The Rise of a Global Feed Safety Standard

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From Local Initiative to Worldwide Benchmark

By

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Cambridge Scholars Publishing

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This book first published 2026

Cambridge Scholars Publishing

Lady Stephenson Library, Newcastle upon Tyne, NE6 2PA, UK

British Library Cataloguing in Publication Data
A catalogue record for this book is available from the British Library

ISBN: 978-1-0364-7114-9
ISBN (Ebook): 978-1-0364-7115-6

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PREFACE

This book describes the development of a private feed safety certification scheme that originated in the Netherlands and has since evolved into a globally leading standard.

At its inception, the initiative was exceptional, since responsibility for safety challenges usually rested with government authorities. In the Netherlands, however, the statutory commodity boards—facilitating sectoral self-regulation under government supervision—provided a solid foundation for the feed sector to address urgent feed safety concerns.

From 1986 onwards, as Secretary of the Product Board Animal Feed—a statutory platform representing the entire feed chain—I initiated cooperation within the sector in response to growing societal demand for safe food and the role of the feed sector within it. My involvement continued until 2021, when I stepped down as Managing Director of GMP+ International. This long-standing engagement enables me to provide an informed account of the development of the GMP+ Feed Certification scheme and the broader contextual factors that shaped its course.

The motivation for writing this book arises from requests by several professionals in the animal feed sector to document this history. The purpose is to ensure that newcomers remain aware of the lessons learned from the past. Many of today's professionals tend to regard the existing feed safety culture as self-evident. It is therefore important that they understand the challenging journey through which this culture was established. Such awareness can help prevent complacency and the taking of irresponsible risks in difficult market conditions. Moreover, this historical perspective may also prove valuable for those who have not yet developed a strong sense of feed safety. Understanding the hard lessons of the past can spare them from having to experience them first-hand.

To avoid a one-sided narrative, this book draws not only on published sources—listed in the chapter bibliographies—but also on contributions from individuals who were **actually there**, active in the feed sector during the early years, and who generously shared their memories and experiences. Throughout this book, several **'Voices from the Field'** provide invaluable, **first-hand** insights from those who shaped the GMP+ Feed Certification

Scheme. A complete list of interviewees is included at the end of this volume.

I am deeply grateful to them—not only for their cooperation, but also for their past contributions to the development of the GMP+ scheme.

Looking back, I am filled with deep gratitude and wonder at the three decades devoted to developing the GMP+ certification scheme. This book is truly an account of our shared legacy. We achieved this success through a tremendous collective effort, powered by the passion and dedication of countless colleagues and stakeholders across the entire value chain.

I am especially grateful to my colleagues, whose dedication and expertise were indispensable, and to the many stakeholders across industry associations, companies and certification bodies worldwide whose involvement ensured both broad acceptance and practical relevance. Above all, I wish to express my gratitude to the Lord and heavenly Father, who enabled me to fulfil this role for 30 years. The spirit of collaboration has been a defining value throughout this journey, with the well-being of the entire supply chain—and ultimately, the health of consumers—always at its heart.

Johan den Hartog
1 November 2025

GMP+ TIMELINE 1990 – 2023

This timeline presents the key developments in the history of GMP+ Feed Safety Assurance (GMP+ FSA) from its introduction in the 1990s through to its digital transformation and global impact by 2023. It outlines major milestones that shaped the global feed safety certification landscape.

1990–2000: Foundation and Early Development

Year	Milestone / Development
1990	Dutch feed industry introduces a Good Manufacturing Practices code to ensure animal feed safety after contamination incidents.
1992	Formal adoption of national GMP standards, establishing the foundation for first private feed safety certification system.
1995	Integration of ISO 9001 principles into GMP+ certification, promoting structured quality management.
1996	GMP certification becomes mandatory (market driven) for feed compounders in the Netherlands.
1997	Extension of certification to traders, transporters, and storage companies.
1998	Launch of monitoring programs to track contaminants in feed ingredients.
2000	Incorporation of HACCP (Hazard Analysis and Critical Control Points) principles into GMP+ Feed Safety Assurance.
2000	Implementation of the Early Warning System (EWS) and tracking & tracing obligations for incident management.

2001–2010: International Expansion and Institutionalization

Year	Milestone / Development
2001	GMP+ certification becomes internationally applicable, opening participation for companies beyond the Netherlands.
2003	Transition from second-party verification to a third-party certification model

Year	Milestone / Development
2003	Rapid growth in certified companies across Europe, Asia, North and South America; harmonization of feed safety standards strengthens trust.
2008	Over 10,000 companies worldwide certified under GMP+; enhanced focus on risk management.
2010	Establishment of GMP+ International as an independent organization to manage and expand the certification scheme globally.

2011–2020: Diversification, Integrity, and Sustainability

Year	Milestone / Development
2011	Introduction of Country Notes to allow national flexibility within the global GMP+ standard.
2013	Launch of the Feed Responsibility Assurance module, integrating sustainability and responsible sourcing.
2015	Implementation of a strengthened Integrity Policy to enhance trust and impartiality within certification processes.
2017	25th anniversary celebrated; over 16,000 certified companies in 80+ countries. Publication of the Feed Fraud Information Document.
2019	Expansion of digital tools, including Feed Support Products (FSP) for risk analysis and data sharing.

2021–2023: Innovation, Global Collaboration, and Digital Future

Year	Milestone / Development
2021	Alignment with the UN Sustainable Development Goals and focus on sustainable feed production.
2022	Enhanced use of digital platforms for certification management and community learning.
2022	Launch of the GMP+ Academy, a global learning platform providing training and knowledge exchange on feed safety.
2023	GMP+ International strengthens its role as a global thought leader, integrating innovation, collaboration, and capacity building through the Academy.

1

INTRODUCTION

The Netherlands' animal feed industry introduced the world's first private feed safety control system with external verification back in 1992. This system, known as the Good Manufacturer Practise (GMP) code, focused on ensuring feed safety in the production of premixtures and compound feeds. At that time, the primary perceived hazards were antibiotic and anti-coccidiostat residues resulting from cross-contamination during mixed feed production, as well as heavy metals, aflatoxin B_1, and salmonella in feed materials. In 1992, approximately 100 Dutch feed companies became certified under this GMP code.

Originally starting as a GMP code, which is now referred to as a prerequisite program (PRP), the system underwent enhancements driven by valuable lessons learned during the 1990s. This led to the integration of various feed safety management tools (HACCP, traceability, etc.), resulting in the development of a Feed Safety Management System. This system has been in place since 2000 and has yielded positive results. The improvements were not only limited to the tools of the system but also encompassed changes in the mindset of professionals working in the associated companies, driven by evolving market conditions.

Fast forward to 2021, and the system has evolved into the comprehensive, market-driven GMP+ Feed Certification Assurance (FSA) certification scheme with a feed safety assurance module and a feed sustainability module. This scheme, especially the feed safety assurance module, has earned recognition worldwide, with approximately 20,000 certified companies spanning the entire feed supply chain in around 90 countries.

The purpose of this publication is to provide an understanding of the circumstances that led to the inception and subsequent development of this scheme, and how it has transformed into its present form.

The development of the GMP+ scheme was not driven by a single factor but rather by a combination of economic, technical, political, psychological,

and organizational influences. Economically, the globalization of the feed and food supply chains created a strong demand for internationally accepted standards that could facilitate safe trade. At the same time, retailers and buyers increasingly required transparent and auditable assurances of feed safety, giving certified companies a clear competitive advantage in both domestic and export markets.

From a technical perspective, advances in laboratory testing, traceability systems, and HACCP-based risk management approaches enabled the industry to adopt more sophisticated safety controls. These tools made it possible to move beyond basic hygiene rules toward a systematic, prevention-oriented certification scheme.

Political factors also played a significant role. A series of feed and food crises in the 1990s and 2000s—such as BSE, dioxin contamination, and aflatoxin incidents—undermined public trust and created strong pressure on governments and policymakers to act. European legislation on feed hygiene and food safety provided a political framework, while private sector initiatives like GMP+ went further because of the needs in the industry, offering a comprehensive, auditable system that often set higher benchmarks than what was politically required.

Psychological and societal factors reinforced this momentum. The loss of consumer trust after repeated scandals heightened awareness across the industry that a single weak link could damage the entire sector's reputation. This realization fostered collective responsibility and collaboration, particularly through associations, cooperatives, and federations of small and medium-sized enterprises.

Equally important were organizational and governance factors. GMP+ International and its predecessors established structures that combined inclusiveness with rigor, enabling broad participation while maintaining credibility. Over time, international cooperation and mutual recognition with other certification schemes further strengthened its global reach.

Finally, sustainability concerns emerged as a new driver of change. Growing market demand for responsibly sourced feed ingredients led to the integration of sustainability modules into the GMP+ Feed Certification scheme, ensuring that it would remain relevant in a future where both safety and sustainability are central to responsible feed production.

2

DUTCH ANIMAL FEED AND ANIMAL PRODUCTION SECTORS AROUND 1990'S

2.1 Introduction

In this chapter, our focus will be on the Dutch animal feed sector and the market it operated in during 1980s and 1990s. Additionally, we will explore the Dutch animal production sector in order to obtain a comprehensive understanding of the factors that contributed to the establishment of the GMP+ Feed Certification scheme in the Netherlands.

It is noteworthy that this scheme emerged as the world's first private and voluntary feed program encompassing the entire feed supply chain, even preceding the implementation of any national comprehensive legal framework addressing feed safety of aspects of quality management system. Introduced in 1992, this pioneering initiative warrants a close examination of the Dutch animal feed and animal market specifically during that time period.

Curiosity

A curious mention is a report from the Dutch Ministry of Agriculture, Industry and Trade, more than a century old. It's an example that deceit, fraud, or a lack of sense of responsibility is timeless.

In 1917, Dutch inspectors reported that nearly half of all animal feeds tested were adulterated. Barley meal, linseed meal, cakes, and mixed feeds were often bulked with worthless fillers such as peanut shells, cocoa husks, sand, and even mites. What was sold as meat or fish meal often turned out to be bone or animal meal with high ash content. Despite their poor quality, these feeds were sold at normal or inflated prices, leaving farmers defrauded and animals undernourished.

Some feeds (e.g., coconut cake) were tested after poisoning incidents, though no toxic substances were detected. Nonetheless, the poor quality and contamination (sand, mites, spoiled residues) reduced nutritional value and could harm livestock (Ministerie van Landbouw, Nijverheid en Handel, 1917).

2.2 Dutch Animal Feed sector

In the 1980s and 1990s, the Dutch Animal Feed sector experienced significant growth and advancement in terms of volume and the utilization of a wide range of feedstuffs, particularly by-products derived from the food processing industry.

As early as the beginning of the 20th century, the Dutch animal feed sector began incorporating various by-products obtained from cereal milling, oilseed crushing, sugar beet processing, breweries, and more, in addition to unprocessed whole grains and fodders (Kooy, 1933). While some of these by-products were mixed in feed mills, a substantial amount was directly fed to livestock animals on farms as individual feedstuffs.

From the 1930s onwards, the production of compound feed in the Netherlands increased significantly. Several factors explain this growth. First, Dutch agriculture shifted toward more specialized branches of livestock farming, such as intensive poultry and pig production, often in areas with poor sandy soils. These farms were less able to produce all their feed on-farm and increasingly depended on supplementary, balanced feedstuffs (Bieleman, 2008). At the same time, nutritional science advanced rapidly, with Wageningen University's and research stations providing new knowledge about the dietary requirements of animals. Compound feed manufacturers could use this knowledge to formulate feeds that were more efficient and nutritionally balanced than single raw materials. Technological innovations in milling, pelleting, and mixing also enabled more efficient production and greater consistency in feed quality.

In the 1930s, Dutch agricultural organizations and cooperative compound feed producers jointly decided to establish an independent control body for feed. This led to the foundation of the **CLO Control Foundation** in 1934. Four years later, the foundation acquired its own experimental farm and set up the *Institute for Modern Animal Nutrition "De Schothorst"*, which became an important centre for applied feed research (Schothorst Feed Research, n.d.).

A complementary development followed in 1972, when farmers created the **Afnemers Controle Veevoeders (ACV)**. Unlike the CLO initiative, which was closely tied to the cooperative feed sector, the ACV represented a farmers' initiative to independently monitor the quality and composition of compound feeds supplied by private feed companies (Winkels, 1996).

Economic conditions reinforced this trend. During the agricultural crisis of the 1930s, farmers were forced to reduce costs and improve efficiency. Compound feeds, with their higher feed conversion efficiency, offered an attractive solution. The Netherlands also benefited from its strong trading position and access to imported feed materials through the ports of Rotterdam and Amsterdam, including soybean meal, linseed expellers, tapioca, and fishmeal. This facilitated the production of compound feeds at relatively low cost and in larger volumes (Van der Woude, 1974).

During the Second World War, food and feed supplies came under centralized government control. From 1940 onwards, the supply and allocation of feedstuffs were coordinated through central agencies. The aim was to allocate scarce feed materials as efficiently as possible, overcome transport shortages, and prevent black market activity.

An important tool in this system was the use of compound feed mills as distribution nodes. By channelling available raw materials through these feed mills, the authorities could exercise greater control and oversight over the allocation of feed to farmers (Dols & Van Arcken, 1946; De Jong, n.d.). Thus, feed mills were not merely production facilities but also a central instrument in the distribution system of wartime livestock feeding.

After the war, central distribution remained in place for several years. Only from the late 1940s, as food shortages eased and the economy recovered, was the market gradually liberalized. By that time, it had become clear that the compound feed industry would play a permanent role in Dutch livestock farming. Moreover, the wartime experience of central distribution confirmed that compound feeds were an effective means of optimizing the use and monitoring of scarce raw materials.

By 1990, the production of total mixed feed had reached approximately 16 million metric tons (Table 1). By 1991/1992, approximately 90% of the utilized feed consisted of mixed feeds, while straight feedstuffs accounted for over 10% (Table 2).

After the oil crisis in 1973, the popularity of (semi-)moist animal feed, such as by-products from breweries, sugar beet processing, and potato processing, increased for on-farm feeding, particularly for pigs and cows. This shift aimed to reduce energy costs associated with drying. As a result, the compound feed industry adjusted the nutritional composition of mixed feed to align with the total available animal feed ration at the farm level.

Table 2.1 Total industrial produced animal feed in The Netherlands and European Union, 1985 - 2000[1]

x 1 000 MT	1985/1986*	1990	1995	2000
The Netherlands	16,534	16,213	16,456	14,774
European Union (EU)	94,241	102,220	120,757	125,472

Source: Productschap voor Veevoeder in: LEI, 2003, p. 52, 240

Origin

Compared to many other countries, the Dutch feed sector and livestock farming heavily relied on imported feedstuffs from around the world, particularly to produce industrially manufactured mixed feeds. In the early 1990s, approximately 75-80% of the raw materials for feedstuffs were imported, while only 15-20% were produced domestically (Table 2, 3, and Figure 1). These imports primarily originated from other member states of the European Union, accounting for approximately 25% of the total volume, such as Germany and France. Additionally, around 75% of the imported feedstuffs came from third countries, including Thailand, Malaysia, India, Brazil, Argentina, Peru, the United States, and Canada (Bolhuis J., 1995, p. 20-21).

Competitive advantages

The high share of imported feedstuffs can be attributed in part to the innovative practices adopted by Dutch feed companies. However, the "Rotterdam Gap" phenomenon created a notable cost advantage for importing grain substitutes from regions outside the European Union.

This Rotterdam Gap was related to three factors:

a. **Dillon Round Concessions**: Lower or zero tariffs on non-grain substitutes like oilseeds and protein crops, and grain by-products as part of global trade liberalization as agreed during the Dillon Round 1962 (Josling et al, 1996).

[1] In 1985 were the following countries member of the European Community (European Union): Belgium, Denmark, Germany, Greece, France, Ireland, Italy, Luxembourg, the Netherlands, Great Britain & Northern Ireland. In 1986 Spain and Portugal became member. In 1996, Austria, Finland and Sweden joint the EU.

b. **Rotterdam Port Advantage**: Rotterdam on the North Sea with possibility to receive ocean bulk carriers (huge volumes), storage and transhipment facilities for distribution via short sea shipping to other ports in Europe and with an excellent domestic logistic infrastructure via roads, canals and rivers, connection with important production regions in the Netherlands and Germany.
c. **EU Market Policy (Common Agricultural Policy – CAP)**: The CAP maintained high internal grain prices compared to the world market, protected by substantial import tariffs on grain. For Dutch agribusiness, low import duties and logistic advantages created access to relatively cheap alternative feed ingredients. This combination enabled the production of relatively low-priced compound feeds and supported competitive livestock production compared to other European countries.

Therefore, the Dutch livestock production grew very quickly in the seventeens and eighteens. On the other hand, less grain from the European Union was used to produce animal feed, so the market for grain declined. A concession to the United States was that the European Union would only grow a limited area of oilseeds. Another concession was to Thailand, which had a share of the quota for tapioca (cassava) import from the European Union (Meester, et al., 2013, p. 149).

Table 2.2 Origin, use and available and quantities of feedstuffs 1989-1992

x 1000MT (July/June)			
ORIGIN:	**Domestic**	**EU member states**	**Third countries**
1989/1990	3,481	4,686	9,326
1990/1991	2,721	5,936	8,879
1991/1992	2,645	6,409	8,726
AVAILABLE:	**Domestic**		
1989/1990	17,493		
1990/1991	17,536		
1991/1992	17,780		
USE:	**Mixed feeds**	**Straight feedstuffs**	
1989/1990	16,366	1,127	
1990/1991	16,289	1,247	
1991/1992	16,047	1,733	
USE OF MIXED FEEDS:	**Import**	**Domestic use**	**Export**
1989/1990	259	15,743	882
1990/1991	341	15,605	1,025
1991/1992	371	15,259	1,159
TOTAL DOMESTIC USDE OF FEEDSTUFFS			
1989/1990		16,870	
1990/1991		16,852	
1991/1992		16,992	

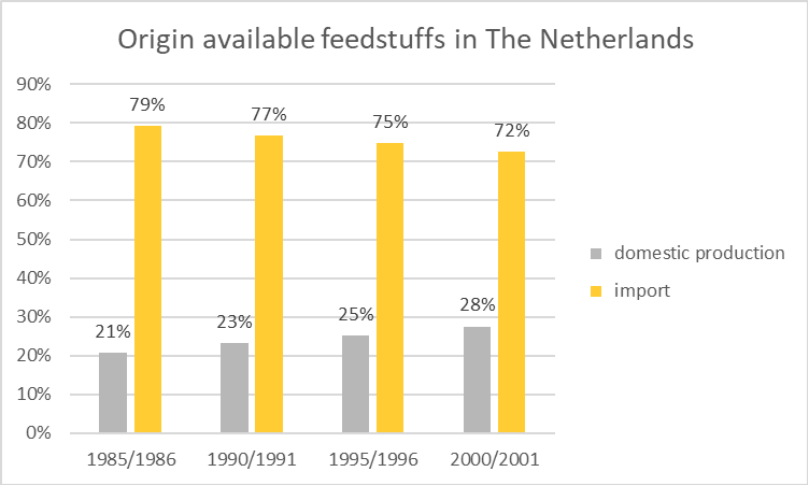
Source: Bolhuis J., a.o., 1995, p.21

Table 2.3 Available feedstuffs in The Netherlands and the origin, 1985/1086 – 2000/2001

x 1000 MT (July/June)	1985/1986	1990/1991	1995/1996	2000/2001
Cereals	2,456	2,126	3,684	4,147
domestic production	552	537	825	1,288
import	1,904	1,589	2,859	2,859
Cereal bran	768	884	1,206	1,191
domestic production	377	742	984	1,023
import	391	142	222	168
Legumes (incl. lupins)	665	1,035	718	342
domestic production	30	34	-	-
import	635	1,001	718	342
Oilseed by-products and corgluten meal	6,195	5,195	6,546	6,167
domestic production	865	1,068	1,441	1,418
import	5,330	4,127	5,105	4,749
Processed Animal Proteins	403	503	361	206
domestic production*	155	235	185	129
import	248	268	176	77
Milk powders	287	189	199	177
domestic production	26	41	11	42
import	261	148	188	135
Whey powder	315	341	430	330
domestic production	144	186	242	86
import	171	155	188	244
Dried beet pulp incl. molasses beet pulp)	723	742	438	267
domestic production	119	208	81	49
import	604	534	357	218
Citrus pulp	767	176	140	429
domestic production	-	-	-	-
import	767	176	140	429
Grass, clover and alfalfa meal	243	318	263	180
domestic production	107	186	175	156
import	136	132	88	24
Molasses	608	693	606	480
domestic production	10	10	10	10
import	598	683	596	470
Vinase	184	169	141	133
domestic production	137	140	108	104
import	47	29	33	29
Cassave (tapioca)	2,851	2,867	1,413	1,388
domestic production	-	-	-	-
import	2,851	2,867	1,413	1,388
Oilseeds	242	459	306	190
domestic production	230	453	8	9
import	12	6	298	181
Fats & oils	374	463	540	519
domestic production	104	88	100	135
import	270	375	440	384
Miscellaneous	1,244	1,172	1,159	1,217
domestic production	955	99	392	328
import	289	1,073	767	889
Total available	18,325	17,332	18,150	17,363
domestic production	3,811	4,027	4,562	4,777
import	14,514	13,305	13,588	12,586
domestic production	21%	23%	25%	28%
import	79%	77%	75%	72%

Source: Productschap voor Veevoeder in: LEI, 2003, p. 51

Figure 2.1 Relationship origin (domestic production / import) of available feedstuffs in The Netherlands



Source: Table 3

2.3 Dutch Animal Production sector

As mentioned before, in the seventeens in the 20th century, the Dutch animal husbandry developed with substantial annual growth of the livestock, especially pigs and poultry (Table 4). However, the cattle herd decreased because of predominantly land-based production for roughage, increase in milk production per cow (genetic improvement) and introduction of the milk quota in 1984. This milk quota didn't allow to produce more milk, consequently the cattle herd reduced due to increased production per animal.

The main reason was the European agricultural policy with a focus on efficiency since the fifties. Additional reasons are (i) the scaling up and (ii) mechanisation of the livestock farms, (iii) the increase of the knowledge level and innovation due to public research, (iv) genetic improvements of the animals that boasted the production performances, and (v) the availability of a growing volume of relatively cheap animal feed to comply with the increasing demand. This last was the result of an active and creative feed supply change (trade and industry) to comply with the growing demand.

Table 2.4 Development of the Dutch livestock from 1980 to 2000

	Cattle	Pigs	Poultry	Horses	Sheeps	Goats
	x 1000	*x 1000*	*x 1000*	*x 1000*	*x 1000*	*x 1000*
1980	5,226	10,138	81,155	67	858	.
1985	5,248	12,383	89,887	62	814	12
1990	4,926	13,915	92,764	70	1,702	61
1995	4,654	14,397	89,561	100	1,674	76
2000	4,069	13,118	104,015	117	1,305	179

Source: CBS, StatLine

The scaling up was made possible in part by the implementation of land re-parcelling, adapting the infrastructure and water management.

The size of the Dutch livestock was quite erratic in the course of the time. This course is partly driven by national and European laws and regulations since the eighteens: environmental and the reduction of market support (market protection, price-support, etc.). The outbreaks of animal disease epidemics among animals also played an important role.

However, the production of meat, dairy – except for beef, sheep and goat meat and skimmed milk powder – was and still is well above domestic consumption, with high self-sufficiency rates for veal, eggs and pork taking the lead.

Last decennia, the self-sufficiency rates for the various animal products are roughly the following:

Table 2.5 Self-efficiency of animal products in The Netherlands

Animal product	Average or range of self-sufficiency
Beef	60%
Poultry meat	160 – 190%
Pork	250 – 325%
Eggs	275 - 310%
Veal	> 700%

Source: Staf (2021), p. 3; Terluin (2011), p. 8

Nevertheless, it resulted in a highly competitive animal production chain that took advantage of the opportunities of the free market in the European Economic Union that time and the growing prosperity of consumers.

Table 2.6 Supply balance of livestock products in The Netherlands, 1990-2000

x 1000 MT	1980	1985	1990	1995	2000
Eggs & egg products					
Production	540	663	652	602	668
Import	24	32	51	87	84
Export	318	491	510	439	466
Domestic use	175	204	193	249	286
Milk and dairy products					
Production (milk base)	11,851	12,525	11,273	11,280	11,155
Import	1,009	1,037	708	907	1,038
Export*	1,397	1,544	1,344	1,484	969
Domestic use	2,305	2,491	2,239	2,244	2,089
Meat & meat products (in carcase weight)					
Production	2,169	2,609	2,894	3,000	2,873
Import	232	182	318	549	757
Export	1,358	1,672	1,966	2,230	2,313
Domestic use	1,022	1,107	1,244	1,324	1,329

* in 2000: no butter included

Note: orignal products and processed products can have a different specific gravity but are added up together

Source: LEI (2002), p. 205-207

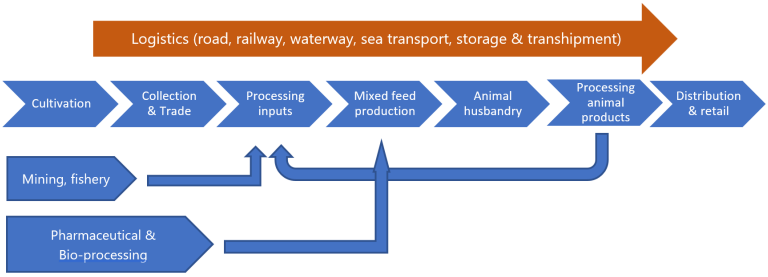
Around 1990's, about 60% of the animal production (eggs, meat, dairy) was exported, mainly to EU member states. A substantial part of the export of animal products is to densely populated areas in the Ruhr area (Germany) and Paris (France).

Also, for the export of these animal products, the well-developed infra-structure for distribution of animal products provided a competitive advantage. The transport to important sales markets like Ruhr area and Paris, is relatively easy and nearby via road and railway.

2.4 Consequences of these market conditions

The specific situation of the Dutch animal production value chain (figure 2), because of the aforementioned factors, is the high dependence on imports of animal feed raw materials on the one hand and the export of the produced animal products on the other (figure 3).

Figure 2.2 Flow chart of Animal Production Value Chain



Explanation value chain steps:

Cultivation:	Arable production of grains (cereals, oil seeds, pulses, etc.), sugar cane sugar beets, cassava, palm nuts, coconuts, etc.
Collection:	The purchase of grains from farmers, often during harvest time, and the storage of these grains in storage facilities intended for further distribution.
Trade:	Buying and selling of crops, feed raw materials and processed products alongside the feed value chain.
Processing inputs:	Output of processing arable products, like oil seed crushing, corn refinery, sugar cane and sugar beet processing, cereals milling, potato processing.
Mining, fishery:	Sourcing mineral from the soil and catching fish with the intention to process is to use the products as a feed material
Pharmaceutical & bioprocessing:	The production of micro-components like antibiotics, anti-coccidiosis, flavours, colouring agents, enzymes, microorganisms, plant cell, etc.
Mixed feed production:	The production of highly complex compounds that are composed of several single feeds and selected additives and thus individually cover the specific, current nutrient requirements of the different animals
Animal husbandry:	Keeping of farm animals like pigs, broilers, laying hens, dairy cattle, beef cattle, etc. commercially
Processing animal products:	Slaughtering broilers, pigs, processing milk, eggs and further processing of aqua produces
Distribution & retail:	Wholesale and final sale to consumers

Benefits and strengths

The flexibility of sourcing feedstuffs from all over the world enabled the Dutch animal production value chain to be very competitive, because feed cost was (and still is) a substantial part of the animal production cost. Especially before the reforms of the European agricultural policy, when the cereals prices within the European Union market were relatively high compared with the world market. Meanwhile, the feed industry was able to import relatively cheap cereal substitutes (like tapioca and oil seed meals) due to WTO agreements.

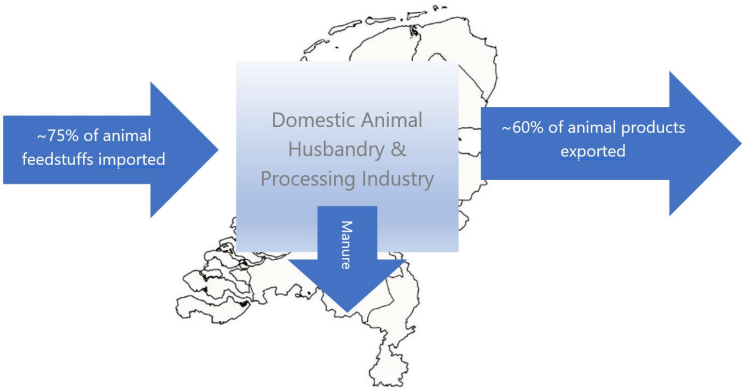
The animal production value chain (dairy processing, eggs processing, slaughterhouses) took advance of the opportunities of the free European economic market, exploiting the needs in this market. Growing prosperity led to more demand for animal products and the Dutch industry could penetrate due to its competitive market position and strong international orientation.

Weaknesses and threats

The weaknesses and threats considered in this context are focused on animal safety. The many and different origins were associated with unknown risks in the countries of origin and a long and complex logistics chain. If a contamination with an undesirable contamination occurred in the beginning of the supply chain, it could result in an uncontrollable contamination of mixed feeds downstream. The high share of imported feedstuffs from abroad could also be a high risk of feed safety emergencies. This made the Dutch feed industry vulnerable from the feed safety perspective. In the next chapter, you can learn about some feed safety issues and incidents that occurred in the Dutch feed industry in the eighteens and nineteens of the 20th century.

On the other hand, the strong dependence on exports made animal production highly vulnerable. Whenever reports about feed-related issues appeared in the media, they immediately triggered critical questions from international buyers of animal products. The consequences were stagnating sales and downward pressure on prices, ultimately leading to financial losses. This vulnerability was further intensified by the increasing saturation of the retail and consumer markets. As a result, the sector's focus gradually shifted from "quantity" to "quality," with the quality of animal products becoming a key competitive factor.

Figure 2.3 Import and export dependence of the Dutch Animal Production Chain



Note:

This typical market situation also inevitably led to excessive manure production, resulting in environmental problems. An important change was the introduction of the system of application standards for manure and the introduction of the mineral declaration system in 1990

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3

PRECURSORS TO THE GMP+ SCHEME: BEYOND ECONOMICS AND MARKETS

3.1 Introduction

This chapter explores the key non-economic factors that played a critical role in paving the way for the GMP+ Feed Safety Assurance scheme. While economic and market forces, mentioned in the previous chapter, undoubtedly influenced its development, several other crucial political, cultural and technological factors converged during the 1980s and 1990s, sparking a heightened focus on feed safety among governmental organizations. This chapter delves into these important factors, providing a comprehensive understanding of the broader context that led to the emergence of the GMP+ scheme.

This chapter sheds light on three primary drivers in the broader context:

1. **Best practices and guidelines:** The development of code of practices and HACCP principles by Codex Alimentarius (a joint initiative of FAO and WHO) provided valuable frameworks for implementing effective feed safety measures. This section will explore their impact and significance.
2. **Regulatory framework**: The evolution of regulations by the European Economic Community (now the European Union) played a pivotal role in shaping feed safety standards. Crucial legislative advancements will be highlighted.
3. **Technological advancements**: The emergence of new laboratory techniques significantly enhanced the ability to detect and monitor potential hazards in feed, leading to a need for improved control measures. This section will delve into the role of technological advancements in driving change.