Effektive Massregel und ihre Folgen für Transportverluste von Schweinen in den Niederlanden.

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Schon früher wurden von vielen Untersuchern, in den Niederlanden Lendfers, bestimmte Massregel propagiert um die Transportverluste während des Transportes zu verringern. Die Stirblichkeitsziffer von 0,7% in 1968 verminderte sich bis 0,49% in 1972 und 0,37% in 1976. Diese Verringerung ist zu erklären von:

- genetischen Massregeln
- technischen Massregeln
- organisatorischen Massregeln.

Besprochen wurden aktuelle Daten herkünftlich aus genetischen Experimenten und anderen Entwicklungen in der Praxis, welche die Effekte illustrieren.

Konkludiert wird, dass jede einzelne Massregel schon günstig auswirkt. Die Kombination macht es dem Transportunternehmer leichter, dem Tier die richtige Pflege und Andacht zu geben. Dieses ist notwendig nicht nur aus ekonomischen Gründen aber auch aus ethischen Gründen.

Effective measures and their consequences on transport loss of pigs in the Netherlands.

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As a result of earlier studies in the Netherlands, measures were proposed in order to diminish transport losses of pigs for slaughter (100 kg weight). The deathrate of 0.7% in 1968 declined to 0.49% in 1972 and 0.37% in 1976. This reduction of deathrate can be explained by:

- improvement of the genetic status i.e. stress-resistance
- improvement of the technical transport conditions
- reallocation of the responsibility in the organisation.

Results from genetic experiments and from other developments in practice will be discussed.

The results of the different measures alone and the observed results of various measures lead to the conclusion that the three measures together reduce the losses substantially. At the same time the animal gets the proper treatment. This is necessary not only from the economical point of view but also for reasons of animal welfare.

A 2:2

Effets de mesures prisés pour restreindre pertes causées par le transport de porcs aux Pays Bas.

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Déjà dans des études antérieures, beaucoup de chercheurs, parmi eux Lendfers aux Pays Bas, ont propagé des mesures pour diminuer la mortalité pendant le transport. Le nombre des décès de 0,7% en 1968 diminuait à 0,49% en 1972 et à 0,37% en 1976. On peut expliquer cette diminution par:

- des mesures génétiques
- des mesures techniques
- des mesures organisatoires.

A partir de données de recherches provenant d'expériences génétiques et du materiel d'un abattoir les effets de telles mesures ont été discutés.
On arrive à la conclusion que chaque mesure ensoi a un effet favorable. La combinaison des mesures décrites permettent mieux au transporteur de consacrer à l'animal un bon traitement et de l'attention. Ceci est nécessaire non seulement du point de vue économique mais aussi du point de vue éthique.

Эффективность внедрения мероприятий по снижению потерь при перевозке свиней.

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НИИ Животноводства "Схооноорд", г.Зейст, Голландский Христианский Союз Крестьян (NCB) в г. Бокстель, Отдел продуктов питания животного происхождения государственного университета в г.Утрехт, Голландия

Много научных работыков, среди которых Лендферс в Голландии, уже в предшествующем труде рекомендовало внедрение мероприятий по снижению падёжа животных в условтях их перевозки. К числу этих мероприятий относятся, напр.:

- генетические мероприятия,
- технические мероприятия,
- организационные мероприятия.

На основании новейших данных исседования в режуме генетических испытаний, а таже полученных из одной бойни практических материалов приведена дискуссия, направленная на их экономическую эффективность.
Приходят к заклюнению, что каждое мероприятие в отдельности в конечном счёте даёт положительный результат.Благодаря комбинации приведенных здесь мероприятий привлеченный к перевозке работник имеет лучшую возмозность уделять животным заботу и внимание, которые требуются не только по одним экономическим соображениям.

A 2:3

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Introduction

Transport losses of pigs, as a result of increased stress-susceptibility, have been of much concern in the Netherlands during the last decennium. The increased deathrate during transport up to 0.70% in 1970 coincided with the improvement of the Dutch pig as to the required slaughter quality (meat/fat ratio). At the same time the meat quality was reduced in terms of Pale, Soft and Exudative meat and Dark, Firm and Dry meat.

At several meetings of the European Meat Research Workers, reports about Dutch research in relation to transport losses and meat quality have been presented. In 1974 Lendfers reported on a study on the sensitivity to transport of the Dutch slaughter pig.

Different factors influence transport losses, i.e. mortality of pigs. Appropriate technical accommodations and environmental as well as genetical influences were mentioned in this respect.

In this paper certain developments in this field in recent years are given.

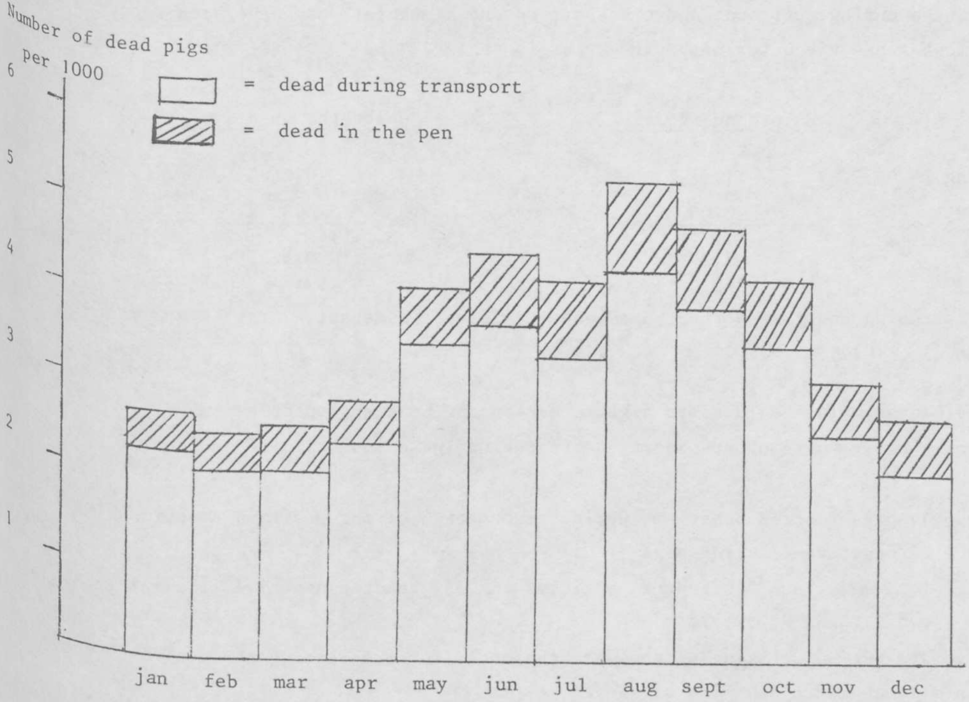
Inventory

In 1976 an inventory was made of the deathrate during transport and in the pens of the slaughterhouse. This inquiry involved 44% (5.2 million) of the total number of pigs, slaughtered in the Netherlands in that year (Corstiaensen et al., 1977).

Figure 1 presents the deathrate of pigs transported for slaughter, expressed in the number of dead pigs per 1000 transported per month.

Figure 1.

Deathrate, expressed in number of dead pigs per thousand pigs transported for slaughter (100 kg weight) by month in 1976. (Corstiaensen et al., 1977).



The deathrate, including loss in the pens, decreased to 0.37% in 1976. This percentage is lower than 0.42%, found in 1972.
In 1965 and in 1970 the figures respectively were 0.23% and 0.70%.
Seasonal fluctuations are present in august and december respectively, 0.53% and 0.27%. But these differences are less important than the striking differences between the average deathrate of the different slaughterhouses: 0.72% and 0.22%.

The existing fluctuations indicate that possibilities for improvement still exist: genetic selection, better housing and delivery accommodation on the farm, better loading facilities in the trucks for transport, sufficient space for the animal during transport, better conditions in the stables at the slaughterhouses, responsibility of the driver.

Genetical measures

Different studies about the impact of the genetic constitution as to deathrate have been made. The meaty type Pietrain breed seems to be far more susceptible to stress than less meaty breeds (Lendfers, 1974).
Minkema et al. (1977) found clear evidence that the so called Malignant Hyperthermia Syndrome was genetically determined by a so called autosomal recessive hereditary trait. This syndrome is due to stress and appears during transport. It can be held responsible for most cases of transport loss. The assessed genetical pattern opens the way for effective selection for a lower deathrate and a better meat quality. By application of halothane (maximum 3 minutes, 5% halothane in 2.5 liter Oxygen) this syndrome can be evoked in susceptible piglets at an age of 6 weeks. The test is non-lethal.
Eikelenboom et al. (1977) presented data on the application of the test to 2944 piglets (litters of 4) at a national testing station. The figures for the test results are presented in table 1, then demonstrate the differences in sensitivity between breeds.

Breed	number	Halothane positive
Large White	1304	3.1 %
Dutch Landrace	1640	22.2 %

Table 1 Results of the halothane test in 2944 piglets of two breeds (Eikelenboom et al., 1977).

From these animals the losses during fattening and transport to the slaughterhouse have been recorded. The percentage of these losses are given for both categories in table 2.

	Halothane positive	Halothane negative
Deathrate during fattening	1.92 %	0.24 %
Deathrate during transport	3.35 %	0.32 %
Total	5.27 %	0.56 %

Table 2 Losses during fattening and transport of halothane positive and negative pigs (n = 2944). (Eikelenboom et al., 1977).

The losses in the susceptible animals are 10 times higher than in the none susceptible pigs.
On one of our breeding farms the results of transport and fattening losses in a limited number of tested animals was as follows:

- From 172 crossbred pigs, 44 pigs reacted positive. During transport 3 of the positive reacting pigs died, while none of the 128 negative reacting pigs died.
- From 557 Dutch Landrace pigs, more than 226 reacted positive and 331 reacted negative. The losses were 13 and 7 pigs(respectively 0.57% and 0.21%).

Although these differences are not so striking as those of the data from the testing station the risk of the halothane positive animals seems to be twice as large.

Minkema et al. (1977 b) pointed out that due to the better breeding index of the susceptible (Halothane positive) pigs, active selection against their susceptibility is necessary if the transport loss is to be kept low. They calculated that it takes 5 generations to bring a breed generation frequency of 25% (Dutch Landrace 22.2%) down to the acceptable level of 7%.
From these research data it can be concluded that effective selection for a pig more resistant to transport loss is possible.

Technical and organisational aspects

As was mentioned by different authors (Lendfers, 1974; Corstiaensen et al., 1977), several technical and organisational measures can be taken in order to reduce the deathrate.

Hydraulic lift

Lendfers (1974) favoured the hydraulic lift. The driver does not need to overstress the animal during loading and unloading because it can be brought to the required loading level of the lorry just by way of pushing a button.
The number of these hydraulic lifts increased considerably in the recent years. The figures of Corstiaensen et al. (1977) comprising 44% of all slaughterpigs transported showed that the percentage of lorries with a hydraulic lift rose from 1.7% in 1972 to 29% in 1976 in the investigated material.
In the past year in one slaughterhouse about 95% of the lorries had such a loading device (table 3).
This table includes the comparison of transport loss data between the differently equipped lorries at one slaughterhouse.

Year	3 month period	Deathrate With lift (%)	Without (%)	Percentage Lorries with lift	Percentage Lorries without lift
1976	1	0.14	0.18	67.4	32.6
	2	0.21	0.36	80.0	20.0
	3	0.28	0.47	85.2	14.8
	4	0.22	0.33	85.4	14.5
1977	1	0.18	0.36	89.0	11.0
	2	0.29	0.36	93.0	7.0
	3	0.40	0.32	96.2	3.8
	4	0.23	0.21	95.7	4.3
1978	1	0.16	0.20	96.6	3.4

Table 3 Comparison of transport loss (per 3 months) between lorries with and without hydraulic lift. The number of transported animals in 1976 and 1977 was approx. 1.3 million.

In 1976 and in the beginning of 1977 the number of the lorries with a hydraulic lift were low. This difference disappeared in the last part of 1977 and in the beginning of 1978, when almost every lorry (± 95%) was equipped with such a lift.
Some lorries remained without a hydraulic lift, these lorries showed already a very low deathrate figure. Therefore, there was no need to incur the expenses.
The influence of the driver is also at stake.
Even if the conclusion is made that the favourable effect on the deathrate by better loading and unloading facilities gradually vanishes, a lorry with a lift has better preconditions for the transportation process. This is true for the driver as well as the animal.

Delivery devices on the farm

De Bruin (1967) propagated the use of delivery accommodation on the farm. The pigs were moved into small pens about ten to twelve hours before transportation to the slaughterhouse to adapt them to a strange environment.

In table 4 data are presented comparing this system with other kinds of management systems.

Risk agreements

The farmer does not always realise what the conditions of the pig are during the transport. He is ready to leave the control of the transport to the driver starting at the moment of loading at the farm. His concern about the pig easily stops at that very moment.

There is a tendency that farmers which produce on a so called industrial scale, transport their pigs in their own lorries.

This means that they prefer to bear the risk for transport losses until the moment of unloading at the slaughterhouse. They themselves are likely to forego transport insurance.

However, not all farmers whithout their own transport system take insurance against transport death loss. Some of them have so much confidence in the driver that they easily take the risk.

The pigs of this group of producers which are engaged in transportation one way or the other, showed a lower deathrate than the pigs from farms which followed the normal pattern of insurance during transportation (table 4).

Transport	number of pigs(1977)	deathrate(1977)	deathrate(1976)
At own risk	365.157	0.13%	0.15%
With delivery accommodation	124.563	0.22%	0.30%
Without special measures	1.059.330	0.42%	0.41%
Total	1.549.050	0.33%	0.33%

Table 4 Deathrate in pigs in 1976 and 1977 transported under different management systems.

From this table it may be concluded that special measures which have been taken to pay more attention to the way which the animals are prepared for or are followed during transport really pay off.

Discussion

The recent data about the transport losses in the Netherlands show that a rather high variation in deathrate still exists.

In the foregoing paragraphs the differences in deathrate are linked with certain factors and measures.

- Selection against stress-susceptibility is now possible with the non-lethal halothane test at the age of 6 weeks.
- Seasonal influences require special care of the pigs in the periods with high ambient temperatures.
- Better equipped lorries help to improve the loading and unloading and definitely lower the incidence of the stress condition.
- Management before the loading, adapted to prevent a sudden change of environment together with the financial and personal engagement of the owner in the transport process itself is beneficial.

Transportation which does not take into account these requirements is often uneconomical. Also from the point of view of minimum necessary care for the animal, such a transport should be labelled as unfit and out of date.

Applications of these scientific results into practice are therefore required at short notice. Scientists in this field must demonstrate their responsibility for the animal by pressing hard for transport under the best possible conditions.

Conclusions

Results from genetic research and studies on the technical and organisational transport improvements lead to the conclusion that the deathloss can be lowered substantially further.

A combination of the proposed measures makes the transport not only more economical but also more adequate for the animal.
In a modern society this last pre-condition of animal care is of utmost importance for the right adjustment of the animal production towards present day ideas on this matter.

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