

## Contribution of Fruit Research in the Developments in Dutch Fresh Fruit Chain

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### Abstract

Due to the poor financial results of the fruit industry in the last decade, the changing trade structures and more consumer-driven fruit chains, Dutch fruit growers change their market behaviour. In these circumstances, the fruit industry itself and the applied fruit research are also changing. Applied Plant Research (PPO-Fruit) is involved in different projects related to consumer-driven fruit chain development and their side effects on fruit growers and firms. The purpose of this paper is to describe two projects about new Dutch fruit chains in which PPO-Fruit is involved and their impact on fruit growers and research. The projects are: a special variety chain, based on the Dutch apple variety Santana, which is scab resistant (Vf) and a regional crop chain “Betuwe framboos”, (= Betuwe raspberry). It is clear that being part of a fruit chain means another way of working for the fruit growers and the other partners as well. They have to work according growing recipes and also recipes/procedures for other activities, like storage, packaging. This means a decrease of independence for the growers. PPO-Fruit works as a facilitator, a knowledge centre and executes experiments to solve new problems.

### INTRODUCTION

#### Dutch Fruit Industry

Apple is the major fruit crop in The Netherlands. However, the area is declining from more than 16,000 ha in 1992 to less than 12,000 ha in 2002 (Table 1). The most important varieties are Elstar and Jonagold (39% resp. 32% of the apple area). The importance of Elstar is increasing. Pear is the second major fruit crop in The Netherlands with more than 6,000 ha (Table 1). The area is increasing and the main variety is Conference (64% of total pear area). The share of the high productive variety Conference is increasing and in the new pear plantings the planting density is also increasing.

Other major crops are plum and sweet cherry, with 656 ha altogether in 2002, and some small fruits like blue berry and red currant (Table 2). The black currants, mentioned in Table 2 are mainly produced for the processing industry and are not picked manually. Due to the high labour costs, the small fruits produced in The Netherlands are meant for the fresh consumption. High prices, which are only paid for high quality products, are needed to compensate the high production costs.

#### Dutch Fruit Marketing

A large part of the Dutch fruit production is sold through auctions. However, the share of the fruit sold by the auctions nowadays is decreasing. More and more fruit growers sell their fruit directly to traders. Auctions try to mediate between fruit growers and traders, but growers increasingly want to keep control of their own products and decide themselves when the fruit is sold. This development has weakened the position of the fruit producers, because the buyers are strongly concentrated and hence have a lot of market power. Growers also sell directly to consumers. Especially for sweet cherry this is the most important way of selling. The Dutch consumer buys fruit at supermarkets,

market places, specialised fruit and vegetables shops and directly from growers. The supermarket is the main selling point. The overproduction of fruit led the last decade to low prices for the growers. A cost price strategy is for Dutch growers in a global market not a promising strategy. It is therefore more and more necessary for growers to create added value to their products in order to attain higher prices and higher net results. Due to the amount of fruit production, consumers are able to demand high product quality. The fruit chains are therefore consumer driven. It is more and more important to produce according consumer wishes.

Due to these changing trade structures, poor financial results in the fruit industry of the last decade and more consumer-driven fruit chains, Dutch fruit growers change their market behaviour. They join their forces and are increasingly willing to co-operate in fruit chains. An example is Inova Fruit b.v.: this joined company of 5 auctions, both in The Netherlands (4) and in Belgium (1) and the Dutch Fruit Growers Association (NFO), just has introduced in February 2004 its 4 new apple varieties. These varieties will be introduced with a brand that identifies their special taste and consumer target groups in a more or less closed chain concept.

In these changing circumstances, the fruit industry and the applied fruit research are also changing. Applied Plant Research (PPO-Fruit) is involved in different projects with consumer-driven fruit chain development and their side effects on fruit growers and firms. The aim of this paper is to describe the new developments in the Dutch fruit chains and their impact on fruit growers and applied research. This is shown by two examples of new fruit chains in which PPO-Fruit is involved.

Two examples are described: a variety chain: based on a special variety and a regional chain, based on the production of raspberries in a certain region. A chain is defined at different ways. Important aspects are (van Erp and Ravesloot, 2004):

- A chain is consumer driven: the consumer demands are leading, no longer the suppliers! This means for fruit growers that it is necessary to produce according the consumer demands
- A chain exists of activities linked together: if the activities are executed at the right way, in the right time and order, the consumer demands can be fulfilled optimally. Each activity has to create extra value to the product, otherwise the activity is not necessary in this specific chain.
- Organisations and enterprises are suppliers of activities. This means that they are the suppliers of the activities, which are necessary to realise the demanded extra value.
- The partners of the chain have a joined established result. There must be agreement about the results of the chain and about the function/role of each partner. Whereas mutual confidence is the basis of a chain, guarantees and agreements are necessary. Partners have to be transparent about their activities and a good flow of information and knowledge between all partners is necessary.

Aspects which often causes failures of chain co-operation are (van Erp and Ravesloot, 2004):

- No clear goals
- Self interest instead of common interest
- Lack of transparency of all knowledge and information between partners
- No equivalence between partners
- No realistic plan of development
- Lack of entrepreneurial skills, being partner means more than just the own farm
- Too much thinking of products instead of services.

At chain projects, the aim is to avoid the mistakes which causes failures and pay attention to the important aspects of a chain. Existing chains can be divided by three characteristics (anon, 2003):

- Fresh product or prepared/processed product
- Structure: based on individual growers or co-operation between partners
- Current or niche product.

These are visualised in Table 3. With these three characteristics 8 different chains

are possible. The two examples in this paper are based on B (a current and fresh product, in co-operative structure: variety chain for apple) and F (fresh product for a niche market in a co-operative structure: regional raspberry chain).

### **Introduction Variety Chain**

An example of a developing special variety chain is based on the Dutch apple variety Santana. Santana is resistant (*Vf*) to scab, a fungal disease. Due to the Dutch climate, fungal diseases are problematic and need a lot of spraying. For a sustainable agriculture, chemical spraying has to be diminished. For scab Santana needs per year 10 sprays less compared to the standard varieties. However, introduction of Santana is complicated because it is a new and by the consumers unknown variety and, due to storage problems, an earlier introduction in the past years was not successful. It became clear that the right picking time of the apple comes close. Too early means too sour for direct trade, too late means a lot of flesh browning and softscald. In the “mini-chain Santana” project, the subject is to make clear what the market perspectives in The Netherlands for Santana are and if it is possible, by means of a quality-strategy, to keep a high quality standard for Santana during a longer selling period.

### **Introduction Regional Crop Chain**

“Betuwe framboos”, (= Betuwe raspberry) is an example of a regional chain, based on raspberries produced in a certain Dutch region: an old fruit region in the middle of The Netherlands. The Betuwe-raspberry project was started in order to give a new stimulant to the raspberry industry by a more active marketing, based on the demands, instead of supply. In this project, growers, auction and retail work together with PPO-Fruit. Raspberry was chosen due to expected possible growth in consumption and the possibilities to add extra value to the product.

## **MATERIALS AND METHODS**

### **Method Variety Chain**

With the cultivar involved, Santana, so far continuity and availability of good quality apples were a problem. The method in this project exists of a strategy with a combination of the right harvest time, storage regime and selling period. Therefore growers, retail (in this case two specialised fruit- and vegetables shops) and PPO-Fruit work together. Santana apples from two growers were stored at PPO with different conditions, treated with a temperature treatment to improve taste (especially to diminish the sour content) and delivered to two specialised fruit and vegetable shops during a period of 20 weeks. During this period product quality was monitored, the shop owners were asked about their experiences with Santana and the sale of the Santana apples and twice consumers were asked to participate in a taste test.

### **Method Regional Crop Chain**

For the regional produced raspberry (Betuwe raspberry) a group, comprising of growers, nursery men and sales men of auctions, discussed and listed in 5 workshops the questions, problems and (non) possibilities of a fruit chain for raspberry. As consumers were not part of the group, retailers as representative of the consumers were asked for their experiences, vision and demands. In each workshop a subject was discussed, after the workshop the members got some “homework” for the next workshop. The 5 subjects of the workshops were:

- Product quality on the farm
- Preservation of quality on farm and in the chain
- Chain design and structure
- Consumer, market and trade
- Raspberry cultivation and farm management

During these workshops aspects of the specified subject were discussed, problems

identified and possible solutions were worked out. The role of research was to organise and collect data and research in order to facilitate the process.

## RESULTS

### Variety Chain

First results show that with a special strategy the earlier problems can be solved. The experiences with Santana in both shops were positive. The shop owners were satisfied with the sales of Santana during a longer period -customers asked for Santana specifically. Quality aspects like firmness, taste and shelf life were qualified as positive by both shop owners. These results of the quality parameters and the experiences of the shop owners were affirmed by taste tests with consumers in both shops. In 4 tests (in December and in February) 232 consumers tasted Santana, Elstar and Jonagold and rated the taste between 0 and 10. The mean value was equal for all three varieties: 7.1. At one shop most consumers valued Santana as highest. At the other shop 25% of the consumers valued Santana as highest. Most people in this shop choose Jonagold as their favourite.

The role of research in this project was and is to prepare recipes to keep product quality high, to investigate the consumer wishes, to make clear the perspectives of this new apple variety by translating the demands of the consumer into practical solutions and to test/demonstrate the performance of the strategy in a real chain. If necessary for the growing recipes, research is done for storage and post-harvest handling.

### Regional Crop Chain

One of the possibilities of a chain is to act on feelings and emotion of consumers when they eat fruit. Consumers associate regional products with quality products. The region of the Betuwe means for a lot of Dutch consumers a fruit area with a long history, nature, health and a beautiful area. For the Betuwe Raspberry project two marketing concepts were made:

**1. Betuwe Raspberry National.** This chain aims at marketing of large quantities of raspberries produced in the Betuwe, throughout The Netherlands. The choice was made for inland sales, because only the Dutch consumers have a special feeling with the Betuwe region. In the chain the partners (growers, transporters and auctions) can take position against the concentrated supermarkets. For this, growers shall have to produce raspberries of specified varieties in special periods, according recipes. The auction will be the stage-manager of the chain activities like promotion, packaging, legal aspects, financial aspects and so on. It will be necessary to confer regulatory about the results and the expected results. Costs and returns must be divided between partners and this has to be agreed. The advantage of this chain is the complementary with the used marketing at the moment via the auction. Changes are biggest for the growers: they have to produce and deliver according agreed quantity and quality.

**2. Betuwe Raspberry Regional.** In this model raspberries are sold during outdoor activities. This should be a top quality product, picked the same morning and delivered at ice shops, restaurants and with mobile shops at large public activities. During outdoor activities it is possible to fulfil the demands of the consumers of healthy food, comfort and pleasure. Higher prices, due to the added value are less problematic because consumers at these moments are less aware of prices. At the beginning this will be a small activity. Growers shall have to organise a lot. First the sold quantity shall be small and marketing depends heavenly on the weather conditions: rain lead to less outdoor activities! But the chain is able to strongly increase the number of raspberry consumers. The actual chain partners will further develop these models.

## DISCUSSION AND CONCLUSION

It is proved to be possible to sell successfully Santana of good quality during a longer period, from the end of October till the end of February. Two other initiatives learned that continuity in availability and a quality strategy are essential for this success.

This mini-chain showed that co-operation can solve the earlier problems with these two critical factors.

The project with a regional raspberry chain resulted in two draft chain models. The further development of these two models will be executed in co-operation between the actual partners in these chains. Which can be different between the two chains.

It is clear that being part of a fruit chain means another way of working for the fruit growers and the other partners as well. They have to work according growing recipes and also recipes/procedures for other activities (like storage, packaging). This means a decrease of independence for the growers.

Difficult for Dutch fruit growers, is their loss of control on the sales of their products. Most Dutch fruit growers are used to decided by themselves when and where to sell and to whom. If prices are low they can decide to wait, if prices are rising they can choose between selling and waiting. This is of course only possible for stored products like apples, not for fresh products like raspberry. Being part of a chain means selling at a previously accorded week or month in order to have continuity of supply, which is best for all partners. It means giving up a part of your independent management, just with the hope/aim of a better financial result.

The role of PPO-Fruit is and has been, to take initiatives, to bring partners together and facilitate the process. In both examples of new, experimental, fruit chains, research co-operates with parties of the aimed fruit chain. This co-operation is essential in order to come to realistic working chains. Making a model is more or less easy. But the implementation of a chain model shows the real problems. It can be technical problems like for example the storage problems of Santana, but also the organisational or co-operation problems.

Applied research, like PPO-Fruit, can add value to the potential co-operation in new and developing chains to be alert on both types of potential problems by solving technical problems or by showing technical solutions to impossible consumer demands. Research can show a mirror to the chain partners, and can also be intermediary between partners. With asking questions and stimulating discussion the critical aspects can be more or less avoided.

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## **Tables**

Table 1. Area of apple and pear in The Netherlands (ha)

	<b>1992</b>	<b>1993</b>	<b>1994</b>	<b>1995</b>	<b>1996</b>	<b>1997</b>	<b>1998</b>	<b>1999</b>	<b>2000</b>	<b>2001</b>	<b>2002</b>
Apple	16,448	16,607	16,480	15,298	15,137	15,096	14,682	14,191	12,839	11,718	11,176
Pear	5,178			5,732	5,934	6,026	5,939	6,020	6,019	6,097	6,329

Source: Peppelman, 2004

Table 2. Area of some small fruits in The Netherlands (ha)

	2002
Red currants	244
Blue currants	182
Raspberry	32
Blackberry	21
Black currants	541

Source: Peppelman, 2004

Table 3. Chains divided on three characteristics (fresh or processed, structure and type of product)

		Type of product	
Fresh or processed	Structure	Current	Niche
Fresh	Individual	A	E
	Co-operation	B	F
Processed	Individual	C	G
	Co-operation	D	H

Source: van Erp, 2004