Summary

S.1 Background, research questions and scope

This Agro-Nutri Monitor is a follow-up to the two previous monitors published in 2020 and 2021. The monitor has been commissioned by the Netherlands Authority for Consumers and Markets (ACM) and compiled by Wageningen Economic Research. The monitor aims to provide insights into price formation in the Dutch agricultural value chain, from farmers through to supermarkets, and to identify any problems in price formation that are impeding progress towards sustainability in those value chains.

The research questions for the third Agro-Nutri Monitor are as follows:

1. To what extent do the payments (and any additional premiums) that farmers and horticulturalists receive for both conventional products and organic products correlate to the costs and investments incurred in production?
2. How are the gross and net margins per unit of product distributed along value chain participants for both conventional and organic products?
3. What are some of the key reasons that account for why different consumer segments – both in the Netherlands and in major overseas sales markets – are not prepared to pay extra for more sustainable products?

To investigate whether the additional costs of production for farmers and horticulturalists who observe sustainability standards above and beyond the statutory requirements are compensated for by the prices achieved, part of this research is based on a comparison of products sold under sustainability quality labels with those that do not hold any such certification. In most cases, we can make a distinction between conventional and organic products (as described above in research question 1), and in some cases also with products bearing a non-organic sustainability quality label, such as 1-star Beter Leven pork or tomatoes bearing the On the way to PlanetProof quality label.

However, the latter comparison is in most cases qualitative, due to a lack of quantitative data on the various value chain participants.
For the first two questions, seven products were the focus of the research: table stock potatoes, onions, pears, tomatoes, mushrooms, fresh milk and pork. These products were chosen based on their importance both within the primary production sector and among consumers in the Netherlands, and also because the monitor aimed to include products from a representative range of agricultural sub-sectors.

The third research question stems from one of the findings of the surveys conducted by the ACM and Centerdata last year as part of the Agro-Nutri Monitor, which was that consumers are only prepared to pay a limited premium for more sustainable products. The third research question interrogates this obstacle.

The research is based on extensive data collection featuring companies situated at every stage of the value chain (from farmers and horticulturalists through to supermarkets) along with interviews, an online survey of farmers and horticulturalists conducted by Geelen Consultancy, and data from Wageningen Economic Research and CBS, among others. The consumer segmentation study was conducted in partnership with Centerdata and Flycatcher Internet Research.

The third monitor consists of this main report outlining all the key findings, a background report which details market developments and price formation for the various product varieties per product (necessary for answering the first two main questions) and a report on the consumer segmentation study.

S.2 Key findings

Recovering the cost of sustainability

Research question 1: To what extent do the payments (and any additional premiums) that farmers and horticulturalists receive for both conventional products and organic products correlate to the costs and investments incurred in production?

For most of the organic products surveyed, producers were covered for additional costs.

In 2018-2020, as in the previous monitor, market prices covered the additional costs associated with organic production for most of the surveyed products, but not for milk, (Table S.1.1). Net margins are higher for organic potatoes and pork than for conventional products, but this is not the case for organic onions and milk, (Table S.1.3, Difference). The latter is also consistent with the finding that many organic farmers in the online survey indicated that they switched to organic because of the environment or because the production method suits the farm better, rather than because of higher price or demand. This suggests that the market is struggling to achieve the same margin on organic products as it does on conventional products, something that is also evident further down the value chain at the supermarkets. Ultimately, consumers must be prepared to pay additional costs for more sustainable production. And it's precisely this willingness to pay that still seems to be an obstacle.

Table S.1.1 Compensation for additional costs and investments for quality labels

	Conventional with quality label	*Organic*		
	Additional costs covered [1)]	Additional costs compared to conventional (euro per kg)[2)]	Premium compared to conventional (euro per kg)[2)]	Additional costs covered [1)]
Potatoes	Sometimes through a premium at the wholesale level, 60% of growers get premium, over 20% consider it cost effective.	0.13	0.14	Majority of growers get a premium and over 50% consider it cost effective.
Onions	Usually not.	0.27	0.29	Majority of growers get a premium. Half of them consider it cost effective.
Mushrooms	Sometimes, via a premium for specific costs, but usually not.	N/A	N/A	Half of the growers get a premium.
Pears	Usually not (explicit).	N/A	N/A	75% of growers get a premium and 40% consider it cost effective.
Tomatoes	Usually not (explicit).	N/A	N/A	All growers get a premium and half of them consider it cost effective.
Milk	75% get a premium. A third of business owners consider it cost effective.	0.19	0.17	70% of livestock farmers get a premium and 25% consider it cost effective.
Pork	There is a premium; a quarter of business owners consider it cost effective.	1.56	1.65	75% of livestock farmers get a premium and all business owners consider it cost effective.

1) Qualitatively determined (interviews and online survey).

2) Quantitatively determined (this monitor)

In the dairy farming sector, the conventional price of milk was found to be below the cost of production and this loss was even greater for organic dairy farmers than for conventional ones. Dairy farmers have long experienced negative net operating results: over the past 20 years, only 2017 saw a positive return. The calculations valued the labour of farmers and horticulturists at CAO wages. A negative result means that similar paid employment yields more and not necessarily that farmers were losing money through business operations.

For onions, the net percentage margins for organic growers in 2018-2020 were also lower than for conventional products. The pig farming sector saw the opposite, with organic pig farmers achieving a slightly higher percentage return per kilo of meat than conventional producers. In the potato sector, 2019 and 2020 were bad years, with growers seeing very low prices from the start of the COVID-19 pandemic in February 2020. The low prices in 2020 partly translated into poorer net margins in 2019 because some of the potatoes from the 2019 harvest were not sold until 2020. That meant a big drop in net margins, especially for conventional potato growers. Organic growers on average achieved slightly higher returns compared to conventional potato growers in 2018-2020. No quantitative data is available regarding costs and revenues for organic pear and tomato growers. Based on interviews and the online survey of horticulturalists, it appears that these growers were generally covered by the market during this period.

There is also no quantitative data for organic mushrooms. Growers indicated in the online survey that additional costs are partially covered. Compared to other horticultural products, the margins for conventional mushroom cultivation (white and chestnut) were low, averaging 1%.

From 2018-2020, net profit margins for farmers and horticulturalists dropped in 2018-2020 in comparison to 2017-2019 for three of the four organic products for which data are available. The net profit margin for organic potato production was 10% on average, for onions 10%, and for milk -12% (Table S.1.3). These margins were about 3% to 5% lower than in the 2017-2019 period. This is mainly because prices were relatively low in 2020 for milk, fattening pigs, and potatoes and onions. These low prices applied not just to organic products, but conventional ones too. Net margins for organic pig farmers stayed around the same (about 3%), (Table S.1.3).

Cost recovery for conventional sustainability quality labels varies by product

A growing proportion of products provided by the agriculture and horticulture sectors are certified under a sustainability quality label, such as SMK's 'On the way to PlanetProof', 'Beter voor Natuur en Boer' from Albert Heijn, or '1 star Beter Leven' from the Dutch Society for the Protection of Animals (Dierenbescherming). Of the products surveyed in 2021, onions had the smallest proportion of certified producers (3% of farms). For milk and table stock potatoes it was almost 10%, with 58% of table stock potatoes being certified under On the way to PlanetProof. For pigs, tomatoes and pears the proportion was 30-40%, and for mushrooms more than half of producers were certified under such a scheme. Where products are destined to be sold on the domestic market, there tends to be a higher proportion produced under sustainability quality labels.

There is some variation across products when it comes to the willingness of Dutch buyers to pay more for a sustainability quality label, (Table S.1.1). Conventional dairy farmers usually achieve a premium for production under non-organic sustainability quality labels. In most cases, according to dairy farmers and other stakeholders, the premium at least covers most of the costs. The same applies to pig farmers under the '1-star Beter Leven' quality label. In surveyed plant-based sectors it's much less common to pay an explicit premium for products that have a sustainability quality label. But the research did find evidence of this for some products, such as table stock potatoes. This premium is paid for at the wholesale level. Supermarkets reported that they do pay a bit more for potatoes produced under the 'On the way to PlanetProof' quality label, but the premium isn't explicit and is absorbed in the negotiated price. For onions, pears, tomatoes and mushrooms, there was usually no stipulated premium. Mushroom growers who sell under Albert Heijn's 'Beter voor' quality label do receive modest compensation for the costs incurred.

Limited opportunities to sell products with Dutch quality labels abroad

Most European countries have developed their own quality labels and value chain schemes based on their own standards and certification systems. In order to sell their products abroad, Dutch farmers and horticulturalists need to obtain certification, which they can sometimes do by applying the value chain standards used by the processor. The sustainability quality labels used most commonly in the Netherlands do not always correspond exactly to the sustainability standards applied in neighbouring countries. In the plant-based sectors, efforts are underway to benchmark quality labels to enable mutual recognition of equivalent standards. It involves comparing requirements for labels, allowing mutual recognition of those components that are equivalent. Mutual recognition can reduce audit costs. The animal-based sectors are lagging behind in this respect. Dairy processors and pig slaughterhouses coordinate sales to ensure that the level of production under quality labels is closely aligned with domestic demand. Processors do not receive a premium

for any surplus products placed on the domestic market On the foreign market, a premium for a Dutch quality mark is not common. The market price is determined by negotiation.

Domestic quality labels impede maximum utilisation

There is a commercial incentive to extract as much value as possible from products made out of a single raw material. This is particularly relevant to the animal sectors, where milk processors or slaughterhouses aim to sell products and by-products in domestic and overseas markets in a way that extracts the greatest possible value from the raw material. Different markets develop in different ways over time. For processors, the challenge therefore is to achieve a good overall result. The fact that quality labels can generally only command a premium on the domestic market makes it more difficult to extract the maximum value from the raw material in question. Any components that can't be sold in the domestic retail market will, after all, end up having to be sold elsewhere without commanding a premium.

Influence of COVID-19 varies by sector

The COVID-19 pandemic has led to lower prices for some primary producers, with the dairy and table stock potato sectors most affected. Dairy producers have been particularly affected by global market disruptions. Both organic and conventional dairy farmers saw their net margins drop significantly, plummeting by 8 percentage points to -10%. In the potato sector, this played out differently for chipping potatoes and table stock potatoes. The closure of catering and hospitality services meant there was little demand for chipping potatoes, which then led to a sharp price drop. Sales of table stock potatoes, on the other hand, were boosted by the pandemic.

Overall, the horticultural products surveyed in the monitor eventually did well in the pandemic. Demand for fruit (pears) and vegetables (vine tomatoes, mushrooms and onions) went up. Profit margins for pear and tomato growers were relatively high in 2020 compared to other years surveyed. However, businesses were affected to varying degrees by staff illness.

Distribution of margins in the value chain

Research question 2: How are the gross and net margins per unit of product distributed along value chain participants for both conventional and organic products?

Gross margin distribution in the value chain mostly unchanged

Compared to the previous monitor, the distribution of gross margins looks more or less the same. This is based on a comparison of 2018-2020 to 2017-2019, so there is substantial overlap. The value chain for conventional onions was the only one that saw an increase in the share of the retail price going to growers, with gross margins 3% higher than in the previous monitor. This percentage grew at the expense of the gross margin for wholesalers The share of the retail price attributable to the pig farmer has also decreased (Table S.1.2).

In the mushroom chain, at the trade and supermarket level, a distinction can be made between common white and chestnut mushrooms in terms of gross and net margins. For both white and chestnut mushrooms, primary production has the largest share of gross margin. The supermarket gross margin is lower for white mushrooms (25%) than for chestnut mushrooms (31%).

Share of primary sector in consumer price higher for organic products than for conventional, except for milk and pears

For most products, farmers' and growers' share of the consumer price for organic products is higher than for conventional products. Milk and pears are the only exceptions. The share of farmers and market gardeners in the chain for these is almost the same as for the conventional product. For potatoes, onions, tomatoes, and pork, the share of farmers and growers in organic chains was 7%, 14%, 10% and 14% higher than in conventional chains, respectively. This is because the costs of organic production at the primary level tend to be significantly higher than those of conventional production (Table S.1.2).

Table S.1.2 Gross margins as % of the consumer price, averaged across 2018-2020, [a), b)]. Shaded red or green if the difference from 2017-2019 exceeds 3% in a negative or positive direction respectively.

	Conventional			Organic			Difference between org-conv		
	Farmer	Wholesale/ processing	Super-market	Farmer	Wholesale/ processing	Super-market	Farmer	Wholesale/ processing	Super-market
Potatoes	32	32	37	38	31	31	7	-1	-6
Onions	25	25	51	38	23	38	14	-1	-13
White mushrooms	43	32	25	N/A	N/A	N/A	N/A	N/A	N/A
Chestnut mushrooms	41	28	31	N/A	N/A	N/A	N/A	N/A	N/A
Pears	41	29	30	40	28	31	-1	-1	2
Tomatoes	34	32	34	44	33	23	10	1	-11
Milk	50	13	36	50	18	33	-1	5	-4
Pork	47	28	24	62	12	26	14	-16	3

a) the gross margin for wholesalers and processors is based on the supermarket purchase price minus their own purchase price as a % of the retail price. For primary producers, the gross margin is equal to the yield price.

b) for primary producers, the gross margin is equal to the sale price, while in the rest of the value chain it's the difference between the purchase and sale price of the product.

In conventional chains, dairy and pig farmers are struggling with lower net margins and net margins for wholesalers and processors and supermarkets have remained the same;

Conventional fattening pig farmers and dairy farmers face substantially lower net margins than in previous monitor (2017-2019 period), (Table S.1.3). Net margins in supermarket for wholesalers and processors in conventional chains remained almost the same. The new white mushroom product included in this monitor has a negative margin (-2%) on supermarket sales. The net margins of potato and onion growers also appear lower this year than in the previous monitor. This is due to a correction to the calculation method for these products[1]. The new calculation method means net margins for farmers are lower but still positive in the 2018-2020 period (8 and 15% for potatoes and onions).

In COVID-10 year 2020, supermarket sales increased due to the closure of the catering industry. Supermarkets also made more net profit on average. However, there are differences in impact among the types of supermarkets. Full-service supermarkets with a wider range and online delivery service have benefited more from coronavirus restrictions than discounters with a smaller range and without an online shop.

In organic chains, net margins have worsened for some farmers and growers

In the organic chains, primary producers of potatoes, onions, and milk face a lower profit margin than in previous monitor (period 2017-2019, (Table S.1.3). The net margins of these production chains have remained the same for wholesalers/processors. The net margin for the supermarket has narrowed in the case of onions and is now 9%. The supermarket generates a less negative net margin on organic pork compared to the previous monitor, although it is still very negative at -13%. The net margin in organic pear trading increased to 14%.

We do not have exact data on the net margins of organic primary producers for mushrooms, pears, and tomatoes. However, the online survey shows that, for pears and tomatoes in particular, organic growers were more likely to be satisfied with prices and margins in 2021 than conventional growers.

[1] In the previous monitors, certain revenues from products other than potatoes and onions respectively were erroneously included as revenues; as a result, in the previous monitors, calculated revenues per kg were several cents higher and the calculated net margins were too high.

Table S.1.3 Net margins as % of the turnover of the value chain segment, averaged across 2018-2020. Shaded red or green if the difference from 2017-2019 exceeds 3% in a negative or positive direction respectively..

	Conventional			Organic			Difference		
	Farmer	Wholesale/ processing	Super-market	Farmer	Wholesale/ processing	Super-market	Farmer	Wholesale/ processing	Super-market
Potatoes	8	6	9	10	6	2	2	0	-7
Onions	15	8	24	10	6	9	-5	-1	-15
White mushrooms	1, a)	0	-2	N/A	N/A	N/A	N/A	N/A	N/A
Chestnut mushrooms	1, a)	3	4	N/A	N/A	N/A	N/A	N/A	N/A
Pears	12	3	3	N/A	14	-12	N/A	0	-15
Tomatoes	20	1	9	N/A	-3	-5	N/A	-4	-14
Milk	-10	-4	8	-12	0	0	-2	3	-8
Pork b)	1	2	-4	3	1	-13	2	-1	-9

a) no differentiation in the cultivation of white and chestnut mushrooms: all hand-harvested mushrooms.

b) "Varken van morgen" and "Beter Leven" - 1 star For regular fattening pigs without sustainability label the average profit margin was -3%.

Source: Farm Information Net, company data; calculations by Wageningen Economic Research.

The negative trend in net margin development in the primary production sectors is expected to be exacerbated in 2021 by the price rises for energy and raw materials that started in the second half of that year. Price shifts for energy and raw materials driven by the war in Ukraine will, for most sectors, be coupled with significant increases in production costs for the entire chain in 2022.

Perceived problems in price formation

In order to further investigate problems in price formation, we compared some of the characteristics of the markets for the seven surveyed products with the profit margins achieved by farmers and horticulturalists. While this analysis is largely based on the perceptions of farmers and horticulturalists (as recorded in the online survey) and on rough estimates, it does reveal a number of issues that could offer opportunities for improving the perceived position of farmers and horticulturalists. First of all, it is striking that in sectors with a higher concentration of farmers and horticulturalists in relation to buyers, margins were also higher for the time period in question. Secondly, it is striking that farmers and horticulturalists in almost all sub-sectors report poor market transparency in terms of, for example, how prices are established, what prices their buyers go on to achieve with the products, and whether prices are predictable. Organic pig farmers were alone in feeling reasonably positive about their market transparency.

Farmers and horticulturalists perceive an unfair distribution of risk

With regard to the perceived problems of determining price, we also want to draw attention to risk distribution here, which many farmers and horticulturalists feel is unfair. This finding emerged from the online survey of farmers and horticulturalists. Pear growers, in particular, felt they faced a variety of significant risks. Weather is the main risk factor for them. Weather damage and crop failures lead to revenue losses and, in practice, these are often not covered by insurance. This is also an issue among onion and potato growers. It is also striking that many farmers and horticulturalists identify changes to legislation as a very high-risk issue. Pig farmers were particularly likely to indicate that this is a risk for them, but producers in land-based sectors such as dairy farming, arable farming, and fruit cultivation see this as a high-risk issue too. Changes to legislation may lead to higher costs associated with any measures that need to be taken and uncertainty about compensations that may be paid in return.

Different consumer market segments and reasons for buying organic products

Research question 3: What are some of the key reasons that account for why different consumer segments – both in the Netherlands and in major overseas sales markets – are not prepared to pay extra for organic products?

Segments in the Netherlands are comparable to France and Germany, but groups with preference for organic is smaller in the Netherlands

The segmentation study distinguished between five consumer market segments in the different countries, based on their preference for conventional or organic product varieties. France and Germany have the same consumer

market segments as the Netherlands. However, in the Netherlands the groups that prefer organic products are smaller than in Germany and France. More consumers will need to be persuaded in the Netherlands if we are to make further progress on sustainability through organic farming.

Consumer groups are determined by personal characteristics

When distinguishing the underlying motives that drive sustainable consumption, we need to look at the personal characteristics of consumers themselves. When faced with a choice in the supermarket or shop, consumers weigh up how valuable that food product is to them, how it contributes to sustainability, and the price they have to pay for it. Personal attitudes are key to resolving this dilemma among consumers. Other factors, such as demographic characteristics, can account for some aspects of the eventual decision, but these aren't the defining characteristics when it comes to consumer differentiation.

Attitudes to organic vary according to product

For tomatoes and pork, fewer consumers opt for the organic variety when the conventional alternative also has a quality label. With milk, the application of a quality label to the conventional product triggers a more decisive choice in favour of the organic product. Having multiple quality labels on food products can therefore lead to various outcomes in terms of the behavioural choices that consumers make. Assessments of the effectiveness of quality labels depend for this reason on the product.

Consumers who choose conventional products expect organic varieties to offer higher quality for the higher price

Groups that opt for conventional products expect the higher price of organic products to be paired with higher quality, a better flavour and that the product ought to be healthier as well as having a positive impact on the environment, animal welfare, or other aspects of sustainability. Improving perceptions of product quality could be a pathway towards further sustainability. This means that for these consumers, the organic product should be superior from a number of perspectives, and in their view, this is not currently the case. This obstacle is about consumer perception and not about the objective quality of the product. This finding is particularly important for those product categories where the more sustainable varieties have a weaker market position. Organic tomatoes are one example.

As well as changing quality perception, contributions to sustainability could be clarified

Another pathway to improved sustainability could be to make it clearer to consumers not opting for organic varieties how those products make a greater contribution towards achieving sustainability objectives. This is not easy in the Netherlands, because one of the clear findings of this research is that all consumer groups in the Netherlands lack trust in the government and in food product suppliers when it comes to sustainability objectives. Information sources, trusted by consumers, can contribute to this.