

Sustainability
in the food chain

DuVo-foundation

Quest for Sustainability in the food chain*



* Translation of the executive summary from the first booklet issued by the DuVo-foundation: *Duurzaamheid in de Voedingsmiddelenketen* (Sustainability in the foodchain) (64 pages), issued by DuVo, August 1999

Introduction

Since 1995, fifteen Dutch companies* operating in the food-chain have united in the 'Stichting Duurzame Voedingsmiddelenketen (DuVo) [Sustainable Food Chain Foundation]. The aspiration of this foundation is to stimulate developments which can promote sustainability** in the food chain. A practical approach has been opted for, which includes the following elements:

1. *Development of knowledge*, focusing on three aspects, i.e. investigation of the environmental impact, formulation of a vocabulary and organisation of an improvement process.
2. *Sharing experiences*, particularly stimulated by an exchange of information between individual companies, and by jointly conducting improvement projects.
3. *Starting a dialogue*. DuVo decided to initiate a cyclic process focusing on sustainability in the food chain. This process should ultimately lead to:
 - the identification of the most important sustainability themes;
 - the development of measurable criteria for assessing an improvement process;
 - a structured (informal) dialogue on sustainability between industry and society.
 Each of the elements mentioned above will be briefly elaborated in the following paragraphs.

* Companies participating in the DuVo-foundation are: Albert Heijn, Avebe, Campina Melkunie, Royal Cebeco-Group, Cehave, Royal Cosun, CSM, DSM, The Greenery International, Heineken Nederland, McDonald's Nederland, Royal Van Melle, Royal Numico, Sara Lee/DE, Unilever Nederland.

** Definition for sustainability as formulated by Elkington (1997): 'Sustainability is the principle of ensuring that our actions today do not limit the range of economic, social and environmental options open to future generations.'

KNOWLEDGE DEVELOPMENT

This paragraph elaborates the initiatives taken by DuVo in the field of knowledge development.

ENVIRONMENTAL IMPACT

In cooperation with several researchers, DuVo has examined which stages in the production chain demand extra attention in view of their contribution to the overall environmental impact. Also, the food related environmental burden in households has been quantified for three impact categories, viz. energy consumption, water consumption and waste production.

Based on these studies the following conclusions can be drawn for most foodstuffs:

- The agricultural stage generally contributes most to the overall environmental impact of food products;
- The environmental impact of agricultural processes may fluctuate substantially, depending on regional and climatic conditions;
- Many transformations of process data are needed in order to generate suitable information on the environmental impact of agricultural processes;
- Environment-related process information for agricultural processes is rather sensitive to assumptions, required to allocate the environmental burden.

These findings are in line with previously studies on the environmental impact of food.

FORMULATION OF A VOCABULARY

In order to promote a versatile dialogue the formulation of a vocabulary has been initiated. This vocabulary will be updated in future so that, gradually, a commonly shared glossary will result.

NEED FOR A KNOWLEDGE INFRASTRUCTURE

Most companies have a need for an environmental information system. Therefore it has been examined which role industry could play in the creation of an environmental knowledge infrastructure. The need for a mere 'databank' was only limited, and hence the study focused on the various positions which DuVo can take in order to stimulate sustainability. These options differ in the degree of formality and their level of ambition.

SHARING EXPERIENCES

DuVo members have identified five environmental themes as being the most relevant for the food chain in the Netherlands, i.e. waste, energy-use, crop-protection aids, overfertilisation and water-use. Initiatives taken by DuVo companies to reduce their environmental impact for each of these themes are briefly summarised in the following sections.

WASTE

Waste reduction is an important theme for all DuVo members. All factories are working towards increased conversion efficiency, thus continuously reducing industrial waste.

With regard to packaging waste, all DuVo members have ratified Packaging Covenant II, which aims at preventing waste from being generated wherever possible, and which supports separate collection for recycling in those cases where waste is generated. Albert Heijn has drawn up packaging guidelines to stimulate the implementation of the Covenant, and Unilever has developed a manual on how to promote prevention. All companies have achieved significant savings in the volume of transport and consumer packaging. Companies such as Numico, SaraLee/DE, Unilever and Heineken conduct a simplified life cycle analysis for every new pack design. McDonald's has set up a special company to coordinate waste collection and processing in six separate fractions. Albert Heijn separates waste and left-overs in the supermarket. The Greenery markets its organic waste in three fractions (cattle feed, materials suitable as cattle feed and compostable residual waste). Waste generated in Heineken factories are used in various industries, such as for cattle feed, pharmaceutical and brick industry (labels). Avebe as well as the sugar manufacturers CSM and Cosun have made remarkable progress in reducing the quantity of soil adhering to potatoes and sugar beets upon delivery. Sara Lee/DE uses coffee grounds as a fuel for its factories. Both Cebeco and Cehave are actively involved in the processing of organic waste flows. The inclusion of residual material has already risen to 30-80% in all Cehave feed products. Cehave and its subsidiary Profarm have embarked upon a trend-setting project entitled 'Application of organic residual materials in animal feed'. A number of DuVo members are participating in this project.

ENERGY

Consumption of energy is resulting in the depletion of non-renewable raw materials. Combustion of raw materials results in the formation of greenhouse

gases and acidification. The food industry is working on an ongoing reduction of energy consumption. DuVo members are continuously looking for new methods to optimise energy efficiency. Van Melle is the first company in the Netherlands to use of solar energy on a large scale for its production. In addition, Van Melle purchases 'green' power and invests in wind mill farms and reforestation projects to compensate for its CO₂ emissions. Campina Melkunie investigates together with its partners in the chain, as well as with scientists, how the environmental burden caused by refrigeration in the distribution chain. The objective is to achieve an energy saving of at least 50%. The head office of Heineken Nederland in Zoeterwoude is using a system of air-conditioning which, in winter, uses ground water for heating while that same water is used for cooling in summer.

CROP PROTECTION

Crop protection is an important issue in agriculture. A large number of DuVo companies are aiming to reduce crop-protection materials within the scope of controlled culture. The various programmes of controlled culture are all based on a chain-oriented approach. Agreements are made between the various parties in the chain, so as to record the quantity of materials used and, subsequently, to reduce them. Companies such as Albert Heijn, The Greenery, Cebeco, Numico, Unilever as well as the sugar industry adhere to strict guidelines for the use of crop-protection agents. Cosun has developed beet seeds coated with crop-protection agent, which results in a dramatic reduction of the quantity of pesticides required per hectare.

OVERFERTILISATION

Excessive use of fertiliser as well as manure surpluses lead to environmental problems. The challenge is to reduce the surplus of phosphate and nitrogen. This can be achieved, on the one hand, by reducing the overall quantity of manure. On the other hand, all fertiliser use can be optimised so as to prevent overfertilisation. DuVo members are active in both fields. Cehave has conducted research into improved utilisation of nutrients, which has resulted in a lower production of animal manure. Gist Brocades has contributed by developing enzymes which increase the uptake of nutrients by animals, thus lowering the phosphate content in manure. The projects for controlled culture aim to adjust the fertiliser application to the plant's needs. Cebeco has succeeded in improving the distribution of fertilisers by way of its 'Precise Fertilisation' programme so as to limit nutrient losses. The Greenery has obliged the growers of greenhouse vegetables to recycle all fertilisers.

WATER

Potable water is not yet scarce in the Netherlands. However, water should not be wasted, however. Desiccation is noticeable, particularly in the agricultural areas in the south of the Netherlands. Various DuVo members are intensively engaged in water-saving projects. In factories this is done, among other things, by means of good-housekeeping and awareness programmes. For instance, CSM has reduced water consumption for the production of canned vegetables 20%, while AVEBE succeeded in lowering its water consumption by around 90%. At Van Melle, water is reused, the ultimate aim being to achieve zero consumption. Within the scope of controlled culture, growers are stimulated, wherever possible, to use rainwater from a closed circuit as irrigation water. In fruit farming, water is administered via a dripping system. The sugar industry is a net producer of substantial quantities of pure water. Many of the DuVo companies operate their own biological water purification plants. In addition, companies such as Campina Melkunie and Cosun, are investigating possibilities of making high-level use of waste water elsewhere.

STARTING A DIALOGUE

Sustainability is not an absolute concept; therefore, continuous dialogue with relevant parties is essential. Government and science, as well as environmental and consumer organisations, play a major part in the social dialogue. Consequently, DuVo intends to regularly organise dialogues, inviting all parties concerned, so as to exchange views. Research will be conducted preparatory to each of these dialogues. Below is a proposal for a first research assignment.

RESEARCH ASSIGNMENT

Companies united in DuVo produce and/or sell foodstuffs. One of the consequences of this is a burden on the environment: crop-protection agents; energy and water consumption, fertiliser use, residual flows, CO₂ emissions.

—‘Residual flows’ is an issue which DuVo would like to investigate more closely. Therefore a research assignment, ‘Residual flows in the food chain’ has been formulated as follows:

‘Produce a quantitative inventory at macro level in the Netherlands of

residual flows in the food chain per sector (primary sector, processing, and retail/food service). Indicate the applications that are currently available for residual flows (cattle feed, generation of energy, biomass). Indicate the environmental, economic and social importance of these applications. In addition, look into the developments regarding the applications of these residual flows in the food chain (threats and opportunities)’.

This study will be conducted in the second half of 1999, on behalf of the DuVo Foundation.

GOVERNMENTAL RESEARCH PROGRAMMES

The government pays ample attention to the research and stimulation of sustainability. A rough estimate reveals that the Dutch society annually invests around 100 million guilders in a more sustainable food chain in this way. A striking aspect is that all research efforts are solely aimed at the environmental dimension of sustainability, but that coherence and interaction are yet insufficient in this respect. The initiation of a dialogue may positively contribute to this.

FINAL REMARKS

Activities described here give an impression of the various aspects, such as the development of knowledge and the exchange of experiences, which the DuVo Foundation has been dealing with in the past five years. In addition, an impression is conveyed of the cyclic process that has been started and in which the dialogue will play an essential part. It is intended that the DuVo Foundation will regularly report on further developments in the form of new publications.

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