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March 1995

Mini-symposium on Quality Systems

Proceedings of the Mini-symposium on Quality Systems,
organized by RIKILT-DLO on November 17, 1994

Dr. J.P. Hoogland (editor)

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ABSTRACT

Mini-symposium on Quality Systems

Proceedings of the Mini-symposium on Quality Systems, organized by RIKILT-DLO on 17 - 11 - 1994

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Dr. J.P. Hoogland (editor)

State Institute for Quality Control of Agricultural Products (RIKILT-DLO)
P.O. Box 230, 6700 AE Wageningen, The Netherlands

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This report contains the proceedings of a Mini-symposium on Quality Systems, organized by the State Institute for Quality Control of Agricultural products (RIKILT-DLO) on 17 november 1994. Experts in the field of animal agricultural production presented lectures on the development of quality systems for milk, pigs, poultry and animal feedingstuffs. Lectures on the Dutch Quality Programme Agricultural Products and certification of the Dutch National Inspection Service for Livestock and Meat were delivered.

Keywords: quality systems, agricultural products, pigs, poultry, milk, animal feedingstuffs, meat inspection service

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Integrated Quality Control in the Netherlands (IKB) for Pigs

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Over the last years, national and international competition with respect to the production of pigs and pig meat has intensified. Also it became clear that production should become more market/consumer oriented. For these reasons, a research project on integrated quality control (IKB) was started in 1986. The aim of this project was the development of better control and quality guarantees within the whole production chain. Specific goals were:

- a] to obtain better safety and quality guarantees
- b] a better image of the product and the production process
- c] modernisation of meat inspection
- d] improvement of animal health care and welfare
- e] better farm production management
- f] to establish cooperation within the whole production chain

After evaluation of the project, IKB was started in the field in september 1992. For this purpose, regulations were issued by the Product Board for Meat (PVV). Near the end of 1994, a number of 20 slaughterhouses and more than 3300 farms producing 5.5 million pigs participated in IKB. Participation sofar is voluntarily.

In IKB, slaughterhouses act as manager of the production chain. They are responsible for admission of farms, the control of farms and certification. External control is done by TNO-ICM; important aspects are: admission control, control of the chain (twice a year) and random sampling of farms. Important features of IKB for slaughterhouses are: a Good Manufacturing Practice code, identification and registration of animals, separation of animals from IKB- and not-IKB farms in space and/or time and feed back of information to the pig fattener.

Pig farms, entering the IKB programme, must produce according to rules which cover the identification and registration of animals, administration (delivery forms, a logbook for the use of veterinary medicins) and the separate delivery of animals to the slaughterhouse. Feed must be ordered by feed mills which are working according to the GMP-code for feed mills. Medical care must be performed by a veterinarian who is working according to Good veterinary Practice. Only a limited number of veterinary medicins are allowed to be used during the fattening period. With respect to hygiene it is stipulated that the pig farm is managed according to the GMP-code for pig husbandry.

Why IKB?

- consumer oriented production (= market oriented)
- better control and guarantees within the whole production chain
- intensified (inter)national competition
- responsibility there were it belongs

Goals of IKB

- better safety and quality guarantees
- improving consumer image
- modernising meat inspection
- improving animal health care and welfare
- better farm production management
- cooperation within the whole production chain

Research and Development IKB pig production

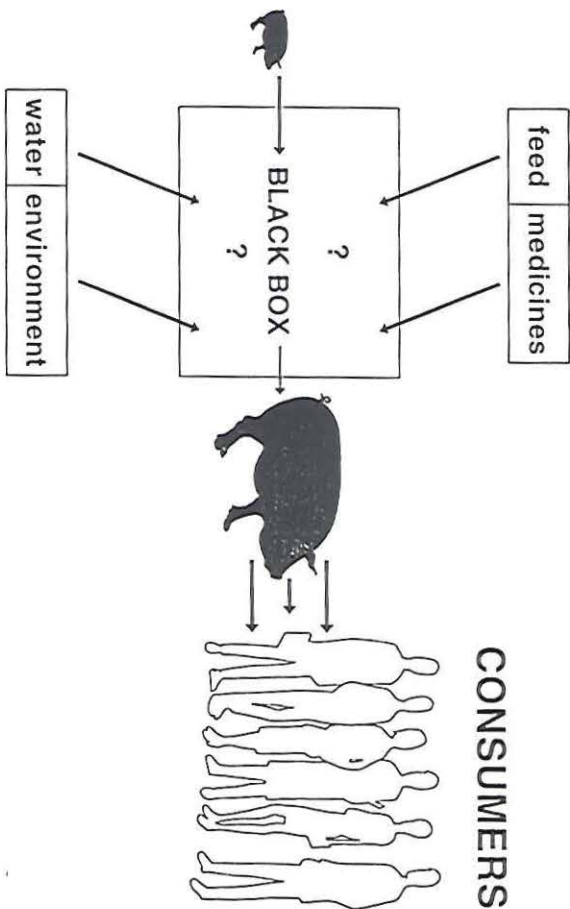
September 1986:
Start of the research project IKB

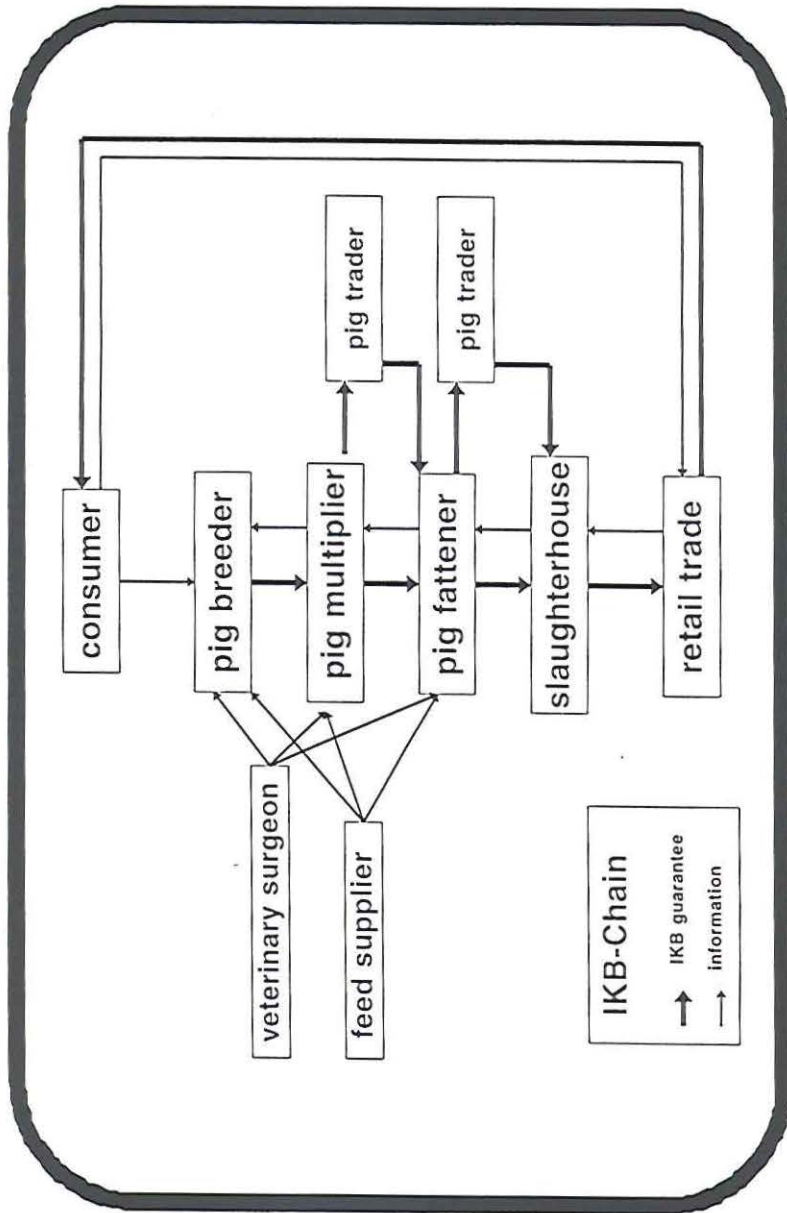
September 1992:
Start of IKB in the field
(voluntary participation)

Year	farms no.	pigs no.	slaughter houses no.
1992	300	1 milj.	9
1993	1500	3 milj.	12
1994*	3305	5,5 milj.	20

* october 1994

PIG PRODUCTION





Slaughterhouse for pigs**

- Manager of production chain:
 - * admission control farms
 - * 2* year control farms
 - * IKB-certification
- Identification and registration
- GMP-slaughterhouse
- Separation (space or time)
- Information -----> pig fatterer

** External controlled by TNO/ICM
 admission control
 2* year chain control
 random sampling farms



Pig farms

- Identification and registration (origin)
- hygiene (GMP-codes)
- Residues (GMP-feed)
- Medicines (GVP-vet.)
- separated delivery
- administration
delivery forms (IKB-worth)
logbook (use of medicines)



Quality Programme Agricultural Products

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Over the last years, the Quality Programme Agricultural Products (Q.A.P.) was developed. The programme was initiated by the Dutch Ministry of Agriculture, Nature Management and Fisheries because of ongoing publicity about residues and contaminants found in agricultural products and food. Q.A.P. is a joint programme of agri-business and government with regard to safety and quality of agricultural products and food. The aims of the programme are:

- a) to contribute to the control of problems associated with residues and contaminants
- b) mainly by providing information on residues and contaminants
- c) if possible to support the image of Dutch agricultural products in national and international markets.

In order to reach these aims, agreements were made between the Dutch government and agri-business. Also a number of governmental institutes are participating. The participation of industry is remarkable because residues and contaminants normally mean negative publicity. The participants provide Q.A.P. with information on residues and contaminants in agricultural products. In this way nearly 200,000 results of monitoring are downloaded in a central computer each year. The database is organised in such a way that the information can be grouped and comparisons can be made. With this instrument, Q.A.P. can generate and publish information for participants, public organizations (consumers organizations), agri-business national and international trade. The first annual report was published in October 1994. In this annual report information on several product groups were given:

Several environmental contaminants were analyzed in different types of fish, caught in polluted areas (so-called critical waters). In the report, for instance, information on the PCB content of codfish and herring (coastal waters), as well as information on mercury, chlorinated hydrocarbons and radio activity in pike perch (sweet water) was given. Over the years a downward trend can be shown for most contaminants; no exceeding of maximum residue limits (as laid down in the Dutch Food Act or Pesticide Act) were found for heavy metals, chlorinated hydrocarbons and radio activity. In a few polluted areas a slight exceeding of the maximum level for PCB-135 was found.

Approximately 11,000 measurements were made on **vegetables and fruits**. Data were collected on pesticides and nitrate. It appeared that the number of measurements was almost equal to the number of determinations in the US; in general, Dutch products appeared to contain less residues than imported products.

One advantage of Q.A.P. is that relations can be made clear, for instance the relation between the aflatoxin B₁ content of cattle feeds and the concentration of aflatoxin M₁ in **milk**. An agreement on the control of aflatoxin B₁ in **cattle feed** led not only to a decrease of the aflatoxin B₁ level in feed, but also to a decrease of the level of aflatoxin M₁ in milk.

Control of **meat and livestock** is carried out in accordance to EG legislation. More than 115,000 animals were examined in 1993.

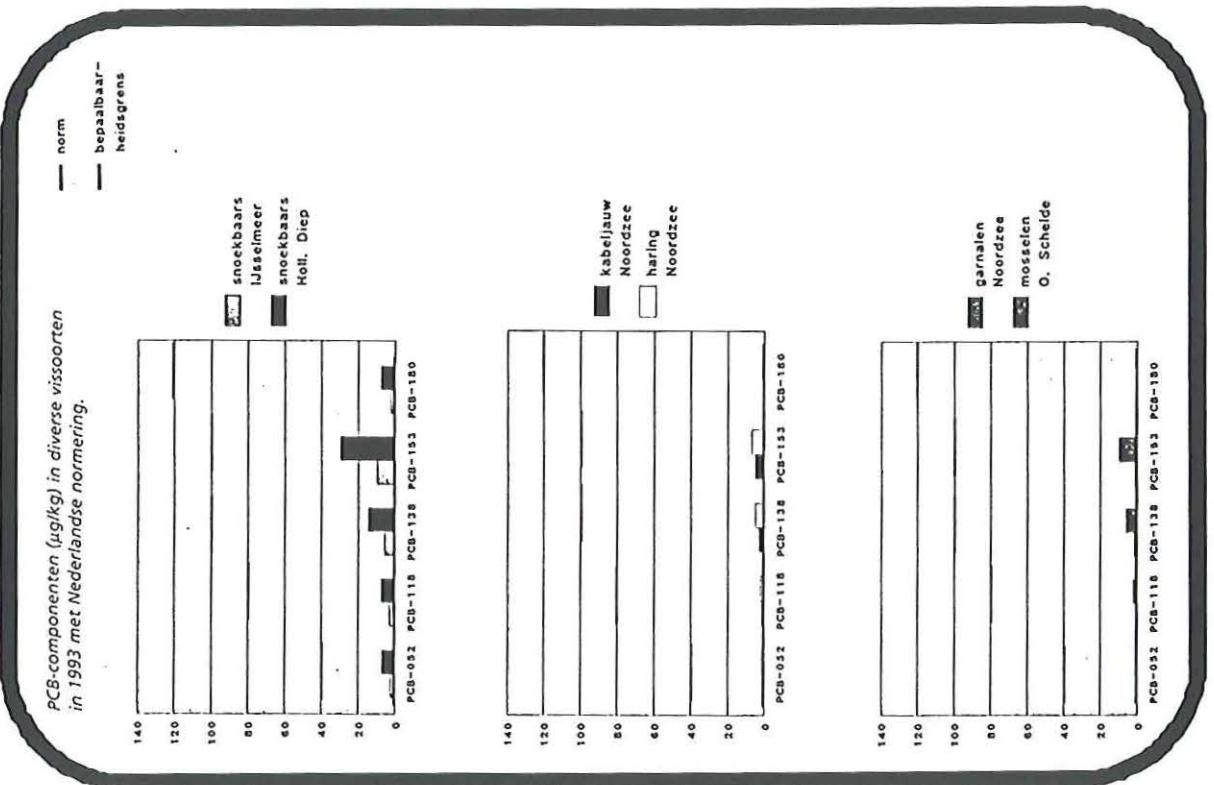
Over the years a downward trend can be found with respect to antibiotics, veterinary drugs and related compounds. International comparison is difficult because of differences in sampling and analytical methods. Also there are different maximum residue levels in some countries.

At this moment no data on poultry is available; this is considered to be a drawback.

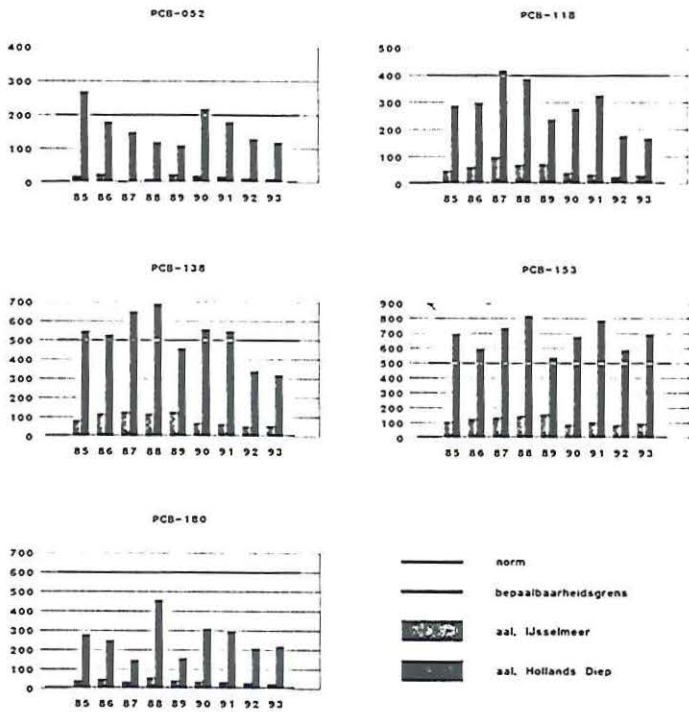
Source: Q.A.P. Annual Report '93 (KAP Jaarverslag 1993)



KWALITEITSPROGRAMMA AGRARISCHE PRODUCTEN

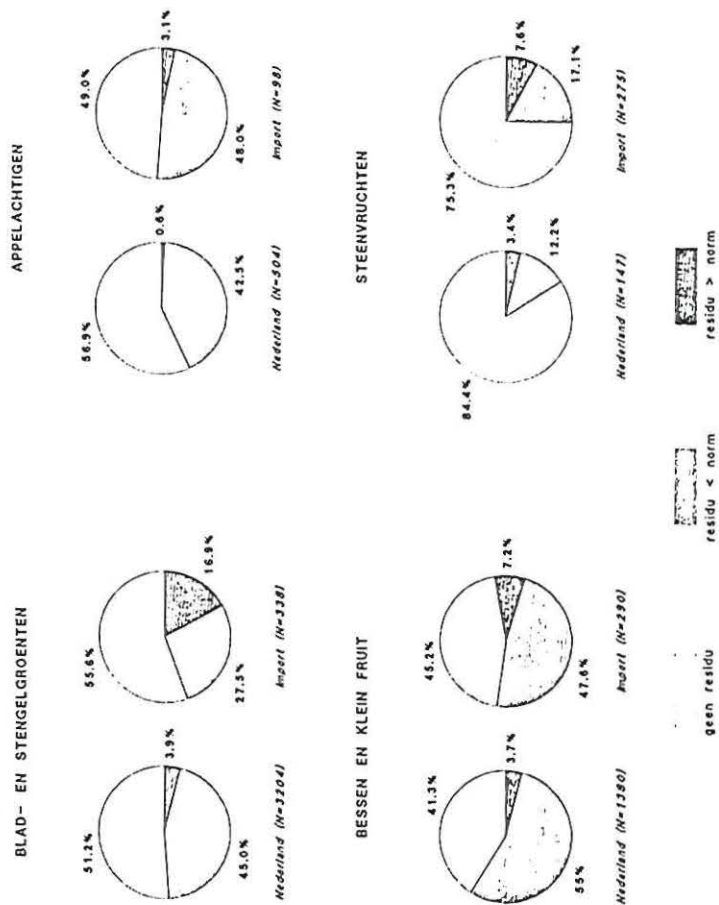


PCB-componenten ($\mu\text{g/kg}$) in aal uit Nederlandse binnenwateren per jaar met Nederlandse normering.

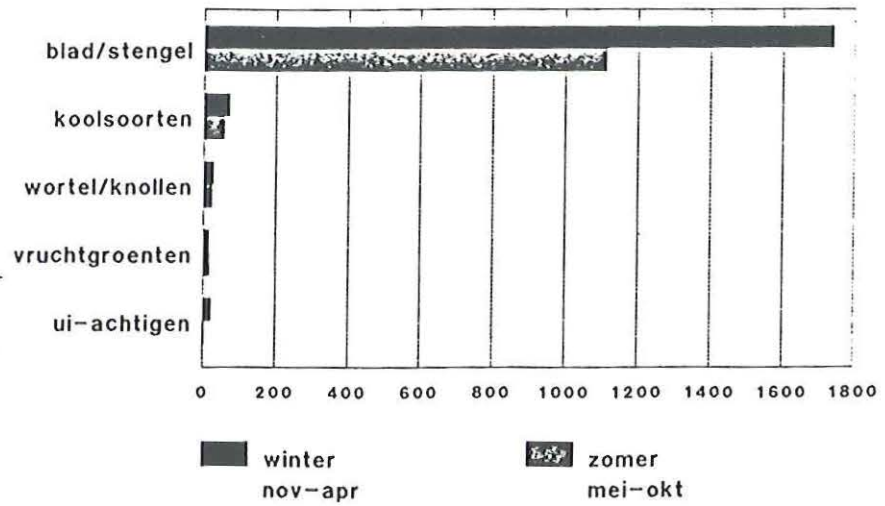


Bron: Landbouwwaadviescommissie (LAC, RIVO-DLO)

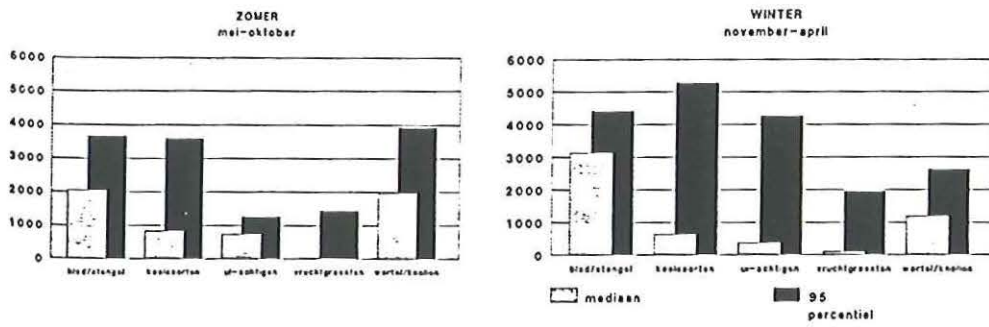
Percentage monsters zonder/met residuen van bestrijdingsmiddelen in Nederlandse en import groente- en fruitsoorten in 1993.



Monstername (aantal) van verschillende produktgroepen uit Nederland per jaargetijde voor de meting van nitraat in 1993.

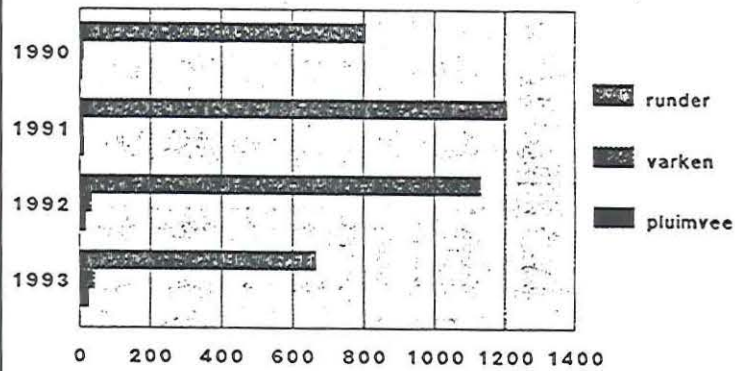


Nitraat (mg/kg) in verschillende produktgroepen uit Nederland per jaargetijde in 1993.

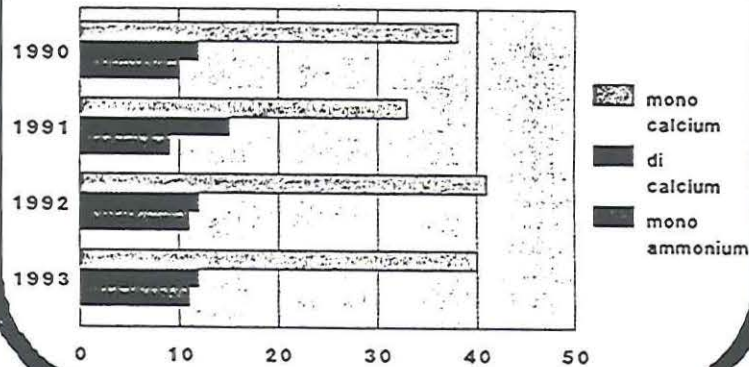


Monstername (aantal) diervoeders en diervoedergrondstoffen onafhankelijk van herkomst voor de meting van aflatoxine en cadmium (1990-1993).

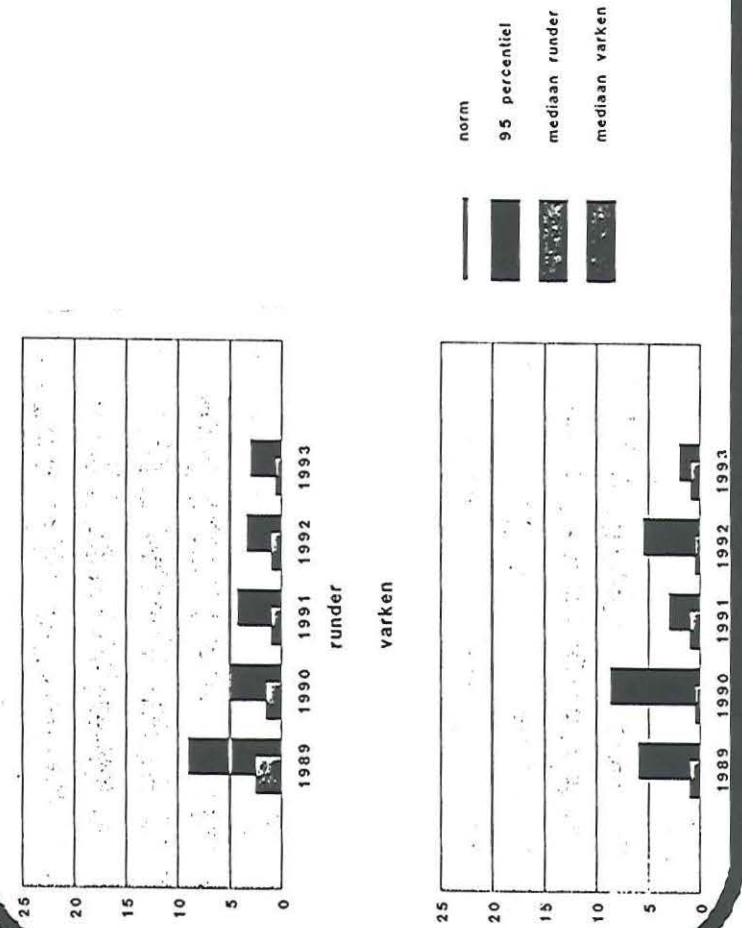
aflatoxine B1, mengvoeders



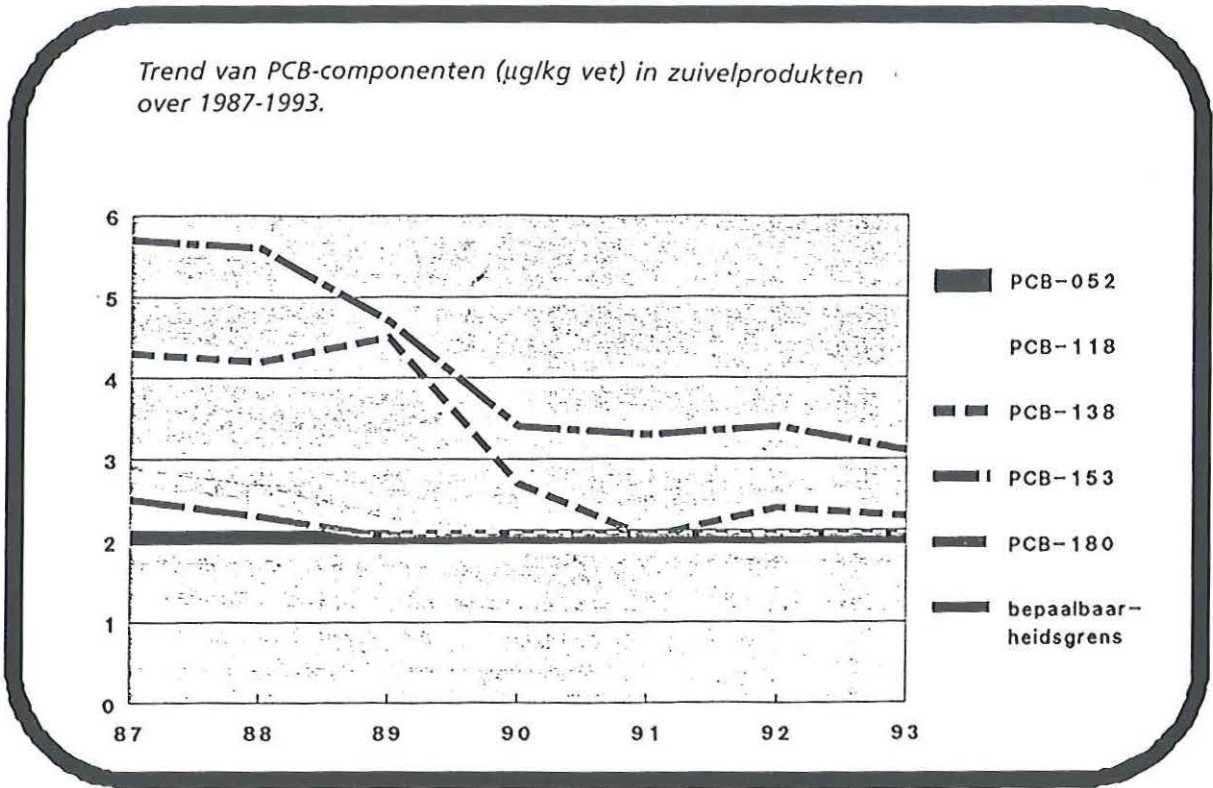
cadmium, voederfosfaten



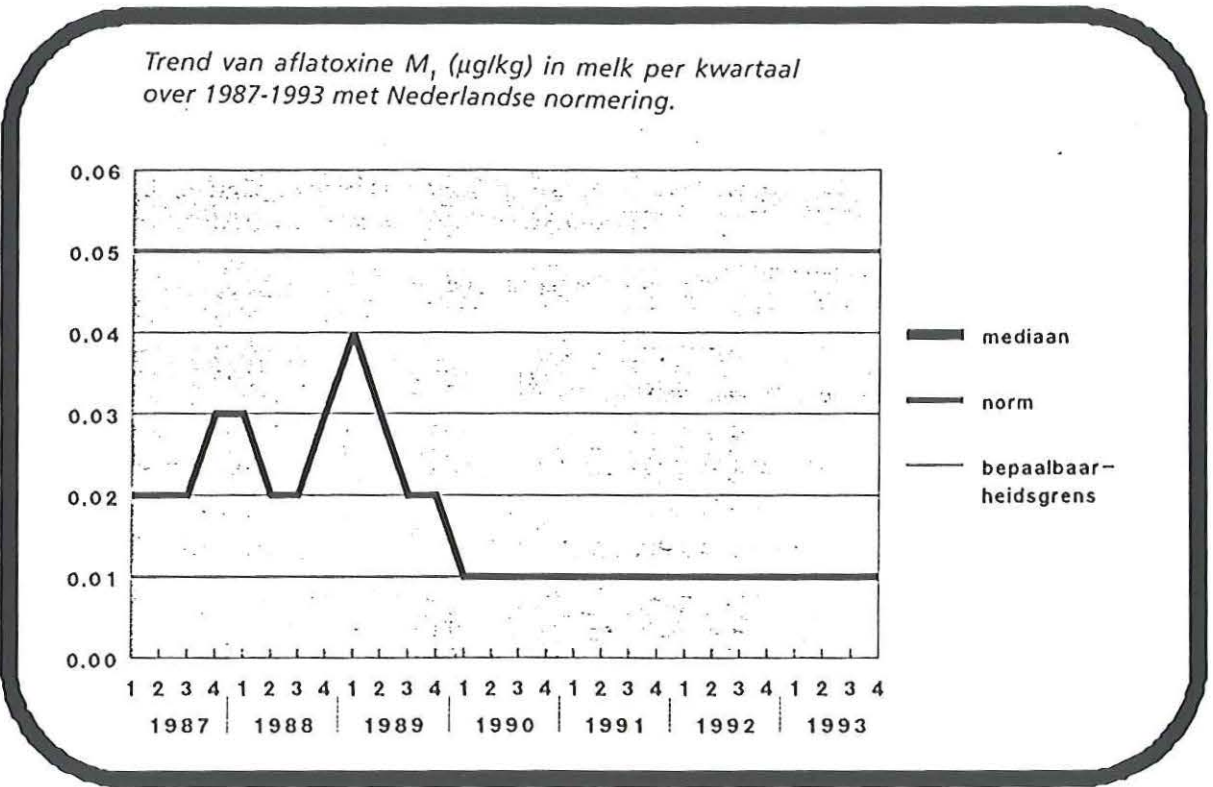
Aflatoxine B₁ (µg/kg) in mengvoeders voor runderen, varkens en pluimvee onafhankelijk van herkomst per jaar met normering.



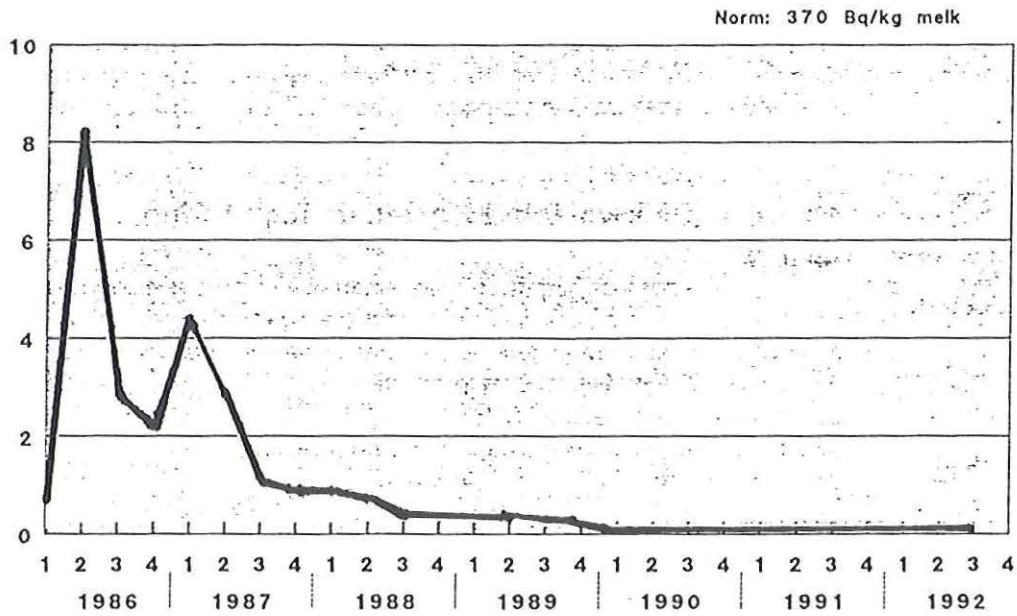
Trend van PCB-componenten ($\mu\text{g/kg}$ vet) in zuivelprodukten over 1987-1993.



Trend van aflatoxine M₁ ($\mu\text{g/kg}$) in melk per kwartaal over 1987-1993 met Nederlandse normering.



Trend van Cesium-134 + Cesium-137 (Bq/kg) in melk per kwartaal over 1986-1992.



Quality Assurance in the Netherlands - Poultry

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In the Netherlands quality assurance programs (Integrale Keten Beheersing, IKB-programmes) for broilers, turkeys and eggs are developed on the principles of certification (analogue to ISO procedures) of the participating production companies. The product Board for Poultry and Eggs (PPE) incorporates these principles in optional regulations to give these programmes a structure for certifying and controlling. The objective is that participants can claim an added value in their presentations to consumers.

The Dutch poultry production chain is usually presented as a pyramid with the poultry breeding organisation at the top and the processing industry at the bottom. In the future, however, it is marketing targeted at the consumer which will predominate, the consumers in this case being the purchasers of poultry products from supermarkets and/or retail trade. The purchasers translate the wishes of their clients into purchase needs. The Product Board for Poultry and Eggs has developed an IKB programme for broilers and is now in the final stage of the programmes for turkeys and eggs. The aim of these programmes is to be able to predict and reproduce a safe, responsible product originating in a recognised and certified production system. In this way the consumer can be provided with a better guarantee that his wishes are being met. This development will make it possible to convince consumers that the Dutch poultry sector is able to supply products for the upper market segments. Participants are permitted to establish their own level above the IKB norm and are even encouraged to profile their own USP's (Unique Selling Points) so that they can present their companies with an extra image. It is very important to stress, however, that IKB certification is awarded to production companies which adhere to very strict standards, **IKB is not a product guarantee.**

The standards which are the basis for the description of the production process are the basic starting point for company certification and are targeted on the following aspects of production:

- The production facilities must be properly cleaned and disinfected and geared to an optimal production.
- Measures must be taken to avoid disease or contamination.
- There must be a code of information.

- Good Hygiene Practice (GHP) codes must be drawn up and will, after approval of the Product Board for Poultry and Eggs, form the expanded microbiological module.

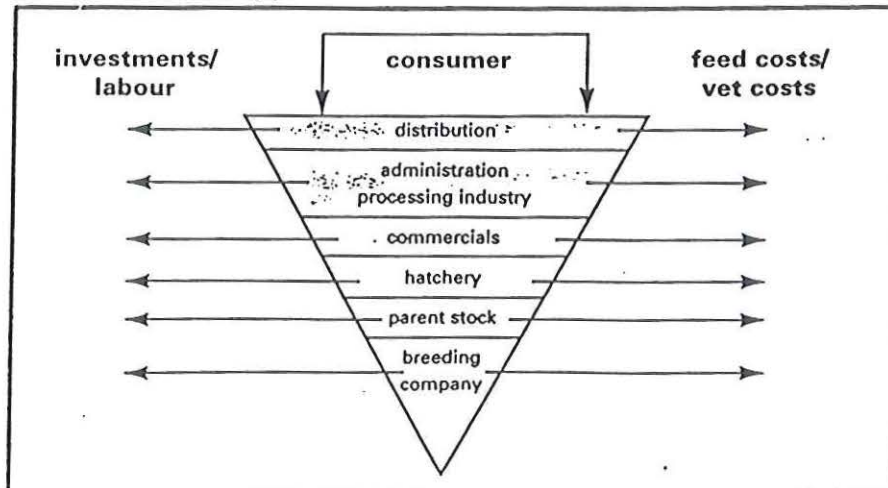
The standards required for the certification of, for example, a broiler farm would look like this:

- A division of the plant into a buffer area and a clean house area with footwear for each house and an overall for each farm.
- Properly regulated cleaning and disinfection of broiler houses with regular controls.
- The maintenance of a logbook and the transfer of information to the customer and the supplier.
- Supply of feed from companies which are recognised in the framework of the GMP programmes of the Product Board for Animal Feed.
- Supply of day-old chicks from hatcheries which are recognised as IKB members of the programme of the Product Board for Poultry and Eggs.
- A veterinarian, working according to the Good Veterinarian Practice Code, is employed to carry out the veterinary supervision of the broilers.

The regulations include admission, certification, supervision and sanction procedures. An independent organisation which operates on behalf, and under the jurisdiction, of the regulatory body (the Product Board as far as the initial system certification and the securing of internal audits are concerned will perform the external audits. A producer will be recognised as a participant by means of a certification audit. The monitoring audits which relate to the implementation of the pre-conditions will be carried out with a different minimum intensity according to the steps of the relevant production chain.

The final stage can be considered a success when a large part of the Dutch production capacity is participating in IKB programmes. The target level is 60-80% of the production capacity within a two to three year period. Participation is not restricted to Dutch companies. Certification is valid for a period of three years, with supervision being carried out by the internal auditor. Action can be taken against a company which, during this period of supervision, is shown to have deviated from the norm. Unless the deviation is corrected within the permitted period, the name of the company will be removed from the IKB register of participants. This means that the company may no longer derive rights or claim benefits from the IKB programme.

Production pyramid interaction.



DATA

- pilot projects (1985)
- development IKB (1985 - ...)
- start IKB-broilers (september 1992)
- start IKB-eggs and IKB-turkey (early 1994)

GOAL OF IKB-PROGRAMS:

to produce a safe and reliable produkt that originates from a system with guaranteed control of production and processing

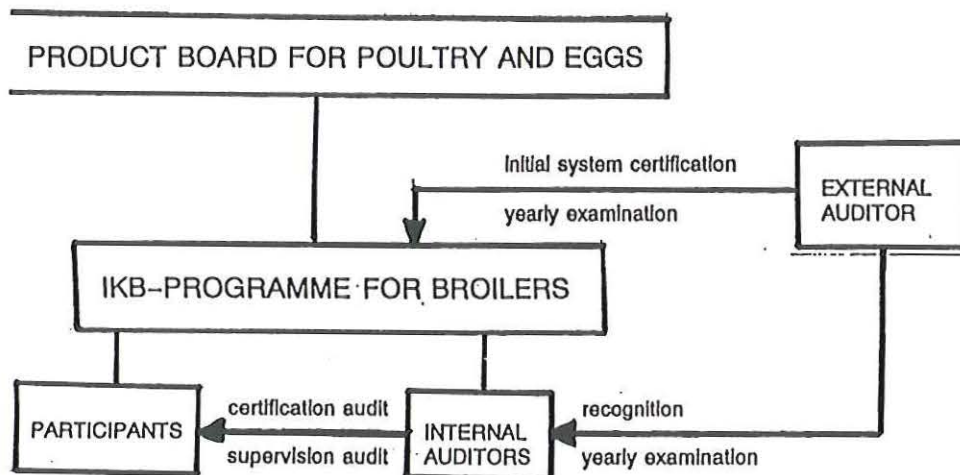
TARGET GROUP: purchase departments of retailers, they are the bottle-neck to reach the ultimate consumers' budgets.

OBJECTIVES of purchasers:

- scheduled margin without losing turn-over rates;
- the product should be of a good, reliable and predictable quality, without the risk for negative publicity.

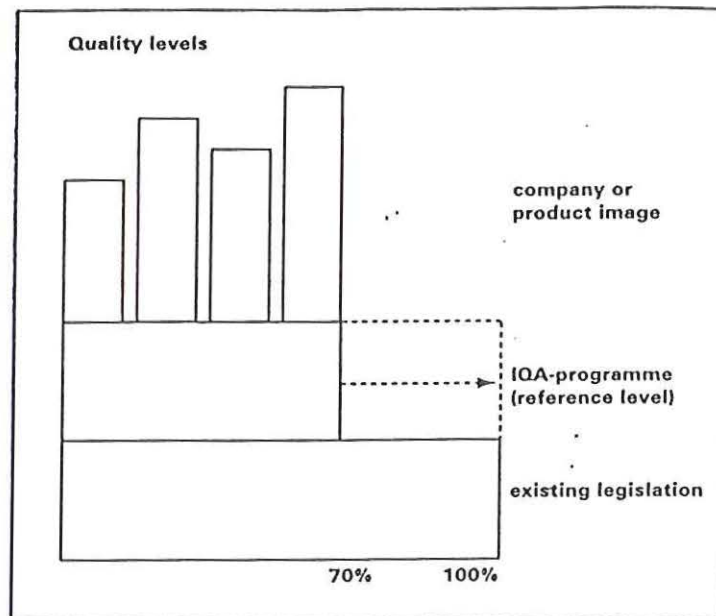
For the FUTURE the marketing/consumer targeted concept will predominate.

The CASH-FLOW coming from the end-consumers/the household budgets is the only cash-flow towards the column.



RECOGNITION / CERTIFICATION STANDARDS ARE BASED ON:

- production facilities must be properly cleaned and disinfected and geared to an optimal production;
- measures must be taken to avoid infections;
- registration of information and feed back/through of information;
- Good Hygiene Practice (GHP) codes will form the expanded microbiologic module.



Added value from certification.

METHOD

- certification standards and checklist
- positive certification audit
- supervision audit, in case of deviation followed by a correction period
- in case of no correction followed by removal from the IKB-register of participants

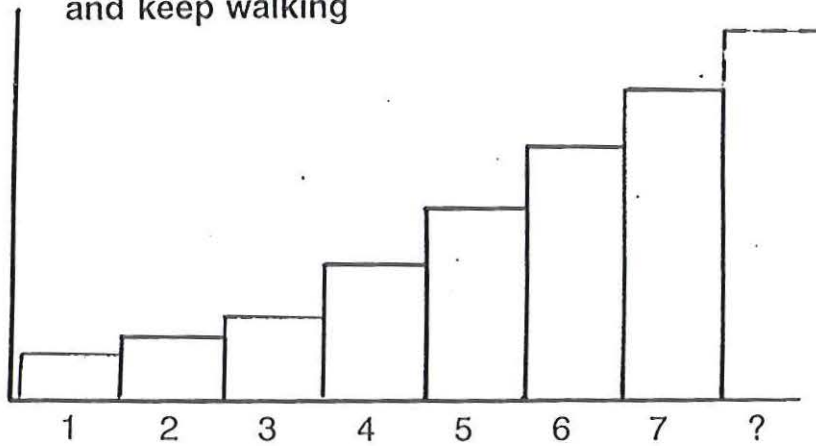
IKB IS A CERTIFICATION OF INDIVIDUAL PRODUCTION SYSTEMS AND IS NOT A PRODUCT QUARANTEE

FLEXIBLE "FINAL" STAGE

- IKB-principle analog to ISO-standards
- optional regulation drawn by the Product Board
- from GPS-level up untill processing industry
- external audits
- internal audits
- target is 60 to 80 % of production capacity
- participation in not restricted to Dutch companies

STAIRWAY TOWARDS QUALITY

start at the first level,
take the next step when you are ready
and keep walking



Quality Systems in the Dutch Animal Feedingstuffs Industry

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During the last decades the concept of agricultural production chains developed. Consumer awareness and scientific development both played an important role in this process. From about 1980, it became clear that the production of animal feedingstuffs is an integral part of the production of food producing animals: the quality of feedingstuffs is affecting the quality of animal products. Clear evidence for this was found in the contamination of pork meat with residues of sulfonamides, and in the presence of residues of nicarbazin, a coccidiostatic feed additive, in eggs. In both cases the residues were caused by contamination of compound feedingstuffs, due to the semi-continuous production process used in the animal feedingstuffs industry ('carry over'). Furthermore it was found that, due to the presence of the mycotoxin aflatoxin B₁ in feedingstuffs for dairy cattle, a highly toxic metabolite (aflatoxin M₁) could be present in milk.

After the 'lead affair' - feedingstuffs, heavily contaminated with a lead containing mineral, caused dead and sick animals in The Netherlands and United Kingdom - the Dutch Minister of Agriculture, Nature Management and Fisheries asked the Dutch Commodity Board for Feedingstuffs (VVR) for a plan to monitor and to assure the quality of animal feedingstuffs. This plan was ready in 1991. It contained three main topics:

Definition of Quality: basic and additional quality were distinguished. Basic quality are all properties which are important in relation to the safety of man, animals and environment. Additional quality is related to all other aspects. producers and clients may agree upon. With respect to basic quality several items were identified, for some of those items action was proposed. In the plan, the importance of 'carry over' of veterinary drugs and medicinal feed additives was acknowledged. A procedure to establish the properties of mixing installations, using a tracer, was developed and also research was done to measure the properties of drug and additive formulations, with respect to 'carry over'. This knowledge must lead to a system where bad combinations (bad additives in an ill-performing feed mill) can be excluded and where a necessary number of clean runs can be calculated in other cases. In this way a powerful tool will be developed which, together with a strict production sequence, will help to create a system in which the production of feeds can be scheduled in a way so that no 'carry over'

from veterinary drugs or feed additives to sensitive feeds can occur (for laying hens, but also for dairy cattle and finishing feeds).

The second important issue in the Quality plan was *quality assurance*: several GMP-codes, for instance for the compound feed industry and premixture production were developed. The industry is free to work according to these codes. At the moment, more than 90% of the annual production is produced in compliance with the GMP-codes. An important factor is that in codes for other parts of the production chain, for pigs, poultry etc., producers are required to order the feed by companies which are in compliance with the GMP-codes. The codes are derived from the ISO9000 series. Special attention is given to measures to control the spread of microbiological contaminations, especially salmonella.

With regard to quality assurance, it is further felt that, since the industry will have to do a considerable part of the control activities, adequate analytical methods to perform this task must be available. Therefore, VVR is compiling a method book, in which all necessary methods for animal feedingstuffs will be present. Methods will be developed, if necessary and furthermore, much attention is given to the harmonization of methods: in CEMA, the expert committee on methods of analysis of the EC but also in ISO and CEN technical committees: the ISO committee has been reanimated after a period of standstill for more than five years; this committee is now operating again with a Dutch secretariat and a Dutch chairman. A Dutch proposal to come to a CEN expert group on animal feedingstuffs is currently under discussion.

Finally there is the matter of *control*: an inspection service has been set up by the Commodity Board. This inspection service (KDD) is responsible for audits at the feed mill to check if the company is in compliance with the GMP-codes. Furthermore, the KDD is doing the primary control. If, based on KDD results, suspect feeds are found, the official control (General Inspection Service, AID, a part of the ministry of Agriculture, Nature Management and Fisheries) is notified and if necessary, further action is taken by the General Inspection Service.

Last but not least there is a possibility for laboratories, of the feed industry, or working for the feed industry, to be engaged in collaborative studies. The aim of these studies is to generate data on the performance of laboratories: if a laboratory scores badly in a collaborative study, this could mean that the performance, with respect to that particular analysis is not good. If necessary, action must be taken by the lab. Engagement in this type of collaborative study is currently on a voluntary basis at the moment, but probably will be an obligation in the GMP-code for laboratories which is currently developed.

1960



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HCH contaminated soil

1970

1980

*residues of sulfadimidine
in pork meat and liver*

residues of nicarbazine in eggs

1990

lead affair / dioxine

Quality Management Plan



rikilt - dlo

Nicarbazine (NCB) in Eggs

Eggs were sent back from Germany due to the presence of low levels of NCB.

Experiments showed that low levels of NCB may lead to residues in eggs and that NCB is very persistent in mixing equipment.



rikilt - dlo

Definition of Quality



Basic



Additional

Focus on basic quality aspects:
safety for man, animal and
environment:



additives



equipment



contaminants



MRLs



tolerances



rikilt - dlo

Quality Management Plan for the Feedingstuffs Industry

Written and executed by VVR, the
Dutch Commodity Board for
Feedingstuffs, as result of a request
by the Minister of Agriculture,
Nature Management and Fisheries.

Three main points:



Definition of Quality



Quality Assurance



Control



rikilt - dlo

2 Quality Assurance / GMP-codes

Principle: the producer is responsible for the quality of his products and for internal quality control,

Several codes have been compiled, for instance for compound feeding-stuffs and for premixtures. GHP, 'Good Hygienic Production', with respect to *Salmonellae* is incorporated in GMP-codes.

A code for laboratories is also developed.



rikilt - dlo

Carry over of Feed Additives and Veterinary Drugs

Contamination of animal feed with medicinal substances is caused by semi-continuous production.

Carry over may lead to unwanted residues in edible products and commercial problems.

Carry over can be influenced by:



Equipment



Substances



rikilt - dlo

2a Quality Assurance

Development of analytical methods.

Normalization of analytical methods (national - compilation of a series of reference methods, international via CEN and ISO).

Reanimation of ISO TC 34/SC 10.

Installation of a CEN committee for methods for animal feedingstuffs.

Active participation in CEMA.



rikilt - dlo

2 Quality Assurance / GMP-codes

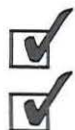


GMP-codes (derived from ISO 9000) have been introduced. More than 90% of the Dutch industry is in compliance.



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3 Control



GMP-codes
regulations

The VVR Inspection Service (KDD) is performing audits and primary control.

In case of suspicious results, the general inspection service (AID) is notified.

Collaborative studies (level checks) are organized by KDLL.



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Summary:

Voluntary GMP-codes in the feeding-stuffs industry are operational since 1992.

90% of total production is produced in compliance with GMP-codes.

Important points: control of (microbiological) contamination and carry over.

(Inter)national efforts to generate adequate control methods.

A considerable part of control is now done by KDD.

Payment System for Ex-Farm Milk in the Netherlands

Ing. R. Westerbeek, National Reference Centre, Dept. of Cattle, Sheep and Horse Husbandry

Runderweg 2
P.O. Box
8219 PK Lelystad
The Netherlands

☎ 31.3200.93311
Fax: 31.3200.26733

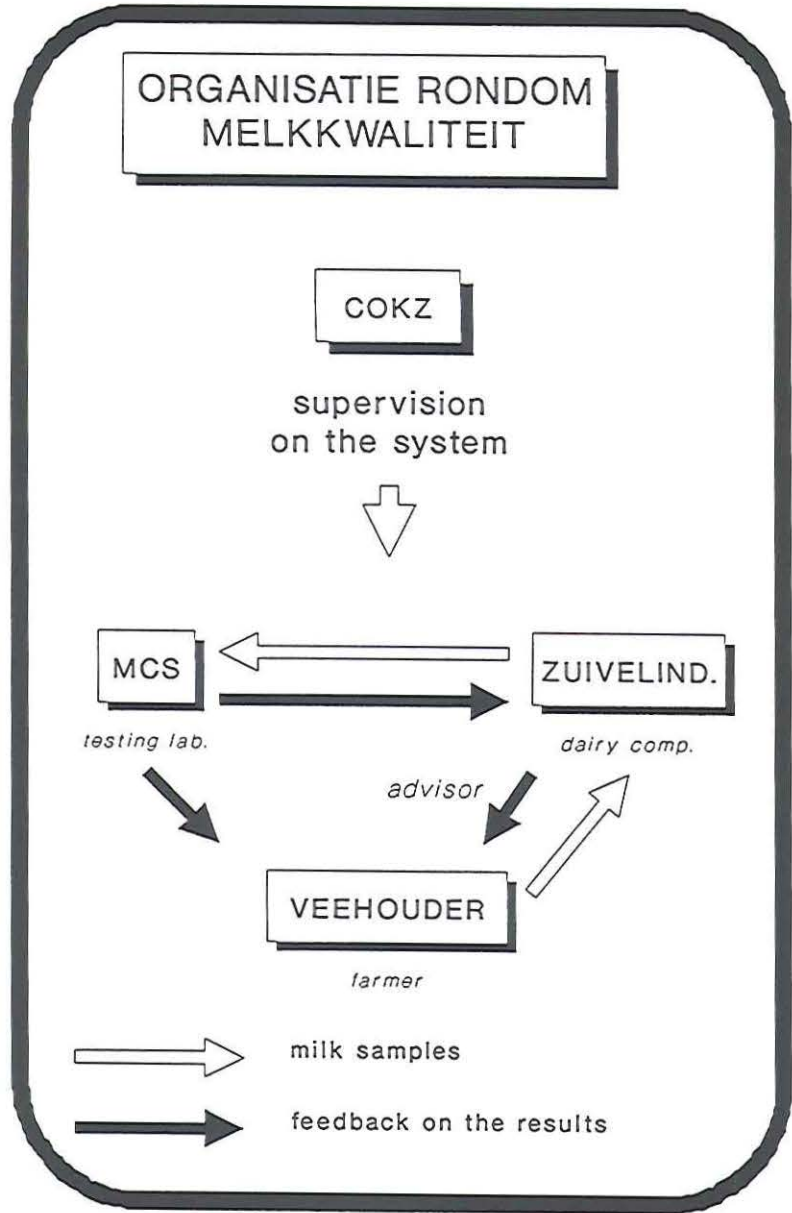
In the Netherlands a farmer delivers raw milk to the dairy-industry 5-6 times every 2 weeks. From each delivery a milk sample is taken for testing. One sample is used for testing on quality, the other samples are used for testing on composition. The results are used for milk pricing based on composition.

Raw milk is tested once every two weeks for hygienic quality on several standards. The system is equal to all farmers in the Netherlands. The standards are formulated by a central committee (Centraal Orgaan voor Kwaliteitsaangelegdheden in de Zuivel, COKZ) in which the dairy industry, farmers and government participate. The payment system is laid down in regulations of the Dairy Commodity Board (Produktschap voor Zuivel, PZ).

Each dairy company has one or more advisors. These advisors are the link between the company and the farmer. As soon as problems with the quality arise the advisor will contact the farmer, in order to prevent more problems. In this case the advisor will discuss the circumstances on the farm in order to improve them.

Also in other circumstances the farmer can call the advisor of the dairy company. In many cases the advisor will cooperate with people from other advisory services. Through this system of (product) quality control and feed back on the results big improvement have been made.

At the moment discussions are going on the use of Good Manufacturing Practice (GMP) codes on the dairy farm.



Certification of the Dutch State Meat Inspection Service

N.J.G. Broex, State Institute for Quality Control of Agricultural Products (RIKILT-DLO)

Bornsesteeg 45
P.O. Box 230
6700 AE Wageningen
The Netherlands

☎ 31.8370.75414
Fax: 31.8370.17717
E-mail: n.j.g.broex@rikilt.agro.nl

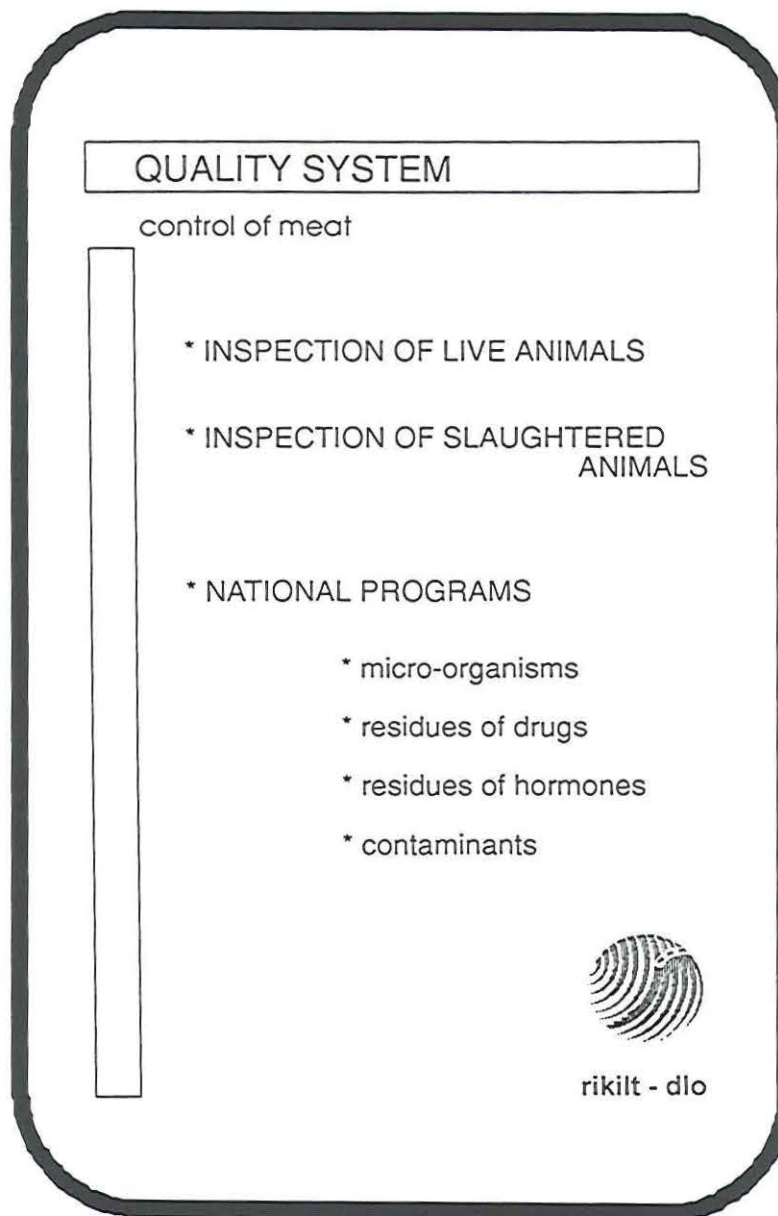
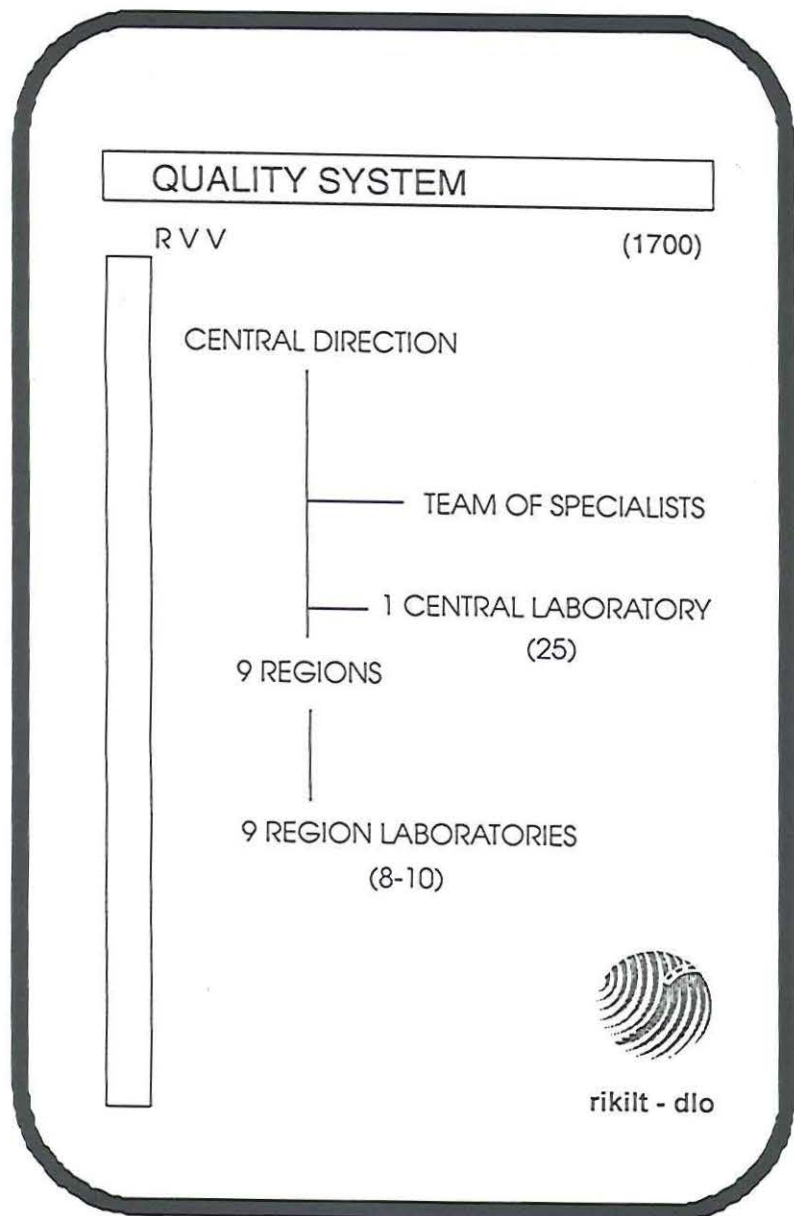
The National Inspection Service for Livestock and Meat is responsible for the inspection van livestock and meat before and after slaughtering. Slaughtering of animals may take place after approval of the livestock by a veterinarian. In support of this veterinarians, the inspection service has a number of laboratories for supplementary chemical-analytical, immunochemical and/or microbiological investigations.

In 1991 the direction of the National Inspection Service decided to prepare a quality assurance system for these laboratories. A special task force started on this project in 1992. In 1995 this work must be completed.

The quality system is published in a number of quality manuals. In these manuals, the management and organization of the laboratory, the responsibilities and the Standard Operating Procedures to carry out the laboratory investigations and the quality system, are described. The system is based on international ISO/IEC standards (guidelines), in particular:

- ISO/IEC Guide 25 'General Requirements for Competence of Calibration and Testing Laboratories' and
- EN 45001 'General Criteria for the Operation of Testing Laboratories'.

On the sheets is summarised the different steps to prepare and implement the quality system in a laboratory before accreditation by an independent accreditation authority.



QUALITY SYSTEM

criteria

- * EN 45001

- * GENERAL CRITERIA FOR THE
OPERATION OF TESTING
LABORATORIES



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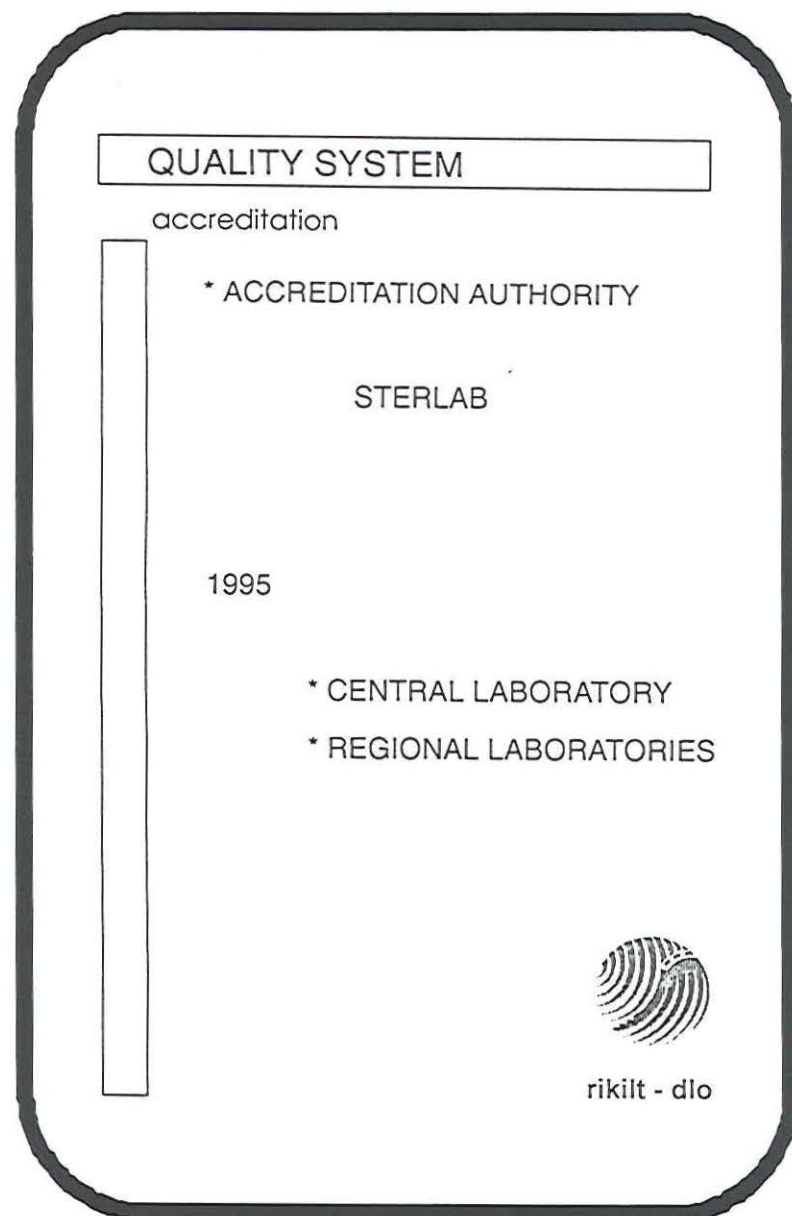
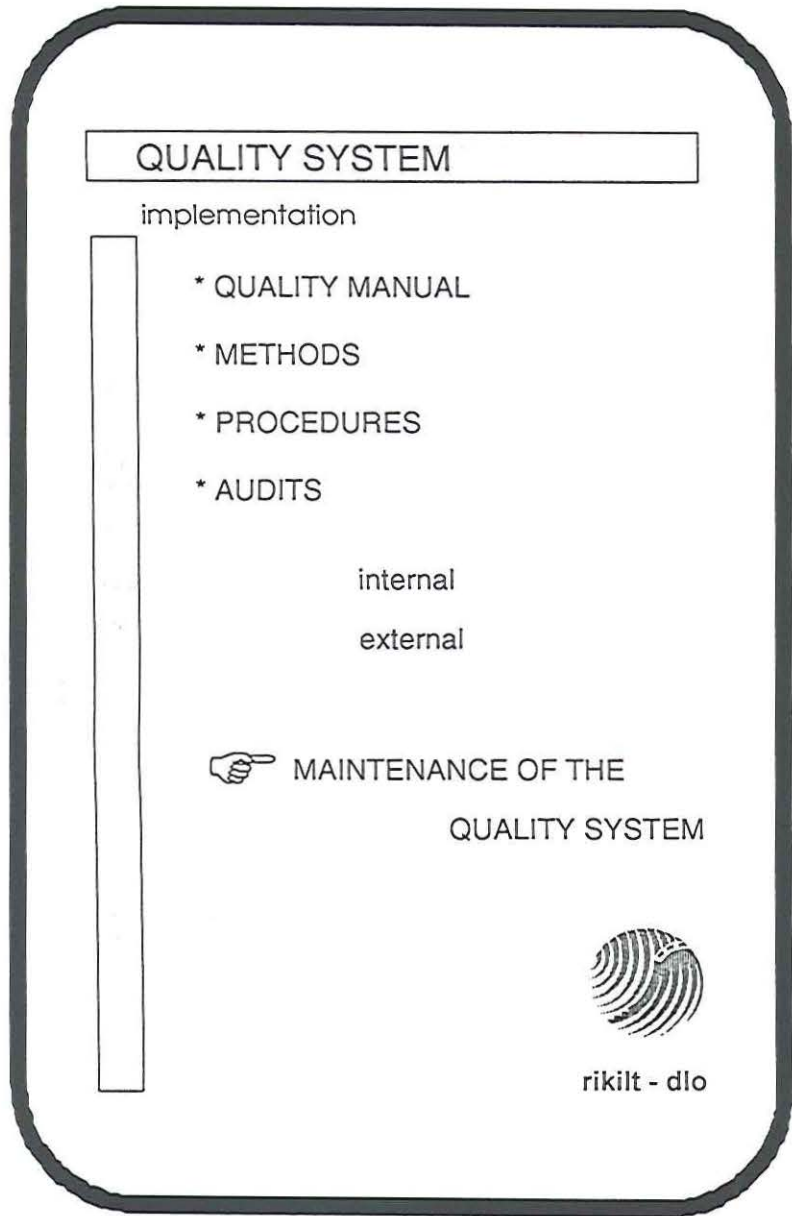
QUALITY SYSTEM

contents

- * MANAGEMENT and ORGANISATION
- * EQUIPMENT
- * WORKING PROCEDURES
 - * methods
 - * procedures
- * HANDLING OF SAMPLES
- * TEST REPORTS
- * ARCHIVING



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QUALITY SYSTEM

accreditation

- * STANDARD ROUTINE
- * FULLY DOCUMENTED
- * KNOWN PERFORMANCE
- * STANDARD OBSERVATIONS
- * CRITERIA FOR RESULTS
- * STANDARD REPORTS



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QUALITY SYSTEM

- * 175,000 MICROBIOLOGICAL TESTS
- * 185,000 RESIDUES of VET. DRUGS
- * 115,000 NAT. PLAN screening AB
- * 20,000 NAT. PLAN SCREENING


- * TOTAL: 495,000 TESTS



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QUALITY SYSTEM

- * EDUCATION OF STAFF
- * CAPACITY
- * MAINTENANCE EQUIPMENT
- * ADEQUATE FACILITIES
- * IDENTIFICATION CHEMICALS
- * INTERNAL/EXTERNAL SERVICES



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Informatie en Kennis Centrum Veehouderij, Afdeling Rundvee-, Schapen- en Paardenhouderij

PROGRAMME

for a meeting at the State Institute for Quality Control of Agricultural Products (RIKILT-DLO - Wageningen) on 17 november 1994, in the presence of some experts on quality management systems for agricultural products.

10:00 Opening of the day and general introduction - *by Dr. Hans Hoogland*

10:15 Introduction - *by Prof. Dr. G. Schiefer*

10:30 Quality Management Systems for Pigs - *by Ir. Jos Thelosen (IKC-varkenshouderij Rosmalen)*

11:00 Quality Program for Agricultural Products - Database - *by Ir. Jacob van Klaveren (RIKILT - DLO)*

11:30 Quality Management Systems for Poultry - *by Ir. Peter Oostenbach, (PPE, Zeist)*

12:00 Quality Management Systems in the Dutch Feedingstuffs Industry - *by Dr. Hans Hoogland, RIKILT - DLO)*

12:30 Lunch

13:30 Payment System for Ex-Farm Milk in the Netherlands - *by Ing. Roelof Westerbeek (IKC Rundvee-, Schapen- en Paardenhouderij, Lelystad)*

14:00 Certification of the Dutch State Meat Inspection Service - *by Nico Broex (RIKILT - DLO)*

14:30 Plenary Discussion

15:00 A guided tour of RIKILT - DLO

16:00 End of the day.

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