EXPERIMENTS IN CHICORY GROWING UNDER ISRAEL CONDITION

M. PLAUT, D. LACHOVER, and B. COHEN-ASCOLI

Faculty of Agriculture and Agricultural Research Station, Rehovoth

INTRODUCTION

The chicory (*Cichorium Intybus*) belongs to the Sunflower family (Compositae). It is a perennial shrub. In the first year of its growth it develops a dense and erect rosette of leaves and a thick, succulent root; and in the second year its blue or white (sometimes pinkish) flowers make their appearance. The wild plant is a cosmopolite, it is more prostrate than the cultivated varieties, its roots are thinner and more woody, and it usually grows on road-sides and waste land.

Its origin is in south-western Europe. According to PEACE (8) it was first found in Lombardy, where it is being grown as a forage plant. WELLINGTON (5) mentions in his work that the wild plants had used in medicine. KALLBRUNNER (11) notes that the first attempts to cultivate the chicory had already been made 200 years earlier. At first it was grown as medicinal plant, but as soon as its usage as a beverage became known, it spread all over Europe.

Six main varieties of chicory are being grown; they are:

1) Brussels Witloof Chicory  
2) Magdeburg  
3) Common Long Rooted  
4) Brunswick Large Rooted  
5) Red Leaved Lombardy  
6) Improved Large Leaved.

Large amount of selection work has been made on these six varieties in two directions. The varieties Bruswick and Magdeburg had been selectioned for thick and succulent roots, rich in dry matter sugars and protein, which would resemble coffee after being roasted and ground. The second direction of the selectioning work, which was made specially on Brussels Chicory and to a certain extent on Magdeburg, was for a sweet variety suitable for the production of the Witloof (White leaf) known by its commercial name French Endive which is being eaten as salad. The selectioning of the endive was first done in Belgium.

Chicory is also being recommended as cure for liver-and gall bladder ailments.

AGRICULTURAL VALUE

The chicory plant can be useful both by its roots and its leaves.
1. *Its value as a forage plant.* The chicory leaves which are left over after the roots are collected can serve as a forage. Analyses made in Michigan, the main chicory producing state in the U.S.A., on the various components of the chicory plant in order to determine their digestion quotient gave the following results for chicory leaves: dry matter 63.3%, protein 55.1%, crude fiber 57.6%, organic matter 68%, nitrogen-free extract 77.5%. It seems that the total digestive nutrient contents of chicory leaves is 57% compared to 56% in sugar best leaves. The influence of feeding with chicory leaves on milk production has not been examined thoroughly. In any case no decrease in milk production has been noted. According to Huffman (7) no detrimental effect on the milk flavour could be found. However, as the chicory is somewhat bitter and the cow does not eat it willingly before getting used to its taste, Kallbrunner (11) suggests that the chicory should be mixed with some other forage and that the percentage of the chicory should be increased gradually. He also mentions some experiments in ensiling chicory. It seems that the silage, which is suitable for consumption after six weeks in the silo, is readily eaten by the cows.

2. *As a pasture crop;* According to Pearce (8), chicory can be grown for pasture in mixture with other pasture plants, as it is capable of renewing its growth for several years, unless it is grazed when very young. Chicory is being used extensively for pasturage, especially in England.

3. *As annual crop for coffee substitute.* For this purpose roots alone are being used, for that the crop can be made cheaper if the green leaves are to be used as fodder.

**Growing Conditions and Agricultural Properties of Chicory**

Regarding its requirements of climate, soil, fertilization and irrigation chicory resembles most of the root crops. Its effects on the soil is much like that of the sugar beet. Chicory favours the same climatic conditions as does sugar beet, but is more resistant to cold, draught and excessive moisture. The best suited soil is deep calcareous soil of medium texture.

**Fertilisation.** It is the general usage to fertilize for chicory with 30 tons of manure per dunam, with the the addition of nitrate of calcium or ammonium sulfate (In accordance with soil reaction) and also potash and phosphorus.

**Relation to crop-rotation.** Chicory is suitable to be grown both before and after cereals. In this country it is proper to grow it after hoe crops, as it is most sensitive to competition by weeds.