory tried to recommend mostly the Z-Type whilst growers rather preferred the E-Type. Although since some years ago roots are bought by the sugar factory taking into account the sugar content the concept of white sugar yield (WSY) still does not have its proper place.

8. The Best Varieties Selected are not Always Cultivated

As mentioned above, the sugar beet surface is grown only partly with varieties developed in Albania, other varieties being imported from other countries. According to variety testing carried out in the Sugarbeet Station in Korça and some other locations, the best varieties recommended to the growers

are found there. Unfortunately, other varieties brought from abroad have not been tested and are cultivated only because of their low purchasing price compared with that of the best adapted varieties. Of course, the free market economy will undoubtedly create a proper background for the cultivation of the best varieties, developed whether at home or abroad, in eastern or western countries, and the variety-testing will then be profitable.

9. Drilling Time is not Always Taken into Consideration

Growers have tried to drill sugar beet seed in March in the region of Korça and 2–3 weeks later in that of Elbasan. Because of good weather conditions in the late winter, several fields have been drilled earlier than usual, with larger yields in the absence of frost and other factors limiting the growth. In the case of frost or cap formation, growers have met seeding damage resulting in a poor yield or re-drilling of the field. The lack of material means has also often delayed the drilling period. In addition, the second forage crops have been absolutely problematical, causing difficulties in seedbed preparation and delaying the drilling period.

10. Poor Seedbed Preparation Needs High Seed Rate

For multigerm and monogerm seeds, Albanian growers use on average 20–30 kg of seeds/ha drilled by very old Russian machines, and 2–3 U seed/ha drilled by the monogerm seed driller.

11. Seedling and Thinning 100% of the Sugar Beet Surface

Thinning is carried out completely by hand at the 2-to-4-leaves stage. It takes a very long time, sometimes more than one month. Albanian growers can no longer continue to spend so much time on hand thinning, they therefore need adequate soil preparing machines and monogerm seeds.

12. Population and Distribution Plant Relationship

To ensure thinning, seedlings are sown in rows at a space of 18–20 cm from each other. This method allows growers to reach an average of over 80.000 plants/ha but the plant distribution within the rows remains imperfect, because this pattern of plant population contributes at the same time to the nearer (under 10–15 cm) and wider (over 30–40 cm) plant spaces.

13. Limited Fertilizer Palette Brings Little Choice

The following fertilizers are those used for sugar beet growing: ammonium nitrate, urea, superphosphate, potassium chlorate and potassium sulphate. Compound fertilizers have not yet been applied. Consequently, there is a very limited choice of fertilizers.

- Nitrogen fertilizers are usually used in 2–3 applications; at planting and thinning and later during the growing season (maximum till begin in the middle of June). The total nitrogen average dose is about 100–150 kg/ha.
- Phosphatic fertilizers are used in 1–2 applications, partly through band placement and by broadcasting and ploughing down, with an average dose of 45 kg/ha which can be considered insufficient most of the time.
- Potassium fertilizers are used only in one application when ploughing down, at the rate of about 70 kg/ha.

The plan for fertilization is based on the balanced method. The recommendation of P&K application in the fall is not often fulfilled, because of the lack of material means. As a result, growers are obliged to plough the soil and use fertilizers in the spring, thus decreasing the economic optimum. Large quantities of fertilizers are applied by hand causing irregular broadcasting and are consequently not well utilized. so that roots quality and yield come down.

14. Manure Application and Sugar Beet

In over 50% of the surface, the rate of 30 tons/ha for manure application has never been completely observed. The effect of appropriate manure application on soil fertility and plant yields is well known.

Sugar beet producers must take into consideration the real possibilities offered to them by scientific knowledge rather than recommendations based on political resolutions. The limited manure available and low transport capacities have led to insufficient applications of manure carried out in the spring instead of in the fall.

15. A Fortune and a Misfortune in the Application of Herbicides

Fortunately, the herbicides including system management, involving herbicidal-cultural control, offer the growers the opportunity to produce sugar beet with minimal hand labour. Unfortunately, herbicides have been either scarce or very expensive. In addition, some economists have not been in favour of herbicides which they thought were likely to diminish the labour available.

Consequently, herbicides were not used for the control of weeds, except for very little “Betanal” used for several years in a very limited surface. Manual hoeing, weeding and cultivation are the common practices for controlling weeds. Let us hope that in the near future herbicides will be more widely used.

16. Irrigation, the ‘Number One’ limiting Factor

In the region of Korça, the average rainfall is about 700 mm/year. This may seem a sufficient amount, but summer comes usually with dryness. For many years, during the months of June and July, little rainfall has been recorded. Irrigation has therefore been resorted to, as about 300 mm water is required for satisfactory sugar beet yields. Unfortunately, this amount has been satisfied only at 50% on the average. In the case of poor rainfall in the spring (especially in April), irrigation helps the germination of the seed.

Usually sugar beet fields are in a very good state until the end of June or beginning of July. Later, the plants suffer from insufficient soil moisture and manage to get more or less water for about two months.

According to the degree of irrigation, different yields have been obtained: from very poor symbolic (lower than 10 tons/ha) to excellent ones (80–100 tons/ha). Because of the dry summer, a great deal of leaves have to be dry cut but irrigation or rainfall cause the roots to produce new leaves, thus increasing roots quality and yield.

The close acceleration of sugar beet yield by irrigation was observed in 1988, a year with plenty rainfall during summer. That year, the highest root yield has been recorded, i.e., 42 tons/ha. Therefore, to reduce the dependence of sugar beet production on the rainfall, an increasing number of sprinklers is required, as well as the improvement of canal networks, providing the farmer with more irrigation facilities.

17. Manual or Mechanical Harvesting?

Beetroots are exclusively harvested by hand. Some harvesters have been imported years ago from France but they have not been used.

The campaign begins at the end of August, in the region of Elbasan and ends in mid-November—sometimes later in the region of Korça. Receiving stations are located in the sugar factory and in the growing areas, so that every farm has to transport the beetroots along a relatively short distance. On account of the limited means of transport and the low factory capacity, the roots sometimes stay too long—several weeks or more in piles—causing high storage loss.

In terms of efficiency, the Albanian sugar factory is probably the worst all over Europe. Its reconstruction or, better, the establishment of a new one, will no doubt improve the actual situation of sugar beet growing in Albania.

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