

INTEGRATED CHAIN MANAGEMENT CHICORY (a pilot project)

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1. Introduction

Integrated Chain Management (ICM) is an instrument to ensure and guarantee consumer satisfaction. The fruit and vegetable organisations have decided to start a pilot project for chicory employing integrated chain management.

2. Objectives

This project will formulate and develop an ICM approach for the production and marketing of chicory. The different activities in the chain will be geared to one another with the objective of satisfying consumer expectations continuously and at the lowest possible cost. The ICM project for chicory runs for three years (1994-1996) and will result in:

- * a description of the possibilities of ICM in practice;
- * a plan for an organisational infrastructure at (chicory) sector level;
- * manuals for ICM at farm level for the different production stages.

In realizing these objectives a foundation will be laid for a complete and systematically worked out ICM approach for the whole chicory chain.

3. Methods

The operational objectives are worked out in subprojects. These subprojects ensure a step by step approach in formulating and developing an ICM structure for the chicory branch. The key elements in these subprojects are:

- * consumer demands prevail (market orientation);
- * production and service with directed specifications (quality control);
- * all processes aimed at quality within the chain are geared to one another (chain cooperation).

Among the subprojects being carried out are: quality management for chicory root growing, root storage and chicory forcing; a chicory taste study; quality prediction model (Q-chicory); complaint management; interviews marketing organisations; consumer study USA.

Communications for the ICM project for chicory take the form of articles, newsletters and lectures.

4. A chicory taste study

One of the subprojects which shows some interesting results is the chicory taste study.

4.1 Introduction

The taste of chicory is an important quality parameter for the consumer. It is well known that chicory has a certain degree of bitterness. It would be interesting to find out whether a guarantee for the degree of bitterness can be given.

4.2 Objectives

This study is focused on an analysis of the present situation and the desired situation. At present no segmentation of chicory on the basis of taste is possible.

A certain group of consumers is in favour of chicory which tastes less bitter. Is it therefore possible to distinguish taste among the various varieties of chicory and if so, which factors are responsible?

4.3 Materials and methods

The bitterness of chicory is influenced by: variety, location root-growing, nitrogen feeding and grading. Three different varieties were used, namely Focus, Sigma and Salsa. The location of the root-growing areas were Zwaagdijk and Lelystad. Nitrogen feeding was done with (N1) and without (N0) an extra dose of nitrogen.

The tasting of the chicory was done in a studio test by an expert panel. Root analysis (N-content) was carried out on the material used by the expert panel.

4.4 Results

A distinctive characteristic of the taste of chicory is bitterness.

The varieties Salsa and Sigma are less bitter than the variety Focus. An extra dose of nitrogen results on average in less bitterness for the varieties Salsa and Sigma (table 1). A dry matter content of the root < 20 % is also an indication for less bitterness. Smaller heads of chicory tend to be less bitter.

Table 1. Bitterness score of cooked and fresh chicory. High score means bitter product. (Source: sensory consultancy O.P.P., 1995)

Variety	Location	Forcing period	Nitrogen feeding	Cooked	Fresh	Average
Focus	Lelystad	Febr.	N0	56	57	56,5
Focus	Lelystad	Febr.	N1	58	55	56,5
Salsa	Lelystad	Febr.	N0	58	53	55,5
Salsa	Lelystad	Febr.	N1	40	48	44,0
Sigma	Lelystad	Febr.	N0	59	55	57,0
Sigma	Lelystad	Febr.	N1	50	55	52,5
Focus	Zwaagdijk	Febr.	N0	51	47	49,0
Focus	Zwaagdijk	Febr.	N1	54	47	50,5
Salsa	Zwaagdijk	Febr.	N0	49	49	49,0
Salsa	Zwaagdijk	febr	N1	46	45	45,5
Sigma	Zwaagdijk	Febr.	N0	52	49	50,5
Sigma	Zwaagdijk	Febr.	N1	39	41	40,0
Focus	Lelystad	April	N0	53	58	55,5
Focus	Lelystad	April	N1	51	62	56,5
Salsa	Lelystad	April	N0	56	56	56,0
Salsa	Lelystad	April	N1	60	50	55,0
Sigma	Lelystad	April	N0	55	53	54,0
Sigma	Lelystad	April	N1	49	52	50,5
Average				52,0	51,8	51,9

4.5 Conclusion and discussion

The taste of chicory can be influenced by variety and nitrogen feeding. However forcing conditions have a considerable effect. So it is impossible to forecast bitterness on the basis of variety and nitrogen feeding.

Quality assurance of taste (although limited) on the basis of:

- * registration data of variety;
- * data of root analysis;
- * measuring content of bitter component Lactucine.

5. Results pilot project ICM chicory

The results of the various subprojects are promising, but the real test is the implementation of recording systems and quality management systems at farm level, in cooperation with the marketing organisations.

Cooperation within the production sector is satisfactory, but is limited to the motivated farmers. The auction houses are positive, whilst the marketing sector supports the intention of the project, but the process of awareness is low key.