



Public Acceptance of Automatic Milking

Report on Societal Acceptance of Automatic Milking

April 2004

Information

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Abstract

As a result of crises and food scares in a number of European countries in recent years public opinion has become very sensitive to food safety and animal welfare issues. This report presents the results of a descriptive content analysis of 14 newspapers from six countries on the ways in which the press deals with agriculture, food, and the food industry. In addition, in-depth interviews with journalists, opinion leaders from pressure and interest groups, and other relevant actors were conducted in each of the six countries. Finally focus group interviews with consumers were held to identify which issues are currently particularly sensitive in public opinion. The results show that, in the period studied, automatic milking was virtually absent from the newspapers studied. Given the fact that most news is 'bad' this implies that automatic milking is currently not an issue. However, while milk and dairy products have largely escaped the bad press received by some other sectors, issues surrounding animal health and welfare do receive significant and largely negative coverage. The interviews revealed a very large – and growing - gulf between food producers and consumers. In almost all groups the crises of recent years have resulted in widespread scepticism of the motives of the industry and the role played by governments in handling crises which, in some quarters, amounts to a serious credibility gap. However, in most cases, the direct effects of these developments on consumer behaviour appear to be relatively short.

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1 Introduction

The objectives of WP 2 were:

- To assess whether and under which conditions automatic milking is a production technology that will be accepted by society at large.
- To identify the role of communication between industry and society in the process of acceptance

In the first phase (sub-package 1) an international multi-disciplinary literature search was conducted in order to bring together in one data base the findings of previous studies with respect to factors and conditions which stimulate societal acceptance of, or resistance to, new technology, in general, and developments in agricultural production, in particular. For the results of this phase see Deliverable D4.

In the second phase a study was conducted in six countries (Belgium, Denmark, Germany, The Netherlands, Sweden, and The United Kingdom) consisting of:

- A descriptive content analysis of 14 newspapers from the six countries to assess the ways in which the press deals with the introduction of new technologies in agriculture, complemented by analysis of news about food and the food industry.
- In-depth interviews with journalists in each country in order to identify the sources of news about dairy related technology and food. The elements that turn developments and occurrences into news. And, which stories journalists tend to select and why.
- In-depth interviews with representatives of opinion leaders and agenda setters from pressure groups and other relevant actors.
- Focus group interviews with members of the general public (i.e. consumers).

The aim was, in each country, first to make a general assessment of news coverage with regard to food production and to identify specific national issues and concerns in public opinion and, second, to identify and assess:

- The overall imago of the dairy food chain.
- Attitudes towards automation and changing practices.
- Specific attitudes with regard to automatic milking (which aspects are regarded as positive and which as negative).
- Which groups manifest opposition to contemporary methods of agriculture, and why.

In the third phase the data were analyzed in order to identify problematic issues and areas of public sensitivity to serve as guidelines for potential pro-active intervention.

2 Methods

The Newspaper Content Analysis

Content analysis is, “a research technique for the objective, systematic and quantitative description of the manifest content of communication” (Berelson, 1952). In this study the analysis was designed to examine newspaper coverage in each country with regard to food production (especially milk and dairy products) and to identify specific national issues and concerns. In total 14 newspapers were analyzed - two from each country with the exception of Belgium where four (two from each of the main language communities) were included. The period covered was 1-11-2001 to 31-10-2002 with the exception of the two Danish newspapers where, for administrative reasons, the period covered was 1-12-2001 to 30-11-2002. In total 1,361 news items were recorded. The newspapers were:

Belgium (Flemish Community)

- De Financieel Economische Tijd
- De Morgen

Belgium (French Community)

La Dernière Heure

- La Libre Belgique

Denmark

- Jyllands Posten
- Politiken

Germany

- Die Welt
- Frankfurter Allgemeine Zeitung

The Netherlands

- De Telegraaf
- NRC Handelsblad

Sweden

- Dagens Nyheter
- Svenska Dagbladet

The United Kingdom

- The Independent
- The Times

The code book used in the analysis can be found in appendix 1.

In-depth Interviews

For the interviews with journalists, officials and opinion leaders the method of semi-structured interviewing was employed. Semi-structured interviews are probably the commonest form of qualitative interview method in the social sciences. The approach is less formal than that used in a structured interview but, “Having said that, the interviewer does have a specific agenda to follow and will have selected beforehand the relevant topic areas and themes to pursue ...interviewers are free to follow up ideas, probe responses and ask for clarification or further elaboration. For their part, informants can answer the questions in terms of what they see as important; likewise, there is scope for them to choose what to say about a particular topic, and how much.” (Arksey & Knight, 1999:7).

Focus Group Interviews

Since within the parameters of the project it was impossible to conduct a representative quantitative survey of around 180 million people focus group interviews were conducted in four countries. For linguistic reasons these did not include Denmark and Germany. Focus groups are a form of research the core of which is the interaction within the group, based on topics that are supplied by the researcher, who plays the role of a moderator. According to Morgan (1988:12),

“The hallmark of focus groups is the explicit use of the group interaction to produce data and insights that would be less accessible without the interaction found in a group.”

Other advantages of focus group interviews for understanding the ways in which people socially construct meaning about public issues are:

1. To talk about issues with others, people search for a common basis of discourse
2. Focus groups, compared to survey interviews, allow us to observe the natural vocabulary with which people formulate meaning about issues
3. Through challenges and alternative ways of framing an issue, participants are forced to become more consciously aware of their perspective. (Gamson, 1992: 191-2).

As Hansen et al. (1998) argue the fact that some individuals may dominate group discussions should be seen not so much as a weakness of the approach as one of its main strengths, “Group dynamics are such that opinion and participation are *not* equally weighted; some people have disproportionate influence. But real life is like that: opinions are not as much the property of individuals as public-opinion polling would have us think. Opinions arise out of interaction, and ‘opinion leaders’ have disproportionate influence.” (Liebes & Katz, 1990:29).

As a technique, focus group interviewing is now widely used in marketing; especially with regard to the launch of new products; and by political parties and their research organizations to stay in touch with issues of concern to voters. It has also become an accepted method of communication research (see Hansen, et al., 1998: 257-287).

3 Results

Newspaper Content Analysis

3.1.1 Belgium Flemish Community

In the two Dutch language Belgian newspapers examined 313 articles were recorded (De Morgen 163, De Financieel Economische Tijd 150). Overall the mean article in De Morgen tended to be longer than that in De F.E.T (approx. 22.3%, [SD 24.1], of a standard page compared to approx. 9.2% [SD 7.7], respectively). In neither newspaper were any news items related to automatic milking found and only four dealing with dairy production in general (three on investment in the dairy industry and one on the fraudulent sale of fake butter). In De Morgen the most frequently covered specific issue (9.8% of all items) was the scare over PCB's (polychlorinated biphenyls), followed by MPA's (meddroxyprogesterone acetaat – 8.0%) and Nitrofen (6.1%). In De F.E.T reports centering on the Belgian Federal Food Agency (19.3% of all items) dominated the category of specific issues followed by farming economics (17.3%) and MPA's (8.7%). In both newspapers the dominant tone of the articles in each of these categories was negative, especially in De Morgen where e.g. 7 of the 13 articles on MPA's, 9 of the 11 articles on PCB's and all of the articles on nitrofen were negative. In terms of general categories, by far the greatest number of items in the two Flemish newspapers fell under the heading 'food scares/safety' (53.8% of all items in De Morgen and 55.4% in De F.E.T.), followed by articles dealing farming in general (10.5% of all items), and the economics of farming (19.8% – not surprisingly with the great majority in De F.E.T). In terms of their geographical focus, 21% of the items were coded as local/regional, 47% as national, 27% as international and 5% as undefined. In both newspapers the dominant tone of around 60% of all news items was negative, although De F.E.T. had more positive items (29%) than did De Morgen (17%).

3.1.2 Belgium (French-Speaking Community)

In the two French language Belgian newspapers 105 articles were recorded (52 in Le Soir and 53 in La Libre Belgique). The mean size of the articles was 21.6% (SD 15.7) of a standard page in Le Soir and 41.8% (SD 36.3) in La Libre Belgique. In the period studied no news articles on milk or dairy production were found. In both newspapers reports concerning GMO's clearly constituted the most frequently reported specific issue (30.8% in Le Soir and 18.9% in La Libre Belgique), with no other issue receiving notable coverage. In terms of general categories, items covering food scares/safety were most frequent (32.6% of all items), followed by GMO's (30.6%) and genes technology (17.1%). In terms of geographical focus, 19% of the reports were local/regional, 44% national, 30% international and 7% undefined. In both newspapers the dominant tone of the reports was neutral (58% in Le Soir and 58% in La Libre Belgique), although few were positive (less than 6% in each case).

3.1.3 Denmark

In the Two Danish newspapers 425 items were recorded (173 in Politiken and 252 in Jyllands Posten), the highest number in the six countries studied. The mean article in Politiken was 25.3% (SD 28.1) of a standard page, and in Jyllands Posten 21.9% (SD 23.8). Two large articles relating to automatic milking were found, both in Jyllands Posten and both positive. In comparison with the other countries, dairy products were also much more frequently dealt with: Politiken featuring 17 items and Jyllands Posten 24. The great majority of these articles dealt with the dairy company Arla and, in particular, its 'butter war' over Lurpack with a small competitor. Other aspects dealt with the companies' monopoly position and ambitions and its alleged sexist milk advertising campaign. In general the coverage of Arla tended to be

negative, placing the company in the role of a monopolistic ‘Goliath’ being heroically fought by various small ‘Davids’. Another issue in the Danish newspapers was the fight to allow Danish producers to use the cheese label ‘Feta’. In other sectors the most frequent specific topic in Politiken was GMO’s (6.9%), followed by animal transport (4.6%) while in Jyllands Posten it was Newcastle disease (10.7%), followed by salmonella outbreaks (3,2%). In terms of general categories, the most frequently reported in both newspapers was food scares/safety (overall 27.6% of items). In Politiken the second most frequent category was the economics of farming (18.3%), followed by animal rights (10.4%) and GMO’s (8.7 %). In Jyllands Posten, after food scares/food safety, the list consisted of the economics of farming (16.8%), organic farming/food (10.8%) and agricultural (particularly E.U) policy (8.8 %). In terms of geographical focus, 21% of the reports were local/regional, 38% national, 30% international, and 11% undefined. In both newspapers the dominant tone of the reports was neutral (59% in Politiken and 55% in Jyllands Posten), followed by positive (22% and 24%, respectively).

3.1.4 Germany

In the two German newspapers 95 articles were recorded (43 in die Welt and 52 in Frankfurter Allgemeine Zeitung (F.A.Z), the lowest number in the six countries studied. However the mean size of the articles was larger than in some other countries - 21.4% (SD 23.3) of a standard page in die Welt and 31.0% (SD 33.2) in F.A.Z. No articles dealing specifically with dairy production were found. The most frequently reported specific issue found in die Welt was Nitrofen (37.2%) and in F.A.Z. it was biotechnology (28.8%), followed by Nitrofen (25.0%). Of the general categories, both the German newspapers devoted most attention to food scares/safety (49.5% of all items), thereafter in die Welt came genetic manipulation (11.6%) and in F.A.Z. new agricultural technologies (28.8%). In terms of geographical focus 7.4% of items were local/regional, 41% national, 41% international, and 10.5% undefined. The dominant tone of the articles tended to be negative, though more so in die Welt (63%) than in F.A.Z. (42%). In both newspapers around 21% of the items were positive.

3.1.5 The Netherlands

In the two newspapers from the Netherlands 131 articles were recorded (De Telegraaf 71, NRC Handelsblad 60). The mean size of the articles was rather small, at 11.1% (SD 17.2) of a standard page in De Telegraaf and 10.6% (SD 12.1) in NRC Handelsblad. Only one news item dealing specifically with dairy issues was found – on the labeling of milk from free grazing cows. Otherwise, in both newspapers, reports about MPA constituted the most frequent specific category, accounting for 11.3% of items in De Telegraaf and 15.0% in NRC Handelsblad. In both cases the dominant tone of the articles covering this issue was negative (100% and 69%, respectively). The second most frequent specific topic dealt with in both newspapers was cloning (11.3% in De Telegraaf and 11.7% in NRC Handelsblad), although here the dominant tone was somewhat more balanced, with one-third of the articles positive. In terms of general categories in the two Dutch newspapers, food scares/safety received the most attention (37.4%), followed by gene technology (14.5%) and farm economics (8.4%). In terms of geographical focus 21% of items were local/regional, 36% national, 41% international and 2% general. In both newspapers the dominant tone of the coverage was negative (54% in De Telegraaf and 63% in NRC Handelsblad).

3.1.6 Sweden

In the two newspapers from Sweden 186 articles were recorded (103 in Dagens Nyheter and 83 in Svenska Dagbladet) The mean size of the articles was 35.0% (SD 35.6) of a standard page in Svenska Dagbladet and 19.0% (SD 22.2) in Dagens Nyheter. One large article about automatic milking was found in Svenska Dagbladet and it was positive. Moreover, one article dealt (positively) with the fact that new farm technology allows farmers more spare time. In

addition, seven other items dealt with dairy production although the subjects involved were very diverse ranging from, ‘ginseng makes cows healthier’ and ‘dead cows to be used for central heating’ to ‘radio-active goats milk in Norway’. In both newspapers the most frequently reported single issues were the same: first the akrylamid scare (Dagens Nyheter 18.4%, and Svenska Dagbladet 26.5%), followed by BSE in cows (5.8% and 7.2%, respectively), and salmonella (Dagens Nyheter 5.8%, and Svenska Dagbladet 6.0%). In both, the most reported general category was food scares/safety, accounting for 54.2% of all items, followed by animal rights/welfare with 18.7%. In terms of geographical focus, 29% of items were local/regional, 30% national, 27% international, and 14% undefined. In both newspapers the dominant tone of the coverage was neutral (61% in Dagens Nyheter and 56% in Svenska Dagbladet).

3.1.7 The United Kingdom

In the two British newspapers 106 articles were recorded (52 in the Independent and 54 in The Times) The mean size of the articles was 23.1% (SD 18.0) of a standard page in The Independent and 33.7% (SD 19.3) in The Times. No articles dealing specifically with dairy production were found. In both newspapers the most frequently reported single issue was foot and mouth disease, including its social implications (13.5% in The Independent and 29.6%, in The Times), followed by gene therapy (5.8%, and 11.1%, respectively). Overall, food scares/safety formed the most frequent general category (24.5% of all items) followed by genes technology (around 12.5% of items) and, in The Independent, GMO’s (9.5%). In terms of geographical focus 28.3% of the items were local/regional, 41.5% national, 29.0% international, and 1% undefined. In both newspapers around 62% of the coverage was negative.

3.1.8 News Items: The Wider Picture

The analysis in each country shows varying particular national concerns, reflecting the importance of local events (e.g. foot and mouth disease in the U.K., nitrofen in Germany, akrylamid in Sweden, Newcastle disease in Denmark, MPA in Belgium). However, it is also useful to aggregate the results across the six countries in order to obtain an indication of which issues were of more general concern. Table 1 shows the ten most frequently dealt with specific topics in the 14 newspapers analyzed. Interestingly, the issue of GMO’s tops the list, followed by MPA, BSE and akrylamid.

Table 1: The Ten Most Frequent Specific Contents Covered

Topic	Number of Items	Percentage Top Ten	Percentage All (n=1,361)
1. GMO’s	60	13.4	4.4
2. MPA	50	11.2	3.7
3. BSE (cows)	49	11.0	3.6
4. Akrymalid	49	11.0	3.6
5. Economics of Farming	48	10.7	3.5
6. Nitrofen	45	10.1	3.3
7. Belgian Federal Food Agency	42	9.4	3.1
8. Cloning	38	8.5	2.8
9. PCB’s	33	7.4	2.4
10. Newcastle disease	33	7.4	2.4
Total	447	100	

Table 2 contains the distribution of news items across more general categories. It shows that one issue in particular dominated the news coverage of the sector as a whole: food scares/safety which accounted for over 40% all news items recorded and which, as we have seen, was dominated by MPA, akrylamid, and nitrofen. In second place comes the economics of farming, followed by animal welfare/rights which was dominated by stories of animal mistreatment, especially in relation to the transport of livestock.

Table 2: The Ten Most Frequent General Categories Covered.

Topic	Number of Items	Percentage Top Ten	Percentage All (n=1,361)
1. Food scares/safety	550	47.1	40.4
2. Economics of farming	126	10.8	9.3
3. Animal welfare/rights	101	8.6	7.4
4. GMO's	97	8.3	7.3
5. Genes/cloning	90	7.7	6.6
6. Farming (general)	66	5.7	4.9
7. Organic farming	40	3.4	2.9
8. Policy	34	2.9	2.5
9. Organic food	33	2.8	2.4
10. Crime (e.g. illegal use hormones)	31	2.7	2.3
Total	1168	100	

3.1.9 Summary

In total 1,361 news items were recorded. However, there was wide variation both between countries and between individual newspapers. Most news items were found in the two Danish newspapers (425 items), followed by the Dutch language Belgian newspapers (313 items) and the Swedish ones (186 items). Fewest items were found in the German (95), the French language Belgian (105), and the British newspapers (106). In terms of individual newspapers, the totals ranged from 252 in Jyllands Posten to 43 in die Welt. In 10 of the 14 newspapers the mean size of articles fell in the range 20%-35% of a standard page, although great caution should be exercised here since in many cases the standard deviation was substantial and items varied between very short news agency notices of a few sentences to full or even double page in-depth articles. Clearly exceptional, however, were the Flemish F.E.T. and the two Dutch newspapers where the mean length of items was significantly smaller than in the rest. In the period studied automatic milking was virtually absent from the news found in the 14 European newspapers studied. Of the 1,361 news items concerning agriculture and the food chain only three dealt with this new technology. In terms of informing and sensitizing the public to the advantages offered by automatic milking this result is not favourable. On the other hand, given the fact that much news is 'bad', in the sense of events being negatively evaluated by journalists (41.2% of all items were negative, compared to 21.6 % positive), it also implies that automatic milking is not an issue and that 'no news is good news'. Moreover, milk and dairy products as a whole appear only infrequently in the news and seem largely to have escaped the bad press received by some other sectors. However, while milk as such escapes, issues surrounding livestock do receive significant (and largely negative) coverage – particularly BSE, foot and mouth disease, GMO's and pesticides in fodder, and animal welfare. GMO's and animal welfare, in particular, appear to be widespread concerns in the press, being kept visible, at least in part, by powerful pressure groups. What is evident from these results is that the press is extremely sensitive to food safety scares. It follows that,

if for any reason one should ever break loose over milk quality, especially in relation to automatic milking, the damage to the imago of the sector might be considerable and, except in the long run, difficult to redress.

The In-depth Interviews

3.1.10 Belgium: Flemish Community

3.1.10.1 Automatic Milking Systems

According to a number of interviewees, Flanders is characterized by very intensive agriculture and is in the forefront of modern food production. Automatic milking technology is little known among the general public and, although many farmers are familiar with the development, adoption has been slower in Flanders than in The Netherlands. According to one interviewee this is because of differences in the fiscal system between the two, which allow Dutch farmers better tax reduction opportunities when investing in new technology. Moreover, in Flanders investment in agriculture has been drastically reduced as a result of government bungling in its investment support policy and the aftermath of dioxin crisis, especially concerning the uncertainty surrounding its legal consequences. According to a representative of the Flemish Farmers Association, the willingness to invest in an automatic milking system depends mainly on two factors: the size of the concern (in European terms Flemish farms are comparatively small), and shortage of labour (which is getting worse). The age of the farmer appears not to be a significant factor. However, there was some disagreement as to the ease with which automatic milking could be introduced in Flanders. According to one view the fact that Flemish milking operations are already well organized and managed means that the structure would require only minor changes to accommodate the new system. The contrary view is that, however well structured it might be, the average operation is too small to reap the full benefits of automatic milking.

Knowledge of automatic milking among environmental pressure groups proved to be patchy. The local Greenpeace interviewee had never heard of it and therefore had no idea whether it would be good or bad for the environment or the quality of milk. The respondent from GAIA (a very well known animal welfare activist) had heard of it but knew nothing of its technical details. While he admitted that, up to the present, he was unaware of any evidence that automatic milking has a negative effect on animal welfare, he stressed that this should not be interpreted as meaning that GAIA is necessarily in favour of the development.

According to an interviewee from one of the Government agencies, automatic milking would not result in farmers becoming alienated from their animals since most enjoy working with living creatures. Thus, the fact that they would see the results of milking on a computer screen wouldn't be a problem since it would enable them to corroborate a cows appearance with objective numerical results and other data. On the other hand, she believed that farmers with smaller concerns would rather work without the system because they prefer to be directly involved with their animals (rather than via a computer).

The main advantage of automatic milking was seen as the fact that it has the potential to allow farmers more spare time, or at least greater flexibility in the organization of their time. The potential negative aspects named can be grouped under three headings: loss of personal contact with the cows, financial unfeasibility for smaller farms, and the perception that farming is becoming 'over-techologized'. In the words of the representative of the Federal Agency For Safety in The Food Chain,

"Cows being milked by computers, that's not really what society expects. I think that milk obtained from an automatic system is as healthy as other kinds of milk but it's mainly the

societal perception and the economic advantages that you have to look at. We've reached the limit of the technologicizing of our agriculture and our dairy sector. What's not a problem in other sectors – the high technologization of the production process – is unacceptable in the agricultural sector.”

3.1.10.2 Grazing

According to the representative of the Farmer's Association grazing is to some extent a taken for granted cultural fact in Flanders (in contrast to The Netherlands), a fact that would not be altered by automatic milking. One would ensure that pastures connect closely to the milking shed. There might be an infrastructural problem in terms of general spatial organization but here too, he believed, Flemish farmers would try to find pragmatic solutions. Consequently, “in contrast to the Netherlands where they are suffering from that problem of always keeping animals indoors”, he did not anticipate any imago problems in Flanders in these respects, since the problem doesn't exist. While he believed that, under some circumstances, an organization like GAIA might be able to create a negative image of automatic milking among the general public, he stressed that this would be no reason, “to resist a responsible technology (...) one has to seek satisfactory solutions on several fronts: the animals have to be respected and it has to be financially advantageous for the farmer.”

According to the representative of GAIA, the tendency to keep cows more and more inside is a disquieting evolution. In his view milk quotas and European Union policies lead to over-exploitation of cows and raise serious questions concerning animal welfare. The representative of one environmental organization (Bond Beter Leefmilieu) insisted that, in general, cows must be allowed to go outside and that, if necessary, automatic milking systems must be adjusted to make this possible:

“Grazing is absolutely essential! From a purely environmental point of view it would be better to keep the cows indoors. The buildings should be altered so that no more ammonia can escape, that first has to go through filters. But then you are dealing with a system that is only designed for efficiency and I don't think that should be allowed. Then we enter the field of animal welfare.”

3.1.10.3 Public Acceptance of Automatic Milking

Few doubts were expressed about public acceptance since, it was believed, most people seldom reflect over the way in which their food is produced. However, according to a spokesperson for one major supermarket chain, there is a difference in the potential for acceptance between technologies which have a perceptible effect on the product in terms appearance, consistency, or taste, and those which do not. In other words, it is essential that milk produced by automatic systems looks and tastes the same as milk produced by conventional methods.

3.1.10.4 Food in General

According to a Greenpeace spokesman, while there are now probably more controls than ever, there is probably also more abuse, because the goal is to produce as much as possible at a lower cost. In his view we pay too little for our food (on average only 15% of income). With respect to industrialized food production, he argued, there are very many hidden costs (e.g. pollution of the air and soil, food crises and health problems) which are not included. For example, he claimed, in 1999 the BSE crisis in the U.K. cost every British family about BEF 12,000 (approx. 300 Euros). In the final analysis that cost is paid by the taxpayer. Were such costs to be included in the price of food, then bio- products wouldn't be much more expensive than conventional, industrial products. Moreover, he added, that BEF 12,000 takes no account of the cost in human lives from those who died of the illness. However, according to a

respondent from another pressure group (OIVO – Onderzoeks- en Informatiecentrum van de Verbruikersorganisaties),

“Consumers just want tasty, healthy food at a good price. The mental gap between producers and consumers is increasing (...) If you ask people what they find important when buying food then the first answer is ‘price’, because they assume that the food is safe. Thereafter comes taste.”

3.1.10.5 Information and Communication Regarding Food

The representative of one environmental pressure group regretted that there is no culture of debate concerning food quality, and added that while they try to get debates started during crises, that actually isn't a very good time. According to the representative of the Farmer's Association recent crises have to some extent even been beneficial. According to him (based on a study published by the organization VILT) the imago of agriculture in Flanders has improved in the last five years despite the crises caused by MKZ, dioxine, MPA and BSE. Sympathy for the farmer has increased but the fact that 'anti-groups' have also become stronger indicates an increasing polarization of opinion. As a result of the dioxin crisis the old romantic agrarian picture of the happy farmer and his wife has been destroyed. In 1999 (in the dioxin crisis) people discovered that food production is a truly industrialized activity, a chain passing through the most advanced technology available.

In the view of the spokesperson from the Federal Agency for Safety in The Food Chain *everything* with regard to food must be communicated to citizens:

“If there are potential dangers confronting consumers then they have to be informed, naturally without dramatization (...) During the dioxin crisis we made the mistake of not communicating, we tried first to get the situation under control (...) We didn't have a culture of open communication and we've learned from that lesson. Non-communication is associated in the public mind with trying to sweep things away under the carpet. Today, society today is sensitive to that kind of thing.”

Conversely, an interviewee from the staff of the Minister of Agriculture disagreed that everything to do with food must be communicated to citizens:

“That doesn't happen in other processes of production. It might just lead to inaccurate, exaggerated, anxiety. But because the average citizen is so far from agriculture – scarcely knows that milk comes from a cow, in a manner of speaking – we should try to break through this alienation (...) the food crises are to some extent a result of the way that we conduct agriculture here: large-scale (which means that if there is an infection that also becomes large-scale), specialized companies that are more difficult to get any kind of grip on than used to be the case. Then farmers who are just trying to keep their heads above water buy cheaper fodder for their animals because no-one has ever said that that's unhealthy. Then bad practices start appearing in businesses that put refuse in their products. “

In the view of the interviewee from OIVO it's difficult for people to understand a lot of food labeling and so, despite the fact that there is a vast amount of information, there's a need for good information which meets these information needs. While in Flanders there is at least a readiness on the part of the parties to talk to each other, she claimed, in Wallonia the parties are further apart and still think in terms of their own conflicting interests. Moreover, she added, communicating with citizens about food is very difficult, partly because of the very low level of knowledge that people have about agriculture and food production and partly because they are very sensitive about everything to do with food. “You really do have to be very careful that you don't just make people unnecessarily frightened.”

The view that consumers know very little about farming was supported by one of the government respondents:

“They probably still have a romanticized picture. But not just about cows, that’s true of hydro-culture and so on too. I have a feeling that if consumers were to realize how certain vegetables are grown, then they wouldn’t want that either, preferring something that really comes out of the ground – just to give you an example chicory that’s grown on sub-stratum and hydro-culture, with all the consequences thereof – the use of chemicals, disinfectants etc. that otherwise wouldn’t be there.”

According to one journalist most people don’t know how strict the regulations in industry and agriculture already are with respect to making production as hygienic as possible adding that, “although accidents can always happen, I think that before a lot more used to happen without anything being said.”

3.1.10.6 *The Media*

With regard to the role of the media there was a wide variety of opinion. Several interviewees pointed out that, far from being an objective reference point for news and information, the media consist of commercial enterprises that have their own logic and priorities which frame the work of journalists. Moreover, according to the spokesperson from GAIA, in the media, “everything has to happen so quickly, nothing is done thoroughly, very shallow work. The ethical drive fails and that’s what we have!!”

Nevertheless, some respondents believe that the media play an extremely important role in forming public opinion. According to an interviewee from one environmental group, “The media are very influential. That’s been demonstrated by the recent crises. 1999 was the best example, when there was a rush to biological food. Since then ‘bio’ has continued to grow but not anything like then. That was a real peak.”

Several interviewees stressed that effects are short-term because although while a scare is on people behave irrationally, when it has all blown over they quickly return to normal habits. Nevertheless, in the view of a spokesperson for one of Belgium’s largest supermarket chains, there *is* a longer-term effect on public sensibility, “Nowadays it doesn’t really take much to produce a disproportionate reaction. People have become sensitized and start getting into a panic about nothing at all really (...) The slightest thing that happens with the food and the whole sector is branded as bandits and criminals. Apparently no other sector is so full of mafioso as the food sector and I think that’s totally out of proportion.”

Interestingly, changes in eating habits such as a decline in meat eating were not proscribed to the effects of the media, but rather to wider cultural and societal changes. In other words, “changes have nothing to do with food safety and everything to do with our lifestyle.” And, “I’m not sure if there is a direct link between the food crises and the fact that more young people are vegetarians. It’s more an indication of prosperity.”

While one journalist admitted, “Naturally we think that we have a significant impact. But there is a general trend worldwide which an individual newspaper can’t stop. There is a change of mentality in a certain direction (...) the supermarkets actually play a really crucial role in terms of the provision of food, because they buy it, they decide on the quality requirements. They are much more important than most people think, this is the most underestimated group, they decide about everything. They have a lot more power than the consumer organizations.”

3.1.11 Belgium: French-Speaking Community

3.1.11.1 Automatic Milking

The milk robot is largely unknown in Wallonia and there was little interest among journalists or representatives of interest groups to discuss it. The only questions which arose from the interviews which were conducted concerned animal welfare and grazing. However, there was agreement that new technology in the sector generally meets with suspicion, a tendency which has been strongly reinforced by the various crises of the past few years. In the main Walloons do not rush out to buy new products but if one in some way meets the needs of consumers e.g. by offering some form of greater convenience (e.g. faster preparation time) or, especially, if it leads to a reduction in price, then its chances of acceptance are much greater. As was found in the newspaper content analyses, above, the only current development where serious doubt is being manifested is GMO's.

3.1.11.2 Food in General

According to the interviewees the Walloons are not very sensitive to food scares and any effects (e.g. eating less meat) tend to be small and short run. For export markets, though, such crises can be more damaging as producers lose and then fail to regain foreign markets.

In Wallonia agriculture corresponds more to the 'source naturel' of the region, i.e. France, than to Flanders, being more extensive than intensive with the result that the image of Walloon agriculture has been much less tarnished by crises than is the case in Flanders.

3.1.11.3 Information and Communication

the view of these opinion leaders, there is a need for better information e.g. clearer labeling and for better communication between researchers, companies and the political world in order to reduce mutual suspicion. Primarily it is the responsibility of the public authorities to communicate with citizens about food and food safety.

3.1.12 Belgium: Summary

Automatic milking is little known among the public. According to most opinion leaders it is a technology that will readily be accepted by the general public as long as there are no negative effects on quality, price, or animal welfare. The fact that pressure groups like Greenpeace and GAIA knew little of the development also indicates that it is currently not an issue.

However, in general terms, there is a large rift between producers and consumers, especially in Flanders. During the dioxin crisis, in particular, consumers were made aware of the fact that agriculture is a truly industrial undertaking with the result that any romanticized illusions about the nature of farming that they might have had were quickly destroyed. As a result of media pictures of large numbers of animals being slaughtered, a widespread residual negative attitude towards agriculture remains among the public at large. Paradoxically, while opinion leaders believe that most people accept the need for technological innovation and its potential advantages, the public perception of such development remains very negative. In Wallonia the picture is better, but even here there is something of a 'hangover' from the crises of the past five years. Most, but not all, are agreed that a more open culture of communication is necessary because the alternative is widely seen as 'sweeping things under the carpet'. According to some, this includes the need to present automatic milking systems (with their advantages and disadvantages) openly to the public, while others tend to the view that as long as the development is uncontroversial, 'the less said the better'.

3.1.13 Denmark

All of the Journalists interviewed worked either for Jyllands Posten or Politiken. It is also relevant to note that from the autumn of 2002 these two newspapers were brought under the ownership of the same company. However, unlike concentration and rationalization

developments in the Swedish press, there seems to have been little discussion amongst Danish journalists concerning their possible negative effects on journalists' independence and efficiency. According to the interviewees, Danish journalistic praxis follows the classic formula of always trying to seek out a number of sources, while making regular use of a group of known, friendly experts.

All the persons interviewed, non-journalists as well as journalists, knew about the new automatic milking technology but none thought that the Danish population as a whole had any knowledge of it. Moreover, they believed that ordinary Danes couldn't care less how cows are milked as long as the milk is healthy and reaches the shops at a reasonable price. The only (vague) doubt was a general one expressed by the representative of the Society For The Preservation of Nature since she claimed to have seen a lot of negative things happen in agriculture as a result of the introduction of new technology.

According to the interviewees almost every Dane is interested in agricultural issues, at least if one means by agriculture subjects such as food quality, food safety, animal welfare and environmental questions. They also pointed out that Danes have an extremely romantic picture of agriculture, as consisting of green meadows containing free-grazing, clean, good looking cows. In other words there is resistance to acknowledging that Danish agriculture is a large-scale industry. In recent years there has been a reaction to large-scale concerns in the shape of small, local, alternative farms, dairies and abattoirs, some of which have been quite successful. The interviewees also agreed that a characteristic of Danes is that, in general, they trust the authorities with the result that if permission is granted to the agricultural sector to do something then most Danes do not bother to question it. In other words, approval from the authorities means that everything is in order and may continue.

In contrast to Sweden, consumer organizations in Denmark are perceived to be very strong, their voice being continually heard in the media. Some interviewees named these organizations the 'darlings' of the media, adding that they have a good deal of self-confidence as a result of the fact that the public puts a lot of trust in them since they are held to have rather a lot of influence in government circles. It is also interesting to note that both consumer organizations and societies for the preservation of nature often appear to play the role of 'experts' in the media when, in fact, they are one of the interested parties in the discourse. For obvious reasons The Farmers Association is unhappy with this relationship and was generally dissatisfied with the way in which the press deals with agricultural issues.

All the journalists interviewed were agreed that automatic milking was a complete non-issue in Denmark and that there was little point in trying to form or influence public opinion concerning it. They were also all of the view that everything points to the fact that the milk robot will make farming easier, that there is no effect on milk quality or animal welfare, and that so long as this is this case there is no reason whatsoever for the press to write about it.

3.1.14 Germany

3.1.14.1 Automatic Milking Systems

In Germany there was little knowledge or interest in automatic milking technology. As a result it was very difficult to get people even to agree to be interviewed. Moreover in some cases journalists replied that the editorial policy of their newspaper forbade them from discussing news selection and other issues with researchers. In the interviews which were conducted the respondents indicated that acceptance of the development by farmers would vary both between and within regions since the sector is far from homogeneous, containing everything from 'romantic traditionalists with five cows' to very large concerns with 2,000 animals. In one environmental group, at least, there was some skepticism as to whether automatic milking really is beneficial for the cows and the need to ensure the highest levels of hygiene was stressed.

The interviewees did not think that public acceptance would be a problem, since the great majority are indifferent and anyway have no idea what happens in agriculture. It is only when the media present some negative coverage that there is any reaction. Most people regard milk as a healthy product and therefore tend to be uncritical of the way it is produced (unlike e.g. the pig sector).

3.1.14.2 Food In General

New technology as such is not regarded as a problem. In the view of one respondent the real problem is obesity and unhealthy eating habits. New developments in technology should be addressing this problem instead by e.g. promoting the consumption of vegetables, “because when nobody eats vegetables it’s useless to develop technologies to produce more food.”

3.1.14.3 Information and Communication

The interviewees regarded the influence of media coverage as very great and although the direct effects are normally short-term, there is a longer-term sensitizing effect: “when something disappears from the media, you forget it. But when it returns it’s much more intense.” The comparative lack of news coverage of agricultural issues which was found in the content analysis above was confirmed by two opinion leaders. They explained,

“You won’t find things concerning BSE in the *Frankfurter Allgemeine Zeitung* because it’s a political newspaper. But regional newspapers cover such items because local people don’t read the *F.A.Z.*, they read *General Anzeiger* in Bonn, for example.”

3.1.14.4 Germany: Summary

According to the opinion leaders interviewed, what Germans want above all is cheap food that can be obtained quickly - thereby the trend to the consumption of more and more fast food and increasing obesity. In general the introduction of new technology is unproblematic because, as long as they perceive no changes for the worse, people are quite indifferent to the issue.

3.1.15 The Netherlands

3.1.15.1 Automatic Milking Systems

As in Germany, Dutch journalists working on one paper reported that editorial rules prevented them from being interviewed about news selection procedures. Automatic milking is not very well-known in the Netherlands. One reason is that, since only a small percentage of farmers currently use the method, few people ever have the chance to come into contact with it. However, more and more farmers are holding ‘open days’ with the aim of giving more people first hand experience. According to one spokesperson the reason for the lack of discussion is that an AMS is just another way of milking so that the difference between it and a milking machine isn’t really all that big. However the development was familiar to one animal rights pressure group (*Wakker Dier*) and it had already organized one action in favour of grazing which, combined with general animal welfare, the organization saw as a condition for AMS acceptance.

The interviewees perceived a number of potential advantages from automatic milking, including less physical strain for farmers (e.g. back problems) and, for the animals, fewer udder health problems as a result of more frequent milking at times chosen by the cow. With regard to contact with the animals there was less consensus, one respondent claiming that automatic milking would give farmers more time to be able to tend to cows, while another believed that the amount of individual attention per cow would be reduced. Disadvantages named included the high price of investment and the resulting increasing scale of concerns, an

increased risk for infections and illness, and higher levels of acidity in the milk making it less suitable e.g. for cheese. There was also a degree of unease about grazing. As one animal rights activist put it,

“Everyone thinks its nicer if the cows are outside (...) when cows disappear from the meadows then you get fields of maize there that are 2 meters high that nobody can see over, and all that scrub and those shed things. It’s all so ugly (...) farming organizations do want to keep the cows out at pasture but they don’t want any rules about it, ‘because we’ve already got so many rules’ they say. And then, yeh, the authorities say that too. It’s too much bother for them to have to enforce the controls.”

It was felt that the imago of the dairy cattle sector is much more positive than is the case for pigs or chickens, for example, since the dairy cattle sector is more visible because of grazing, the milk tankers that drive around all over the place etc. The cow has also traditionally always had a friendlier imago and up to now nothing has happened to threaten that. However, were cows, like pigs, to be kept in the whole time then it was believed that this would result in a worsening of that imago. According to the representative of one pressure group, grazing and automatic milking are two distinct issues which should be kept apart. In the Netherlands, he claimed 60% of the milk robot owners have some form of grazing. The two things are therefore perfectly compatible. Neither does automatic milking stand in the way of animal welfare,

“indeed, if the cows stay indoors then often you see that the whole accommodation is changed so that the stall in fact becomes a luxury hotel with luxury mattresses and so on.”

As in other countries the picture of cows grazing in meadows is a romantic/nostalgic one which lies deep in the public imagination. Some producers are smart enough to play on this emotion by giving farmers who allow grazing a bonus so that they can then better market their products, although according to one respondent this is really just window dressing since in those areas, specifically North Holland, South Holland and Utrecht, you have 95% grazing, so it’s really just a form of free promotion.

According to these opinion leaders, public acceptance of automatic milking will depend on how it is presented to the public, the most important element being animal welfare. According to one journalist, once citizens have seen an automatic milking system in action they will more readily accept it.

In terms of *food in general*, price, quality and taste, in that order, are perceived as the most important elements in consumer buying patterns, followed by place of origin, the way it is produced, and whether or not it’s ‘a botched product’.

3.1.15.2 *Information and Communication*

There is a general feeling that the gap between producers and consumers is getting bigger and bigger. Moreover, in general, people are poorly informed. However, although the Dutch are less sensitive food crises than some other Europeans and have a fairly high level of trust in supermarkets and the public authorities, if something happens then they want to know very quickly and exactly what is going on. Thus, fast, honest and open communication is essential, with the assurance that the chances for a repetition of the incident are zero.

3.1.15.3 *The Netherlands: Summary*

Dairy farming has a very positive imago, partly because of its visibility and partly because it fits into the romantic/nostalgic picture that many people have of the countryside. Grazing appears to be a core element in this positive perception and its reduction or disappearance would have a negative effect on the imago of the sector. However, there is no reason why grazing cannot be combined with automatic milking. According to opinion leaders, younger

people are more and more consciously choosing healthy foods, the exact contents of which they know. Nevertheless, while many people say that they are prepared to pay extra, when it comes down to it, they don't. For the consumer safety is important (more important than, say, grazing) but, for the consumer, safety means something 'natural'. Thus 'naturalness' has become an important marketing instrument. Despite opposition from at least one animal rights group, automatic milking appears not to be a problem for the great majority of Dutch people, provided it does not have a negative effect on animal welfare and grazing.

3.1.16 Sweden

3.1.16.1 Journalists

Each of the journalists interviewed in Sweden was working for a morning paper, the majority either for Dagens Nyheter or Svenska Dagbladet. Although these two newspapers have their primary readership in the Greater Stockholm area, both newspapers, and Dagens Nyheter in particular, are considered to be relatively important opinion leaders for the country as a whole. A widespread characteristic of the Swedish daily newspaper market is inadequate profitability which has resulted in cost-cutting measures. All editorial departments relevant to this study have been 'streamlined' in recent years resulting in significant cuts in staff numbers, including a reduction in the number of special reporters. As a result, editorial departments contain more and more younger, 'general' reporters, raising the question of how the quality of sources will be affected now that fewer journalists are expected to cover a wider area, twice as fast, and with less specialist expertise.

None of the journalists interviewed had written anything about automatic milking, although all of them knew about it. Only one journalist had a negative attitude towards the phenomenon, for reasons of animal welfare. The reason for this lack of interest is partly that editorial departments do not think that it would be of interest to their (primarily urban) readership, and partly because it is difficult to come up with a narrative introduction so that automatic milking would meet current criteria of newsworthiness. Journalists writing for the consumer affairs sections of the newspaper would consider doing a story on the milk robot if the quality of milk were to suffer. Similarly, journalists covering environmental issues might put the milk robot in their section if it were perceived to have harmful effects on the environment.

None of the journalists interviewed considered it as part of their role to be opinion leaders for farmers, this role being fulfilled by The Federation of Swedish Farmers (LRF) and specialist 'trade' newspapers such as 'Land/Lantbruk'. The only major Swedish newspaper that regularly covers agricultural issues is Skanska Dagbladet but even it had not devoted a specific article to automatic milking, although it had once referred to it in an article dealing with milk production in general. Svenska Dagbladet was the only newspaper that devoted extensive coverage to contemporary global food issues. Although food journalists would like to write more about global food issues, items such as recipes and pub/restaurant reviews have more 'reading value'. To a large extent, content is determined by perceptions of 'what readers want'. However, isolated examples were given of how pressure from readers and interest groups could occasionally result in e.g. recipes being accompanied by discussion of global issues. General reporters usually only write about food issues when a crisis, such as toxins in food, arises in the industry. One spectacular example in Sweden was the discovery by Scientists in April 2002 of akrylamid in some staple foods.

All interviewees reported that it is relatively easy to find sources, particularly on food issues and all were very careful to point out that they never use just one source, especially when this source represents the food industry. However, there was no consensus about the most common type of source. Rather, the interviewees claim to use a combination of sources, from both industry and government agencies. Specialist science and environmental journalists tend

to consult highly respected scientific journals as sources. Other media are also important, although most stressed the danger of relying entirely on other media for news production since this could easily result in a vicious media cycle with everyone writing essentially the same thing trusting that the first one to publish the information had thoroughly checked the source(s).

Journalists claim that they are free to choose their sources without interference from the editorial management. The source's reliability and expertise in the subject are important selection criteria. Although naturally denying the practice themselves, journalists admit that it is common to use 'house scientists'. This involves repeatedly interviewing a specific, cooperative, commentator on a variety of issues, even if some of them do not fall within that scientist's area of expertise. This involves a shift of responsibility onto researchers, namely, that of bringing the question to the attention of colleagues who do have expertise in the given field. Most of the Swedish journalists interviewed have compiled some form of data base of people that can be used in this way in various contexts. Some also use University websites to search for expert sources.

For news about supermarket chains, several of the interviewees again stressed the importance of not relying entirely on the industry as a source. Some also admitted that the food industry occasionally invites them on trips during which new products are presented. None admitted ever accepting such offers. According to newspaper policy, when a journalist goes on such a trip, the newspaper pays all the expenses since journalistic integrity is perceived as crucial. If they consider the event to be of interest to their readers or important for their own education, reporters sometimes attend scientific meetings and press conferences.

Most of the interviewees admitted that news is frequently selected as a result of a specific incident and that it is easier for incidents that are unexpected, sensational and/or culturally relevant to qualify and be selected as news. Several felt that as newspaper journalists it was easier for them to choose sources than it is for journalists working in broadcasting because sources that talk on the radio or TV must fit a special media format: they must be eloquent and comprehensible. In newspapers, journalists can simplify the language of researchers who are difficult for laypersons to understand, whereas this is not possible in broadcasting.

None of the journalists interviewed thought that automatic milking would or should appear in newspaper headlines unless it proves to be harmful to animals or if the milk is undrinkable or contains toxins. While of little or no interest to the Stockholm newspapers, some journalists were of the opinion that an article on automatic milking could be included in the general business section since it involves major financial investments by individual farmers. One interviewee thought that the milk robot as a subject would be better suited to the working environment section since automatic milking drastically improves farmers' working conditions.

In conclusion, the interviews indicate that automatic milking is currently not an issue in the Swedish press. As long as milk is available in stores at a reasonable price and looks and tastes the same as it always has, readers will be uninterested in the development and there will be no reason for the daily press to write articles about it.

3.1.16.2 Organizations

The Secretary-General of the *Swedish Consumers' Association* took over the post relatively recently. Previously employed at the Swedish Ministry of Agriculture, Fisheries and Food, she was aware of the development of automatic milking. Until recently the Swedish Consumers' Association had had an employee working solely on food issues. For financial reasons this service had now been discontinued. Despite these and other cutbacks, the organization naturally still considers food issues to be important and as far as possible tries to monitor them for consumers. Far from being against automatic milking the organization is in

favour of it since the price, quality and accessibility of milk remains unchanged and it does not adversely affect animal welfare.

The Swedish Consumers' Association works actively to set agendas by extending invitations to press conferences, sending out press releases etc. Nevertheless, its representative felt that recently there has been a trend making it relatively more difficult to pursue consumer issues in the media. However, Journalists frequently use the organization as a source, both in connection with consumer issues and with other news relevant to consumer affairs.

Unsurprisingly, *The Federation of Swedish Farmers* (LRF) is in favour of automatic milking. As the most important opinion leader for Sweden's farmers LRF works diligently to get agricultural issues onto the news agenda. This even extends as far as issuing a calendar containing pictures of young, 'sexy', half-naked male farmers in an attempt to show how 'cool' it is to work in Swedish agriculture. LRF has a relatively large press department where priority is given to cultivating journalists with regard to coverage of agricultural questions. When appropriate, it also issues press releases and holds regular press conferences. The organization is also regularly contacted as a source on agricultural issues. Unless it involves things like BSE and other disasters in food production, LRF feels that it is comparatively difficult to get agricultural issues onto the media agenda. In fact BSE was a bonanza for Swedish cattle farmers since it gave them the opportunity to increase their market share by marketing 'healthy Swedish' beef to worried Swedish consumers.

The *Swedish Society For Nature Conservation* works actively to bring agricultural issues to the attention of the media. The organization also runs various types of information campaigns that usually receive some media coverage. Moreover, it cooperates with other bodies, both voluntary and governmental. According to critics cooperation with bodies such as The Swedish Ministry of Agriculture, Fisheries and Food and The Swedish Board of Agriculture has led to it being institutionalized and unable to play a leading role in environmental issues. However, the organization believes that it is important to cooperate with such bodies in order to be able to monitor the environmental aspects of agriculture. Journalists both in the mainstream media and the specialized agricultural press often consult the organization as a source with regard to agricultural matters.

3.1.17 The United Kingdom

3.1.17.1 Automatic Milking Systems

There are not many automatic milking systems in operation in the U.K. There are various reasons for this: first there is the cost and dairy farming is not really profitable in Britain and more dairy farmers are leaving the industry than in other European countries; second, the first systems did not operate satisfactorily, there was unsatisfactory maintenance, with the result that they have a reputation for being unreliable.

Consumers are completely unaware that some cows are milked by robot systems. In general consumers are very distant from farming and know very little about it. However, they have an almost instinctive fear of so-called 'intensive farming', even though they don't really know what that actually means. The imago of the dairy industry is better than that of poultry and pigs where there is a negative, media-fed image of 'factory farming, and automatic milking might raise questions about animals treatment, especially with regard to grazing. Consumers like to think that their milk comes from cows that spend their time chewing the cud. In fact very few farmers practice zero grazing and because of consumer sensitivity this is unlikely to change, so automatic milking systems will have to lend or adapt themselves to this fact. In general, public acceptance of automatic milking was perceived as unproblematic, because, as one respondent claimed, unlike GMO's it doesn't change the milk. If criticism were to

surface then it could become an issue, but as long as there is no worsening of animal welfare and hygiene there is no reason to suppose that there will be any problems.

3.1.17.2 Food in General

U.K. consumers don't rely much on farmers, less than 1% of the GNP is from agriculture, as a result they are of little political consequence. Food is of consequence because of safety implications, but here the situation is little different from other European countries. The industry is dominated by five large supermarket chains who like to sell cheap branded products and they are the dominant players, as one respondent put it, "customers have grown used to going into these supermarkets to pick up their food, assuming that food quality is 100% o.k. (...) Most supermarkets sell milk at a price that's too low." Despite this widespread trust in the supermarkets, however, it is recognized that there is a group of consumers (maybe 10-15%) who have begun to raise questions about how food is produced.

3.1.17.3 Information and Communication

According to one respondent, the British press loves food scare stories and if some journalist were ever to decide that there is a big issue surrounding automatic milking then he or she would go for that story. There are also strong consumer and animal welfare groups with enormous influence. Nevertheless, it was pointed out, people have short memories. During the BSE crisis there was an increase in the number of vegetarians but a lot of them have gone back to meat, so now meat consumption is probably at the same level as before. The dairy industry worked very hard to ensure that consumers understood that BSE could not be transported in milk, illustrating that it is possible to influence consumers and consumer groups in a positive way. According to one respondent, it is important to give consumers the opportunity to make informed decisions about their food by providing comprehensible information about healthy diets, ingredients and nutritional content. There is a lot of information, e.g. on government websites, but it needs to be open and balanced. With regard to automatic milking, it was stressed that the development should be presented not as a further form of intensification, but as just another tool on the dairy farm, and one that is also beneficial to the cows.

Focus group interviews

3.1.18 Belgium: Flemish Community

Three focus group interviews were held in the Flemish Community of Belgium; a group of women from a countryside association, a group of students studying bio-engineering, and a group of students of communication science.

3.1.18.1 Group 1. K.V.L.V. Wijgmaal

This group consisted of eight women from the KVLV (Katholieke Vereniging voor Landelijke Vrouwen) in Wijgmaal (Flemish Brabant). All were in the age range 40-50 years and were involved either with livestock farming or horticulture. They were all familiar with automatic milking systems. The main advantages named were labour costs and the physical welfare of farmers (especially those with back problems). However, the group also indicated a number of potential disadvantages with the system. These can be grouped under four headings:

- Technical aspects: It was felt that, in general, farmers need more and more technical knowledge. The main problem with automatic milking is that, as soon as the smallest thing goes wrong, you have to call out a technician because the system is so complex.

Moreover if there is an electricity power cut, it is necessary to restart the whole system while a cow is stuck inside.

- The scale and investment cost relationship: It was felt that the return on investment from one AMS would be insufficient for small and middle-sized concerns, while for larger concerns the costs of installing numerous systems might also be prohibitive.
- Temporal organization: While it was acknowledged that automatic milking provides farmers with greater flexibility in their time budgets, this advantage might, at least in part, be annulled by a) the fact that since one would be constantly milking one would also constantly have to be available to respond to any alarm signals from the system, and b) that rather than gaining time, it would simply lead to its reorganization.
- Feeding: With an AMS fodder has to be constantly available because without it the cows would not pass through the system. Problems with one system on the market were named in this respect, where it was claimed cows are reluctant to be milked and therefore get too little to eat everyday, and that brings other problems.

The group was agreed that although the imago of the sector had suffered in the past it was now improving again. For the dairy industry, the importance of grazing with regard to public perception was acknowledged because “media images of cows permanently kept inside would create an imago problem” and, “people walking in the countryside love to see cows in the meadow”. Moreover, “it’s pleasanter for the animals, they also enjoy the sunlight”.

The growing rift between the farmers and the great majority of consumers was also identified as a problem. As one member of the group put it rather resentfully, “they don’t know the trouble we go to in order to maintain animal welfare and the quality of our products.” More and more, it was pointed out, efforts are being made to improve the imago of the sector by organizing open door days, promotional weeks etc. One group member had a problem with the term ‘boer’ since she felt that it in the public imagination it still carried the connotation of ‘ignorant peasant or rustic’, rather than farmer, and preferred the term ‘dairyman’ (melkveehouder). However, another member of the group retorted that she was proud to be called a ‘boer’. The group regretted the increasing scale necessary to operate successfully and realized that this is not always good for the sectors’ imago. However, they acknowledged that, if one wants to remain in business, one has no choice. Moreover, the fact that it was no longer evident that the younger generation would take over the enterprise meant that more and more it was necessary to attract labour from outside, thereby increasing costs. Outsiders it was claimed, have no knowledge or understanding of all this.

Understandably perhaps, in this group ‘bio-farming’ came in for some criticism. Basically they saw it as a temporary reaction to the food scares of recent years, a trendy fashion niche among a certain sector of the population (middle-aged working women). It was also, they claimed, hypocritical – quick and easy meals during the week and then, at the weekend, everything has to be ‘bio’! Moreover, they argued, while bio-farming has created a profile for itself by casting conventional agriculture in a false negative light, in some respects it is actually more dangerous.

Similarly, they were critical of the media which, although possessing a great deal of power, are not always responsible in its use, often using sensational headlines which have little or nothing to do with the actual content of the article.

Despite some reservations concerning potential disadvantages, this group saw acceptance of automatic milking as unproblematic provided the safety of the system could be guaranteed. The welfare of the animals would be unchanged. With regard to general public opinion, they felt that the decision whether or not to adopt the system is up to the individual farmer and citizens should respect the decisions which these individuals make.

3.1.18.2 Group 2. Bio-Engineer Students in Leuven

This group consisted of 5 men and 4 women all aged around 20 and studying at the University of Leuven to be Bio-Engineers. All of them were familiar with automatic milking systems and all were very positive to it, perceiving no potential disadvantages. As the main advantages the group pointed to the fact that cows could be milked more frequently, which would be better for them while, for the farmer, it could bring both financial and practical (especially time-management) benefits. One member of the group saw a resulting loss of grazing as a potential problem but added, “the question is whether our children will bother about that.”

The group did not believe that, as a result of all the meat crises, there are now *more* vegetarians, merely that the social climate has become more favourable to vegetarians so that e.g. most restaurants now have a vegetarian option on their menus. Nevertheless, they admitted that when supposed cases of animal mistreatment appear in the media they can be exploited by opposition groups like GAIA and that this can have very serious consequences for the general image of the sector. Once again, as in other interviews, a problem identified here was the complete ignorance of most people with regard to the means by which their food is produced and it was argued that many would turn pale if they knew how far the technology has developed. The complicit hypocrisy of public opinion which combined dislike and criticism of mass production with shopping as cheaply as possible in big supermarkets, was also once again highlighted.

This group regarded the influence of the media as being very strong and they were very critical of the media's role: ‘As soon as anything happens in a food company it's exaggerated in the media’. ‘These days you only see negative things in the news and on TV; and if the media are negative, then the people will be negative’. This problem they saw as being reinforced by the aforementioned distance between the sector and consumers: since people have such little first-hand knowledge, when they see negative pictures on TV then they are much more likely to be influenced. In other words, people are so easy to shock because they are so far away from what is happening. None of the group had so far seen anything about automatic milking in the media. However, they doubted whether this would remain the case if something were to go wrong and a pressure group were then to begin to tell wild stories about it. Their view was that it is better not to inform the public of developments too quickly because that would only create a frightening picture which would result in negative consequences. Moreover, added one respondent, “there are 100,000 worse things in the food industry. I wouldn't spend any money on distributing information about the milk robot!” Perhaps not surprisingly, given the direction of their studies, this group was very positive to automatic milking and other new technological developments. Nevertheless, in the food sector as a whole, they perceived a damaging rift between producers and consumers which provides a space which the media and opposition pressure groups can exploit in order to create negative images. However, they betrayed a certain resignation in this respect and did not believe more information about new technological developments to be the answer.

3.1.18.3 Communication Students: Leuven

This group consisted of seven students, four men and three women, all aged around 20 and studying communication science at the University of Leuven. Since none of them had heard about the latest developments in automatic milking they were shown a promotional video dealing with it. They were then asked to point out the potential advantages and disadvantages that they believed would accrue to the technology. As *advantages* they named greater hygiene and the fact that the cow could choose herself when to be milked. Above all, they saw advantages for the farmer especially in terms of greater flexibility in time management with more spare time as a result. This, they believed would make the work more attractive. As potential *disadvantages* they named the perception of farming as becoming more and more industrialized and the great investment cost for small concerns, although they accepted that

such developments are essential to maintain profitability. There was also concern that sometimes cows would have to wait too long in order to be milked. *Grazing* they regarded as essential, something that people absolutely want to keep, “otherwise the result will be the same bad situation as with chickens and pigs.”

In respect to food safety and quality the group was critical, not to say cynical:

“unsafe but you don’t have any choice.”

“all the rubbish goes to Aldi and the people who go there don’t know what they’re buying.”

“there are so many preservatives, the ‘E’s’ that you never know what’s in it”

“Our meat is all bloated and then when you fry it, it shrinks. That can’t be healthy”.

“if you see ‘modified soya’ on the label of a simple jar of Choco, well, you leave it alone. I’m not in favour of that genetic manipulation”

However, in terms of consumer consciousness there was some difference of opinion, with on the one side, the view that, “the consumer has power, in the sense that he can buy what he wants” and, on the other, that young consumers like themselves can be influenced by advertising, or just take what’s cheapest or what their parents buy.

In general terms this group was cynical and resigned about food quality and safety.

Nevertheless they were not necessarily against automatic milking believing that it would be accepted by the public at large as long as there are no negative effects on animal welfare.

With regard to information they were of the opinion that, above all, the authorities should ensure that proper standards are laid down and should let people know that milk quality is unaffected. However, they also expressed the (once again cynical) view that, “whatever you do, some people will be against it.” In a parting shot, one participant stated,

“The farmers would do better to think about themselves and their imago, because that’s not very good.”

3.1.19 The Netherlands

The focus group in The Netherlands consisted of eight students (1 male and 7 females) studying environmental sciences at Wageningen University. They were all in their early 20’s. Most of the group did not know what an automatic milking system was, but one of them had been given a study task about it and she explained to the others how it worked. In her view the *advantages* include:

- an extremely high level of hygiene,
- the fact that cows allow themselves to be milked more often,
- the fact that the system merely does what farmers do now,
- it allows the farmer better time management,
- the need for less labour is the goal, not greater milk production
- the robot is in the cowshed and so the cow can stay in the herd and doesn’t have to walk on its own to a barn in order to be milked.

While potential *disadvantages* were:

- the need for a lot of cow management,
- results would now have to be read from the computer
- the development represents a further step in the process of intensification

With regard to *grazing* there was agreement that milk has to come from cows that are able to walk about outside, however as one person observed, “every Dutch person wants cows in the meadow, but when they buy milk they expect it to be cheap.” There was also agreement that the meadows should not be too far from the cowshed because if the weather is very bad, or if it’s hot then the cows have to be able to choose to go inside.

The group was of the view that we currently pay too little for our food and that this demand for cheapness has its consequences. If bio-food were less expensive, it was argued, then half of the Dutch population would eat bio-products. However, it’s not, and so a lot of concerns that switched over to bio-farming have had to switch back to current methods again because otherwise they can’t recuperate their costs. Moreover, they pointed out, ‘bio’ doesn’t always mean ‘safer’, e.g. you get a lot more salmonella in bio-eggs than you do in those produced by other methods. According to the media there are more and more vegetarians in The Netherlands and, for health reasons, a lot more fish being eaten instead of meat. In fact, they claimed, meat consumption as a whole doesn’t drop during a crisis, people just switch types. For example, if there is some scare over pork then people (temporarily) just buy more beef or chicken. In their view changes in eating habits are more dependent on the type of society and life-style that we have than anything else.

In this group there was one clear opinion leader, since she had had first hand experience of automatic milking while the others knew little or nothing about it. Not surprisingly, then, a conclusion drawn by this group was that it is easier to influence people in a positive direction if, up to that point, they know nothing about it, than change an already formed negative attitude into a positive one.

3.1.20 Sweden

Three focus group interviews were held in Sweden: a group of young adults in Stockholm, a group consisting mainly of middle-aged highly educated persons in Helsingborg, and a group of middle-aged low educated persons in Halmstad. While not representative in the quantitative sense each group can be viewed as typical, even ‘ideal types’, of three socio-demographic groups.

3.1.20.1 Stockholm

This group consisted of five women and one man, with an age range from 19 to 23 years. Only one was born in Stockholm. All shared a middle-class background and all were politically to the left, though not active in conventional politics. The women were all Feminists and some of them had participated in demonstrations (e.g. outside pornography shops). Four of the six were ‘ethical vegetarians’ (“we have no right to kill animals for food”) and a fifth had previously been one but had now resumed eating meat.

General Attitude To Food Production, Food Safety, and Animal Welfare

The group was very interested in food issues and often thought about what was being produced and how, partly for health and partly for ethical reasons. They claimed that they always look at labels, the vegetarians above all to ensure that products contained absolutely no animal products. The group was skeptical of the food industry, being of the opinion that, given the chance, it would not hesitate to cheat consumers in order to increase profits. At the same time they were aware that there are established rules, both E.U. and Swedish, regulating food labeling. There was a strong feeling of nationalism with regard to food production and the group was completely convinced that Sweden is much better than the rest of Europe when it comes to food production in general, and animal welfare in particular:

“Look at all those TV-programmmes showing how animals are transported in the E.U. It’s good that we Swedes have protested against that.”

However, the vegetarians in the group were against the idea of merely making animals ‘happy’ so that the meat would taste better:

“That’s so damned egoistic. Should we make living creatures happy just so that we can eat them?”

General Attitude To Milk and Dairy Products

Most of the group stated that they buy bio-milk, despite its being more expensive, because this type of production is on a smaller scale and the cows can go outside. Most of the group were opposed to large scale of milk production:

“You can only get about 4 liters a day from a cow that isn’t inside all the time, but this type of industry has made it possible to milk about 20 liters instead. They squeeze out as much as possible to suck the animal dry.”

On the question of price the group was of the opinion that, even if large scale ‘industrial’ production resulted in lower prices, they themselves would rather pay a little more for bio-milk which is produced in an ethically defensible way. While they were aware that for lower income families with children price is more important, there was a consensus that the central question is not one of price but of the kind of society one wants to live in, and that the problem of price differentials could be solved by subsidizing bio-milk (“the E.U. gives so many subsidies to so many other things, why not that?”).

Perception of How Cows are Milked and Treated Today

Each participant was aware that cows have long been milked by machines and not by hand. However, the members of the group had very disparate perceptions of current praxis. This resulted in two members of the group having a rather intensive discussion about how cows stand in milking sheds. The person born in Stockholm was convinced that cows are chained together in long rows with very little space with the result that they frequently had to urinate while being milked. The non-vegetarian (the only one in the group with personal recent experience of cow-milking sheds) stated that space wasn’t all that restricted and that the cows have plenty of room. Nevertheless, there was agreement over the importance of allowing cows to go out and, once again, complete agreement that it was better to be a cow in Sweden than in the rest of Europe. There then followed a discussion (among three of the women vegetarians) on whether it is defensible even to drink milk at all:

“I think I’ll stop drinking milk completely, because a cow’s milk is for the calves and why should we humans take their milk, it’s like using animals as machines.”

“Good God, the cows have far more milk than they need for the calves, they get what they need, of course we don’t take the milk from them.”

“They (the cows) have so much milk because we humans have made them like that. The farmers want to earn as much money as possible from their cows, that’s why they make sure they’re milked as much as possible.”

Automatic Milking

The group was shown photographs of an automatic milking system. None of them had ever heard of it before. Three members of the group stated that they couldn’t see any possible benefit from the development except to those who want to earn even more money by producing as much milk as possible and that there was a risk that the cows would no longer be

allowed to go out during the warmer months of the year. The other two members of the group were convinced that the cows would not suffer, nor would anything change within farming as a result of automatic milking. However, the critics remained skeptical to the idea of ‘milking by robot’ and found the brochure derisory, “It’ll become an industry where cows, which are living creatures, are reduced to machines. I think it’s damnable.”

There then followed a discussion as to whether or not automatic milking would make farmer’s lives easier so that more people would want to work in agriculture. No-one in the group felt that this would be the case. However, the group was of the opinion that it could reduce the price of milk and that this would be welcome to the majority of consumers for whom the ethical issues involved in food production were unimportant. Three members of the group believed that there would be a reduction in milk quality because the cows would have less contact with humans and suffer more stress. Nevertheless, the group were sure that automatic milking would be accepted by consumers at large because, ‘most people don’t care. They just work and consume.’ The group was also critical of the coverage of food production by the ‘ordinary’ media (i.e. the press and TV) since they seldom reported on food production issues.

Future Technology

The members of this group were rather worried about future technology and food production. There was a discussion about GMO’s including whether one should refer to the development as genetically ‘modified’ or ‘manipulated’. They were negative to technology which they found synonymous with ‘large-scale’ and ‘exploitation’. Given this expressed techno-phobia it was ironic that immediately after the interview every member immediately switched on their mobile phones and checked their messages.

Summary

This group can be seen as illustrative of a certain type of urban, politically conscious, middle class young person. Basically, they were against everything currently topical: the European Union, the Euro, and an ever-more technologically oriented society. They were interested in environmental questions in a general way, claiming that they always buy labeled ‘bio’ products. There was also a clear nationalistic, idealized perception of the nature of Swedish agriculture. Their idyll consists of green pastures full of (Swedish) grazing cows each of which has its own name. The group was skeptical to what they saw as the ever-increasing industrialization of the food production sector, “where everything is based on increasing profits.”

3.1.20.2 Group 2:Helsingborg

Helsingborg is a middle-sized town in the far South of Sweden standing on the Sound facing Denmark. The Focus Group here consisted of five persons, two women (both aged 54 years) and three men (aged, 35, 56, and 59 years). Four of the group were born in Helsingborg, although two of these had also lived in Stockholm. The fifth was born in neighbouring Malmoe but has lived in Helsingborg for a long time. Socially they all belonged to the well-educated professional middle class.

General Attitude To Food Production, Food Safety and Animal Welfare

The members of this group stated that they tend not to think very much in general terms about food production. However, they pointed out that the media often report various scares and that this can have short-term effects which lead to one wondering ‘what one is putting into oneself’. The group was also of the opinion that the fact that Sweden has lots of rules and

regulations is a good thing with respect to food safety. For example, one participant never buys meat in neighbouring Denmark because “there have been lots of problems with salmonella there”. Further, “Just as I always buy Nordic bio-labeled washing powder, I always check to make sure that meat is Swedish.”

And,

“I often buy bio-labeled products, but that’s mainly for health reasons, since those products usually contain less fat.”

There was a consensus in the group that food safety is rather good in Sweden, compared to the rest of Europe.

The group believed very strongly in the great importance of animal welfare and human responsibility to ensure that animals are happy. They were satisfied that Sweden worked hard to bring animal welfare issues onto the E.U. agenda. There followed a lively discussion on ‘the terrible way in which animals, such as cows and pigs, are transported across Europe’ and the how the animals suffered as a result. Every member of the group had seen a lot of media coverage of this issue.

General Attitude To Milk and Dairy Products

Only one of the group (the youngest man) had ever bought bio-milk, but had stopped doing so because,

“I read an article, can’t remember where, that said that there is no difference between bio- and ‘ordinary’ milk. So then I stopped buying the bio-milk because it’s more expensive. But otherwise I check everything that I buy, for ethical as well as health reasons.”

The suspicion which the members of the group had concerning meat production in Europe (i.e. outside of Sweden) appeared not to apply to dairy produce – at least if one wanted to eat good cheese. In response to the question of whether it is as important to buy Swedish dairy products as it is to buy Swedish meat, the group agreed that,

“No, sometimes you want to have really good cheese; not that there’s anything wrong with priest’s cheese and manor cheese (two popular Swedish types); but French and Italian cheeses are a bit better.”

Perception of How Cows are Milked and Treated Today

Each member of the group was aware that cows are milked by machines, but none of them had ever heard of the milk robot. They believed that most cows in Sweden are kept in reasonably good conditions, although ‘one shouldn’t have any illusions’,

“It’s obvious that the days when farmers had a name for every cow and went out in the meadows to fetch them are long gone. And of course if it’s to be profitable then it has to be done rationally.”

The members of the group agreed that milk production in Sweden today is an industry. Despite this fact, however, they believed that the cows are still reasonably well treated and that, all over the country, one could still see cows grazing in the meadows in summer. They were also firmly of the opinion that this should continue to be the case and that profitability must not be achieved at the cost of ethically indefensible animal husbandry.

Automatic Milking

The group believed that automatic milking might reduce the price of milk since it would be possible to increase individual cow milk yields. There followed a discussion on how automatic milking would affect individual farmers and whether or not it would give farmers greater freedom,

“Maybe it’ll make it possible for farmers to go away on holiday, although someone will still need to check up on that robot – so it’s debatable.”

There were also questions raised concerning the scale of investment necessary to install the new technology and whether these costs wouldn’t then be passed onto the consumer. Moreover, Even though the group could see that automatic milking would provide some opportunities, they were at pains to point out some limitations, the greatest of which would be the de-personalization of farming and the fact that animals would be treated like machines rather than living subjects.

“I think it’s a rather unpleasant future – just milking as much as possible. Personally, I could never be a farmer of any kind. I’d get attached to my animals and not be able to kill them. That said, I’m actually rather glad that there is meat.”

The group saw animal treatment as the main problem with automatic milking. They believed that it would result in cows not being allowed to go out any more, which they regarded as an important issue. Some members of the group also believed that there would be a negative effect on milk quality e.g.,

“The fact that the cows wouldn’t have any contact with humans anymore, no-one to feel them and see if they are ill etc., might mean that they would have to use masses of antibiotics to get the cows to produce milk, and then we’d get all that crap in us.”

All the members of the group believed that cows need some form of human contact in order to feel good and that this contact would disappear as a result of automatic milking,

“I think it’s terrible to let a robot milk cows – it’s obvious that this is just to increase profits as much as possible. Not a thought for the animals.”

On the question of whether, all things considered, they were prepared to accept automatic milking, opinion was divided,

‘ I could say o.k. if there were guarantees that the cows feel well and don’t just have to stand in stalls without any form of human contact.’

“I must say I don’t like any of it – the cows could get ill and since there would be no-one to look after them on a daily basis they might be ill for a long time before it’s discovered and that’s a type of farming that I for one don’t want. I’d rather that milk costs one crown extra instead.”

However, the group believed that automatic milking would be accepted by Swedish consumers at large, ‘because most people just think about prices when they buy food, and never stop to think about how it is produced.’

Future Technology

When the subject of agricultural technology was broached, the immediate response of the group was to raise the question of GMO’s. The idea of things like ‘genetically modified crops’ was frightening. Numerous examples were given of vegetables which never rot, bread which never goes mouldy etc. The group thought all of this unnatural and they therefore tried to buy bio-products. There then followed a discussion of why Swedish agriculture needed to

be so technologically oriented, with greater and greater demands for profitability when, “everyone knows that Swedish farmers more or less live on E.U. subsidies.”

Summary

This group can be seen as illustrative of well-educated, middle-aged, liberal citizens who are conscious of consumer issues. However, in a sense they were also ‘rich rebels’ who have the means to buy food in small specialist shops while disparaging the majority of consumers ‘who just go to supermarkets, look at the prices and buy as cheaply as possible’. The group saw ethical questions in food production, particularly animal welfare, as extremely important, claiming that they often thought about the issues involved, although their cultural snobbishness sometimes (e.g. when it came to French and Italian cheeses) made their ethical parameters rather flexible. In general, although convinced that automatic milking would be accepted by ‘ordinary’ consumers, they themselves were mildly critical of it because they believed that it would have negative consequences for animal welfare.

3.1.20.3 Group 3. Halmstad

Halmstad is a small town on the Swedish west coast. It’s fine beaches attract large numbers of tourists during the summer. Otherwise, it is a stable, unremarkable community. The group was made up of six persons, four women aged 49-59 years and two men aged 52 and 61 years. Four of them were born in Halmstad, the other two have lived all their adult lives in the town. They have had little or no higher education, but are economically comfortably-off.

General Attitude To Food Production, Food Safety and Animal Welfare

There was a general consensus in the group that there were a great many good laws, rules and regulations in Sweden to ensure that food safety is good. A lively discussion broke out with regard to Swedish versus foreign meat and everyone was agreed that Swedish meat is best. “The other day I saw a shop that had pork from Denmark for 49 crowns a Kilo. That’s crazy. I would never buy it. You see people around the fridges just taking whatever they see, stuff that can be re-frozen and so on, just as long as it’s cheap. I buy Swedish because I want to support Swedish agriculture. I think it’s important that we have agriculture in our country.”

The group was agreed that it is important to have a viable countryside and that one should therefore buy Swedish products. However, one of the members, who said that she always tried to be very careful when buying food, pointed out that one could still sometimes be cheated: “I bought some chicken breasts that had a Swedish label, then when I got home I saw that they had just been packaged in Sweden and that the chicken was foreign. I think that kind of thing is terrible.”

Another member replied,

“There was this TV programme looking at how you can be fooled with chicken, I mean it has a Swedish label but it can come from lots of different countries. After that programme I saw lots of people reading the packaging in the shops. But it didn’t last long, after a while people stopped caring again, taking anything just as long as it was cheap.”

The discussion concerning animal welfare was lively. Most of the group agreed that, ‘we Swedes care a lot more about animals than people do in the rest of Europe’. However, one man, who was of German origin, disagreed with this self-righteous attitude, “It’s a myth that it’s so much better here than, say, in Germany or Belgium. You talk about the terrible way that animals are transported and so on. In Germany the abattoirs are situated closer together which makes it better for the animals than here. So there’s no great difference

between Sweden and, at least, other parts of Northern Europe. Animals get mistreated in Sweden too.”

On the question of why Swedes should care more about animals than other nationalities do one woman claimed,

“I grew up in the countryside and I know how kind and considerate everyone was with animals. Quite simply, I believe it’s natural in the Swedish character to care about animals and be humane.”

General Attitude To Milk and Dairy Products

With regard to dairy products the group was not as nationalistic as they had been about meat: they were happy to buy French cheese etc. On the other hand milk was something that absolutely had to be Swedish, because it has to be fresh and shouldn’t be transported from other countries. There followed an unruly discussion about the German supermarket chain Lindl, which at the time was becoming established in Halmstad and across the rest of the country. These shops they claimed would only sell German milk because it’s cheaper than Swedish milk. This the group thought was reprehensible:

“Buy cheap German milk and transport it here when we’ve perfectly good Swedish milk. As I said milk is a fresh product and so should come from as nearby as possible. Also, I think it’s very important to preserve Swedish agriculture and have our own Swedish milk production. I suppose families with children that buy a lot of milk can’t afford to think like this, they just want to have it as cheaply as possible.”

The group spoke about a small, local dairy that produced milk and that it had been able to get into all the shops in Halmstad and thereby compete with Arla, which otherwise has a virtual monopoly in Sweden. The members of the group always bought all their dairy products from this local dairy. True, it was more expensive but they all thought it important to support local enterprise. There followed a discussion as to whether the milk from this local dairy was ‘biological’ or not. In the opinion of one woman,

“What does ‘BIO’ milk mean, actually? The cows at Vapnoe (the local dairy) are always outside and that’s bio-milk. There’s almost a public celebration when those cows are taken outside in the spring – people drive out there to look. At any rate the milk doesn’t have any additives and I think that’s good. I read in *Allt om mat* (a food/recipe magazine) I think it was, that ordinary low-fat milk has to have vitamins added. But they don’t need to do that with Vapnoe milk because it still contains all the natural goodness. We get enough poisons in us as it is, so that’s why I buy Vapnoe milk.”

Perception of How Cows are Milked and Treated Today

Everyone was aware that cows are milked by machines. One woman claimed to have seen a milk robot on a farm in the far South-East corner of the country close to where her daughter goes to school. She described in detail how the cows each had a chip around their neck and went voluntarily into the stall to take their turn to be milked. She found the whole thing a little impersonal. After her account the other women in the group reacted strongly and thought it a terrible technique. One, herself raised in the countryside, stated,

“I think all animals need human contact. When the farmer connects the milking machine then he pats the cows, and that makes them feel good.”

One woman started wondering how the milk robot is cleaned after each cow and her husband had very definite views on this subject, stating, "It's cleaned after every cow and it's a completely closed system, so there's no danger."

To which his wife replied,

"But if the cow, for example, starts to bleed during milking, then the blood will get into the system and then we'll get it in the milk. That doesn't sound very nice. I don't mean that we should over-sensitive about bacteria and so on, but blood in milk is not something one wants to have."

There followed a discussion of how the cows at the local dairy are milked. While the women saw it as their ideal model, the men were of the opinion that there was already an automatic milking installation there.

Finally, everyone in the group returned to the agreement that Swedish cows are pretty well looked after these days, at least in comparison with the rest of Europe.

Automatic Milking

The group were of the opinion that the main advantage of automatic milking is that it would eventually keep the price of milk down. The men pointed out that, although it required a great deal of investment, it would also reduce labour costs because fewer employees would be needed. One man also believed that the technique would improve farmer's lives by giving them more spare time. On the negative side, it was felt that only the richer farms would be able to afford the investment and that, as a result, the smaller farmers would find it even more difficult to compete. The group felt that the E.U. should provide subsidies for small farmers in this respect.

In terms of animal welfare, the women in the group were of the opinion that the introduction of automatic milking would make animals feel less well because they would lose all contact with humans. They were afraid that animals could fall ill and suffer for some time because there would be no-one there on a daily basis to look after them. However, the two men did not believe that animal welfare would be affected, since the important thing was that the animals would be milked when it was necessary for them and that was good for the cows. Since these two men worked in an abattoir they saw themselves as authorities even on this subject so that, after some discussion, the women changed their views.

The group repeated that automatic milking would help to hold prices down and they were agreed that agriculture needed to be rational in order to be profitable and competitive. However, once again Lidl's entry into the Swedish market was named in horror. With regard to the quality of milk the women were at first rather nervous, but they were calmed down by one of the men:

"The farmers run this system from a computer screen which quickly signals an alarm if something has gone wrong. Quality controllers will come and make random checks just like they do now. Of course things can go wrong, but that's true now too, and that's life. The system is clean and, as I said just now, the most important thing is that the cows feel good while they are being milked."

The group was agreed that the great majority of Swedes would accept automatic milking because most haven't the faintest idea of what happens on a farm and just want to buy as much as possible as cheaply as possible. It was pointed out that today children, in particular, have no idea whatsoever of life in the countryside or of how food is produced, and it was agreed that this is a sad thing. There was even doubt as to whether some children even knew where the milk they drink comes from (i.e. from cows).

Future Technology

As soon as the subject of food and bio-technology was raised there was a lively discussion about genetically modified crops. One woman told the following story, “Once I did a test. I put a green apple in the fridge for 8 months. When I took it out it was just as good and green as when I put it in, not at all wrinkled. I cut it in half and it wasn’t rotten at all. That’s awful and completely unnatural.

On the subject of GMO’s the group was as divided as it had been on other issues. Some found it a frightening technique, others argued that it would make it possible to grow enough food to counter hunger and famine in the world. In the end a consensus was reached that, just as in other industries, new technology was a necessity in agriculture. Finally, they also admitted that with respect to agriculture Swedes have a rather idealized picture of just what the perfect farm should look like – small with happy animals.

Summary

This group can be seen as illustrative of small town, middle aged Sweden. The members of the group saw themselves as aware consumers to the extent of being careful about the food they buy. On the other hand, they were not particularly environmentally aware. They showed great faith in the ability of the Swedish authorities to control the food industry. The women were somewhat skeptical with regard to automatic milking mainly because they were worried that the cows would feel worse. Nevertheless,, they allowed themselves to be persuaded by the men that this would not be the case.

3.1.20.4 The Swedish Focus groups: General Observations

The first observation from the interviews is the lack of first hand knowledge respondents demonstrated regarding the nature of contemporary agriculture. This is not surprising given the fact that agriculture, forestry, hunting and fishing all together account for only about 2% of all employment in Sweden. Moreover, in general, Swedish media only report on agriculture when there is a scandal somewhere, and especially when it involves mistreatment of animals. Interestingly, there has been a docu-soap on Swedish TV called ‘The Farm’ which showed how a group of people survive on a farm where they have to do everything themselves. A parallel programme showed a group of people trying to survive on a south-sea desert island. The success of these programmes is perhaps based on the fact that they are both located in exotic, alien places of which the vast majority of viewers have no direct knowledge or experience whatsoever beyond perhaps the occasional brief touristic interlude.

Secondly, a widespread and profound nationalism manifested itself in the firm and oft-repeated belief that, in respect of food quality and animal welfare, everything is better in Sweden than anywhere else, a belief going hand in hand with a mental picture of a Swedish pastoral idyll filled with green meadows grazed by cows, each with its own name, and made happy by human love and attention.

Thirdly, the indications are that Swedish attitudes with regard to agriculture and food are structured along lines of age, gender and level of education. Young well-educated women were the most critical, mainly for ethical reasons relating to animal welfare, while middle-aged less educated men were least critical. These results are in line with those reported in the annual, quantitative, SOM opinion studies carried out at the University of Gothenburg, which also show that concern over GMO’s and other food risks tends to be greatest among the more highly educated and among women.

3.1.21 The United Kingdom

Three focus groups consisting of university students were held: one in London and two in Hull.

3.1.21.1 Group 1. London

This group consisted of nine persons, six women and 3 men. All were students at Kings College of the University of London and were studying English and Communication. Six of them were British (coming from various parts of the country), and three were from Continental Europe (France, Germany and Portugal). Most of the members of the group, even those who initially were from rural areas, admitted to knowing absolutely nothing about farming. Two (the German and the Portugese) did have first hand knowledge, having grown up in farming families although, significantly, the German was apologetic of the fact,

“I come from a very small village and I know quite a lot about farming (...) my granddad is still a farmer and we own fields and woods. It’s quite embarrassing but my dad and my granddad they used to slaughter a cow every year and the meat and everything, the whole cow basically, is then split up between the family.”

All of the members of the group knew that cows are milked by machines, however, none of them had ever heard of automatic milking. When it was explained to them (in neutral terms) their reaction was very negative. The only positive advantages which anyone could see were speed and efficiency, which would make the system attractive to big farms but, as one respondent put it, “for all the rest it’s very bad.” Otherwise the general reaction of this group was uniformly negative,

- “It all looks so cruel to me”,
- “cows will be stressed!”
- “it sounds more like a factory” (everyone agrees with this)
- “all for money!”
- “the government doesn’t care about animals!”

There then followed a discussion about animal welfare in automatic systems which illustrates the negative basic attitudes of almost every member of the group. Whatever was said by the interviewer was met by objections,

“What if the cows stand very close to each other and how can a cow know where and how she has to stand in the milk robot?”

interviewer: “cows learn very fast (...) and after they have been milked they can get food and lie down until they feel the need to be milked again.”

“But it’s not good. Then the cow isn’t seeing a single person.”

“But cows can’t make a difference between a machine and a person. They just want to get rid of their milk.”

“No, they are sensitive enough to see and feel the difference between a person and a machine.”

“Has any research been done concerning the stress they feel being milked by a robot?”

interviewer: “Yes, the research says that they feel less stressed being milked with an AMS because with this system they can be milked as many times as they want.”

“ (...) but what if there is another cow in the machine at that moment.”

Interviewer: Yes, there can be some traffic in the cowshed. But they only have to wait for a couple of minutes. Before, when the farmer did the milking, they sometimes had to wait half a day.”

“But some cows have the privilege to go first. Is there like a hierarchy?”

The discussion then meandered across almost all the classic negative points raised in almost every focus group discussion:

“And what if the machine is not working, you have a big queue. At the moment there is a big sort of issue to do with food in general and organic milk in supermarkets. Consumers are not going to like the fact that these cows - would it sell, milk that comes from cows who are being milked with a machine?”

- “would people know?”
- “they have to ...”
- “would you as a consumer taste the difference between milk from a machine or not?”

- “for me it wont make any difference because I don’t drink any milk!”

- “well, yeah. But how do you (i.e. the others) feel?”
- “There could be more concern about ethical issues rather than the milk. The conditions of the milking are more important.”

- “I think people like the image of grazing cows, they prefer that instead of the image of large factories.”

- “yes, that’s true.”

As usual, the discussion then switched over to the issue of grazing:

- “the system, does it also control their feed as well? They will be fed in closed environments? Would they still be allowed to go out and graze in a natural environment?”

interviewer: “automatic milking doesn’t change anything with respect to whether cows are kept in or not.”

- “but we already have this issue with battery eggs and people are prepared to pay a bit more to get organic eggs rather than battery eggs. ...”

- “the animal welfare aspects are indeed the most important.”

- “Yes, but what is the most important: cows kept outside waiting to go and get milked and so, more stress or keeping them inside, close to the machine?”

- “who says that she’s not stressed when she’s in a box?”

- “it’s like those chicken farms where they – there was a big scandal in Germany about it – they found out mathematically how much space the chickens needed.”
- “But cows will be stressed!
- “exactly, and this will outweigh the advantage of not having that much stress being milked on time.”
- “we are looking at two extremes. What’s to say that they can’t be milked by an AMS as long as the cows are allowed to go out and graze? It could be beneficial as long as some conditions are fulfilled. You have to think about that before you introduce such a system.”
- “why can’t they place the robot outside the whole time.?”
- “they have to be connected to the tank and so..”
- When they find a way to keep cows outside - when the cow knows that the robot is there outside, she goes to it herself. For example, she knows the robot is there at this particular spot, by the tree outside.”

The participant from Portugal then intervened:

“I know as a foreigner that this is a very sensitive issue. But in other countries probably people would even find this funny. It all depends on how sensitive people are to issues per country.”

To which another participant replied,

“British people are very much aware of animal welfare because with BSE people saw on TV what was happening. Perhaps people in other countries are not so well informed.

Interviewer: “but aren’t these short-term effects?”

“It’s still in the mind of all the people! Nobody talked about these problems until it was too late. And when this will come up, even if it’s not as serious as BSE, there will always be a lot of skepticism about it.”

The subsequent discussion about vegetarianism then took a rather nationalistic turn:

“interviewer: “Are there more vegetarians in England now?”

- “Yes, there are more vegetarians anyway.” I don’t know if that’s related to that.”
- “everything is going like – we want to be healthy, we want to go to the gym. We want to exercise. We eat vegetables. It’s more a general way of how we are living now.”
- “I heard Madonna saying last week that eating vegetarian is so passé. She’s eating meat again.’

- “Ever since the BSE crisis, the standards of British beef would be very high because of what happened. Probably our meat has never been so healthy as it is now.”
- But my sister did a dissertation about it and a lot of people in France wont eat British beef. Public opinion can thus be wrongly informed.”
- But the French government has the responsibility to inform people.”...
- I’m sure that there are a lot more vegetarians in England than there are in France (this from the French participant). Because when you go here to the supermarket, you find vegetarian food everywhere. And when you go to a restaurant and you see a ‘V’ – it means that it’s good for vegetarians. You see that on every menu. French people don’t care about the vegetarians.”
- “In France it has always been part of the culture.”
- “and with Christmas, everyone is eating turkey.”
- (the French participant) “we eat foie gras for Christmas.”

Everyone here reacts very strongly pointing out that the way in which foie gras is produced is very cruel.

- (The French participant) “But it’s really good!”
- (everyone else) “yes, but it’s really cruel!”

Rounding off, the interviewer asked what we could conclude about the acceptance of automatic milking by British people. All the group members were against it:

- “There first must come a big scandal for The Sun, The Times... letting people know how cows are kept, whatever danger there is in that....something like that has to happen. We need scandals, some dying cows, some diseases.”
- “There already have been some, there has been BSE. So, the answer generally is ‘no’., we wont accept it. I think it is completely the wrong time from the consumers’ perspective to be willing to put such a thing on the market. People are so paranoid concerning the way in which their food is being produced.
- “We’re skeptical about the government. If I were the government, I wouldn’t tell anybody about it, not for a little while.”

Here the group once again went off on a tangential discussion concerning another food issue:

- “there is a huge debate going on concerning GM crops for the moment. Basically, the general concern is – there is more research needed for 5 or 10 years. Now people are arguing about something they don’t know a lot about, but that’s because we are so paranoid about anything to do with our food.”
- “who wants to eat penicillin, fat?”

- “The Americans, they’ve had GM crops for lots of years.”
- “yes, but let’s face it, they’re all fat!”
- “To be honest a lot of people would prefer not to know where their food comes from. We can’t boycott all the food in the world, cause we’d die. A lot of people prefer not to know.”

We have cited this interview at length because, in one session, it very sharply crystallizes virtually all the criticisms and concerns which were voiced in the interviews as a whole. The views which this group (which was drawn from young, highly educated urban dwellers) expressed were based on a fundamentally negative and skeptical attitude towards farming and food production. Despite knowing virtually nothing about modern farming and food production methods, they were prepared only to see negative aspects with regard to new developments and whenever the potential advantages of automatic milking were mentioned they immediately switched the discussion to associate with other negatively perceived issues (BSE, battery hens, animal welfare etc. etc.).

3.1.21.2 Groups 2. & 3.: Hull

The first group from the University of Hull was made up of nine students from the M.A. course in translation studies, consisting of four males and five females, and eight students studying Drama and Communication, consisting of five males and three females. They came from all over the country. Since there were few significant differences in the views expressed by these two groups, the results of the interviews will be summarized together. The members of these groups knew that milking is done by machines but none of them had heard of automatic milking systems. When the principles of automatic milking were presented to them they were asked advantages and disadvantages they saw as accruing to the development.

As *advantages* they saw first and foremost benefits to the farmer in terms of greater efficiency, greater profits and fewer worries, although it was felt that it would make farmers even more into technicians and businessmen – reading and understanding the results of milking from the computer. In addition they believed the system would reduce cow stress and would provide greater hygiene. As potential *disadvantages* they saw the development as contributing to the image of the over-industrialization of farming (‘machine versus nature’) and the fact that there would be no personal touch from the farmer. The comparison with battery hens was made and some felt that automatic milking might have a negative effect on the quality of milk. There was also concern that the system might be painful for the cows and that ‘over-exploitation’ might affect the calves. Finally, the high cost of installing the system was raised.

On the subject of *grazing* there was unanimity in both groups that it was essential, but that it did not necessarily have to be the whole day. The groups were firmly of the belief that cows need movement, fresh air, space etc. and that cows need to be ‘social’ (i.e. to be with other cows). This, it was felt, is healthier for the cows so that there would be less spread of diseases, less chance of BSE etc. , and that grazing has a positive influence on the quality of milk.

Food in General

The participants in these groups were agreed that, since all the crises people are now more aware about and suspicious of their food (some here also mentioned GM crops). However, on the whole they did not believe that the crises have influenced their own eating habits. Some

believed that women are more aware about what they eat and tend to be vegetarians more than do men. Concerning price, there was a difference of opinion, with some seeing organic products as too expensive, while others countered that, in fact, it is ordinary food which is too cheap. Not all of them believed that organic food is necessarily healthier. In general, it was remarked young people in Britain have very bad eating habits: lots of junk food and soft drinks, not enough fruit and vegetables - in fact most people are unaware of what they eat and, for reasons of convenience, life-style, addiction, are also unconcerned.

Information and Communication

It was felt that it could take a long time to be informed about new technologies via the media and that if something isn't in the media then there aren't any problems. They were skeptical of the media ("you have to be careful about how much to believe in the media", "there are so many conflicting articles – who can you trust, believe?"), and felt that, although the media can influence the eating habits of the public, the effects tend to be short-term. Most participants thought that the public would like to know about new technologies being used in food production. They believed that people should know that automatic milking systems exist and what its benefits are, not only for the farmer but also for the cows and the milk. This, it was argued could be good for the image of farmers and the dairy industry. There was criticism of current labeling which, it was felt is often confusing - difficult to understand. The public has a right to more information and producers and global manufacturers get too powerful when they keep all the information to themselves. If producers fail to provide adequate information, then the government should do so. However, some participants felt that the public wouldn't really be interested in new technologies like automatic milking because, "it's just a piece of equipment."

While to some extent skeptical and critical concerning food production and food safety issues, these two groups were much more balanced and constructive than the London group. In terms of general public acceptance of automatic milking they were of the opinion that there would be no problem providing a) the price doesn't go up, b) if animal welfare is guaranteed and c) the public is well informed.

4 Discussion and conclusions

In the period studied automatic milking was virtually absent from the 14 European newspapers examined. Nor were many news items specifically about milk or dairy products found, at least not in comparison with other issues. Considering the fact that, with food as in most other things, 'most news is bad news', this should be seen as an encouraging result.

There is wide variation between countries in the amount of news devoted to agriculture and food production. The fact that the largest number of news items was found in Denmark and Flanders, and the least in Germany, Wallonia and The U.K. would suggest that this variation reflects the relative importance of the agricultural sector to the economy as a whole.

Newspapers are commercial organizations which need to attract readers and so the criteria of what is 'newsworthy' tend to favour stories which are sensational and threatening. Thus, news about the food sector is dominated by food scares and crises – 40% of all the news items we found fell into this category. Since none of these scares affected milk directly, the dairy sector has so far managed to escape the trend of worsening media imago characteristic of beef, pork and chicken production (although for various reasons Arla seemed to get a bad press in Denmark). However, two media issues do indirectly touch milk production: animal welfare and GMO's. Both are to some extent kept in the public eye by influential pressure groups to which journalists are well-tuned. As witnessed by the crises over BSE and foot and mouth disease, amongst others, 'suffering animals' provide ready-made 'shocking' pictures which resonate readily with public opinion, casting lasting shadows over the imago of the sectors involved. Concern over GMO's we found to be the most widespread single issue across the countries studied. It has not yet become acute but it is fermenting just below the surface and it might not take much to ignite it into a serious crisis – with the implication that a negative GMO link with cow fodder and thereby milk quality/safety could pose a serious threat to the dairy industry.

The interviews with journalists, representatives of interest groups, and other opinion leaders also revealed that automatic milking is currently not an issue. In these groups, too, the dairy industry has a generally positive imago. However, more generally, many observers noted a very large – and growing – gulf between food producers and consumers based on the fact that the vast majority of people today have almost no direct contact with agriculture and are very ignorant concerning modern techniques of food production. Moreover, most interviewees believed that most people don't care how their food is produced as long as it is cheap and that, even if crises can have a temporary effect on demand, consumers have short memories and soon return to their old patterns of consumption. The main potential concerns highlighted were, above all, animal welfare and milk quality. With regard to the former many pinpointed grazing as a key issue in the imago of the dairy industry. Amongst some there was also a growing feeling that farming is becoming 'over-technologized' and that advances such as automatic milking would lead us further down that (for them undesirable) path. Nevertheless, the majority of those interviewed regarded public acceptance of automatic milking as unproblematic provided there were no negative effects on price, quality and animal welfare. With regard to information and communication about new technological developments like automatic milking opinion was divided. Most were convinced that the media are not interested in such apparently prosaic matters - only if and when some problem or crisis arises do they show much interest in what's going on. Consequently there is little point in trying to publicize new developments, especially since to do so might merely evoke skepticism and suspicion. However, in some countries, some observers did feel that the public want to, and should, be informed, although opinion was divided as to who should be responsible for this. The focus group interviews also revealed an enormous rift between producers and the vast majority of consumers, with the latter having little or no knowledge of how their food is produced. This was accompanied by a profound and highly romanticized, nostalgic view of

what the countryside is (should be) like, combined with an equally profound skepticism about current developments. This was especially so in the focus group sessions held in Sweden and the U.K. and, while we should be cautious of generalizing on the basis of the methods employed here, it was perhaps no coincidence that the two most negative groups were situated in the urban conurbations of London and Stockholm. As was apparent from the individual interviews, at the heart of this idealized view of the countryside is grazing, in the form of a pastoral idyll which appears to lie deep in the human psyche. Grazing emerged as probably *the* core element of the positive imago of the dairy industry and the comparison with intensive ('factory') farming of pigs and chickens was frequently made. In general, animal welfare figured largely in the group discussions and media images of e.g. battery hens and BSE stricken cows were vividly recalled.

In almost all groups it would be fair to say that the crises of recent years have left a residue of negative attitudes, even cynicism. In most cases there was widespread skepticism of the motives of the industry and of the role played by governments in handling crises, which in some quarters amounts to a serious credibility gap. Again, with due caution concerning generalizability, the indications of this study are that young, urban, highly educated women constitute a particularly critical group and future research could test this hypothesis.

With regard to information and communication the same range of opinion was found as in the individual interviews. The effect of the media was generally seen as very strong but short-term with regard to direct influence on behaviour. However, the media coverage of the scares of recent years does appear to have sensitized at least a part of the public to food safety issues and to have cultivated a mainly negative attitude towards the sector. Once again as in the individual interviews, however, the acceptance of automatic milking by the majority of consumers was regarded as unproblematic as long as price, quality and animal welfare are unaffected. In several discussions a gap between consumer opinion and actual behaviour was highlighted when it comes to actually handing over more cash for 'bio' products in the supermarket.

In one group it was argued that the sector would do well to inform the public about automatic milking developments on the assumption that the positive effect of information is greatest when people have little or no prior knowledge. However, while this is a sound maxim of persuasive communication, it must here be placed in the context of the fact that some consumers have already formed a sturdy negative opinion with regard to the 'over-technologization' of agriculture and, in particular, its alleged threat to animal welfare; a perception which is likely not only to nullify any pro-active effects of information about automatic milking but which may taint the technology with what, in the public view, is a tarnished brush. Perhaps, then, while the positive aspects of automatic milking should certainly not be hidden, we should be careful not to dent too deeply the public's idyllic pastoral vision.

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Appendices

Appendix 1: Code Book

- A. Identification number article

- B. Newspaper
 - 1 = De Morgen
 - 2 = De Standaard
 - 3 = Het Laatste Nieuws
 - 4 = De Financieel Economische Tijd
 - 5 = Het Volk
 - 6 = De Volkskrant
 - 7 = De Telegraaf
 - 8 = NRC Handelsblad
 - 9 = Le Soir
 - 10 = La Libre Belgique
 - 11 = La Dernière Heure
 - 12 = Die Welt
 - 13 = Svenska Dagbladet
 - 14 = Dagens Nyheter
 - 15 = Politiken
 - 16 = Jyllands Posten
 - 17 = The Times
 - 18 = The Guardian
 - 19 = The Independent
 - 20 = Frankfurter Allgemeine Zeitung

- C. Date
ddmmjj

- D. Location in newspaper
page number

- E. Size article
% of the total page size

- F. Journalist

- G. Contents
 - 1 = Politics
 - 1.1 = Bio-politics
 - 2 = Economics
 - 2.1 = Price dairy products
 - 2.2 = (Investments in the) dairy industry
 - 2.3 = Milk production
 - 2.4 = Economics France-England following to BSE
 - 2.5 = Ranking retailers
 - 2.6 = Luring customers away
 - 2.7 = Merger in Pig Industry
 - 2.8 = Inheritance laws for farmers

- 2.9 = Conflict over liver paté patent
 - 2.10 = Arla freed from paying compensation to dairy farms
 - 2.11 = Criticism of Arla, 360 dairy farmers risk going out of business
 - 2.12 = Price fodder
 - 2.13 = Selling farm produce via Internet
 - 2.14 = Arla monopoly
 - 2.15 = Farming subsidies
 - 2.16 = Danisco
 - 2.17 = Dairy industry in Denmark – right to use Feta
 - 2.18 = Dairy industry in Denmark (Arla in general)
 - 2.19 = Environmental money is moved to farming subsidies
 - 2.20 = Small farmers start own organization
 - 2.21 = Fano
 - 2.21.1 = Fano dairy butter war
 - 2.22 = Lurpak
 - 2.23 = BSE compensation to farmers
 - 2.24 = Merger of slaughterhouse companies (monopoly fears)
 - 2.25 = New market for Danish pigs
 - 2.26 = Arla permitted to continue milk adverts (accused of sex discrimination)
 - 2.27 = Increase in exports of beef
 - 2.28 = Butter war between Dairy and Dairy Federation
 - 2.29 = Contradictory rules for marketing at foodstuffs
 - 2.30 = Arla wants to build new milk provider factory
 - 2.31 = Arla sells Stockholm HQ
 - 2.32 = Bornholm Dairy
 - 2.33 = Criticism of Arla's power in new organization
 - 2.34 = Sales of meat increasing after crisis
 - 2.35 = Small cheese dairy breaks in Danish supermarkets
 - 2.36 = Pig producers earn less
 - 2.37 = Record production of beef
 - 2.38 = Frustration over Arla's payments for milk
 - 2.39 = Change in milk production after introduction of mini-milk (very low fat)
 - 2.40 = Arla wants to build new milk factor (in Sweden)
 - 2.41 = Danes change milk consumption habits
 - 2.42 = Arla's expansion (monopoly)
 - 2.43 = Problems (economic) in pig farming
 - 2.44 = Milk produces under pressure
 - 2.45 = Arla + butter war
 - 2.46 = Arla takes over Jutland milk distribution from Coop
 - 2.47 = Arla gets 40 mill. Kroner claim for cooperation
 - 2.48 = British farmers fight Dairy giant Arla
 - 2.49 = Fano Dairy war with Arla
 - 2.50 = Ok demands compensation from Arla
 - 2.51 = Arla wants to build new milk provider factory (in Sweden)
 - 2.52 = Bio-milk sales increase after period of stagnation
- 3 = Social-responsibility issues
 - 4 = Science
 - 5 = Crime
 - 5.1 = Bio terror
 - 5.2 = Destruction organic plantation
 - 5.3 = Trickery with test results of food analysis

- 5.4 = Fraud with dioxin
- 5.5 = Corruption
- 5.6 = Fraud with butter
- 5.7 = Environmental pollution
- 5.8 = Bioland's Delivery to ice producer
- 5.9 = Hormone mafia
- 5.10 = Cattle dealers (cows mistreatment)
- 5.11 = Illegal manure transports
- 5.12 = Farmers reported to police for spreading removed dead pigs on his land
- 5.13 = Cheating with bio-products
- 6 = 'High' culture
- 7 = 'Low' culture
- 8 = Lifestyle
- 9 = Human interest
 - 9.1 = Research for animals on Internet (family tree)
 - 9.2 = "Cow interest"
 - 9.3 = 13 years old saves father from mad cow
 - 9.4 = Denmark's 'most beautiful cow' now alone
- 10 = Leisure
- 11 = Advertisements
- 12 = Column advertisements
- 13 = Miscellanea
- 14 = (Short) comments, opinions
- 15 = (Food) crises/food safety
 - 15.1 = PCB
 - 15.1.1 = Swedish article concerning PCB's in Belgium
 - 15.2 = Dioxin
 - 15.3 = Salmonella
 - 15.4 = Quality chicken meat
 - 15.5 = Tse
 - 15.6 = Drinking water (Mineral water)
 - 15.7 = Pesticides
 - 15.8 = Hormone (mafia)
 - 15.9 = Antibiotics
 - 15.10 = Federal Food Agency
 - 15.11 = Food (general)
 - 15.12 = Potatoes
 - 15.13 = Nitrofen
 - 15.14 = Bio food/Bio-industry
 - 15.15 = MPA
 - 15.16 = BSE (cows)
 - 15.17 = Food-and-Mouth (FMD) disease
 - 15.18 = Milk Quality/-production
 - 15.19 = Biodiversity
 - 15.20 = Pest
 - 15.21 = Chlorinemequat in baby food
 - 15.22 = Sulphonamide in chicken food
 - 15.23 = Horses hormones
 - 15.24 = Legionella microbe
 - 15.25 = Hormone disturbing substances in surface water
 - 15.26 = BSE (sheep)

- 15.27 = 'Harmful' food (like poisoned food)
- 15.28 = Raw materials
- 15.29 = Pieces of broken glass in Nutricia Olvarit (baby food)
- 15.30 = Too high concentration of bacteria in baby food BEBA
- 15.31 = Too high concentration of mould poison in milk originating from a company out of Luxemburg
- 15.32 = PCB's in fodder for dairy cows
- 15.33 = Antibiotics in cattle fodder
- 15.34 = Penicillin in milk
- 15.35 = Eva vzw (Ethical-Vegetarian Alternative)
- 15.36 = Hygiene in slaughterhouses
- 15.37 = Swedish meat quality
- 15.38 = Poisoned fish
- 15.39 = Fish oil can be poisonous
- 15.40 = Akrylamid
- 15.41 = Cadmium in pig food
- 15.42 = Hormones in meat
- 15.43 = Radioactive goats milk in Norway
- 15.44 = Food poisoning from sausages
- 15.45 = Food control
 - 15.45.1 = Cuts in food control
 - 15.45.2 = Danish meat examined for Trikiner (a worm)
 - 15.45.3 = Gaps in food control
- 15.46 = Poison in ecological food (in Germany)
- 15.47 = Hormones in pigs
- 15.48 = Fish poisoned in Denmark
- 15.49 = Dangerous food served in restaurants
- 15.50 = Hormone scandal in Europe
- 15.51 = DDT in fish
- 15.52 = Old meat served in restaurant
- 15.53 = Ginseng makes cows healthier
- 15.54 = Bad fish threatens Norwegian exports
- 15.55 = Parasites in salmon
- 15.56 = Overfishing is endangering the survival of 3 popular fish species (England)
- 15.57 = Cancer-causing weed killer in organically grown wheat
- 15.58 = TB (Tuberculosis in cattle)
- 15.59 = Poison in eggs
- 15.60 = Hygiene in restaurants
- 15.61 = Cancer causing poison in olive oil
- 15.62 = Too much medicine used by pig farmers
- 15.63 = Too much nitrate in bacon
- 15.64 = Control of meat out of date
- 15.65 = Poor food control at airports
- 15.66 = Rabies (sheep)
- 15.67 = Hormones (oestrogen) in eco-food in Germany
- 15.68 = More Danes ill from food
- 15.69 = Concern over quality of imported meat
- 15.70 = Newcastle Disease (chickens)
- 15.71 = Criticism of low-fat butter products (not good for children)
- 15.72 = Bacteria in hamburgers

- 15.73 = Mercury in fish increases risk of blood clots
 - 15.74 = Use of antibiotics in pig production
 - 15.75 = War EU-USA on use of hormones in (US) meat
 - 15.76 = Bio hens plagued by illness
 - 15.77 = More poison in fruit and vegetables
 - 15.78 = Few cases of medicine residues in meat
 - 15.79 = Banned growth hormones in pig fodder (Holland)
 - 15.80 = Hormone scandal in Denmark
 - 15.81 = Bacteria in chicken
 - 15.82 = E-coli bacteria in springbok meat
 - 15.83 = Food in general is full of bacteria
 - 15.84 = Fresh chickens without campylobacter
 - 15.85 = Botulism in cattle
 - 15.86 = E. Coli in meat
 - 15.87 = Lack of hygiene in meat
 - 15.88 = Mad chickens (after mad cows)
 - 15.89 = Extreme caution is exaggerated
 - 15.90 = Bacteria bobs in food
 - 15.91 = Milk powder (for babies) withdrawn from market (particles of butter found)
- 16 = Farming
- 16.1 = Imago farming
 - 16.2 = Manure policy
 - 16.3 = Strikes
 - 16.4 = Cattle fodder industry
 - 16.5 = Mink Farming (Sweden)
 - 16.6 = Industrial farming
 - 16.7 = Blockades
 - 16.8 = Organic farming
 - 16.8.1 = Pig farming
 - 16.9 = Farms to disappear
 - 16.10 = Farmers adopt high tech methods
 - 16.11 = Farmers using more antibiotics
 - 16.12 = Farmers want to use more fertilizer
 - 16.13 = Danish farmers deep in debt
 - 16.14 = Farmers giving up bio farming
 - 16.15 = Merger of Danish farmers' associations
 - 16.16 = Regionalising of agriculture
- 17 = Genes technology
- 17.1 = Cloning
 - 17.1.1 = Cloned cows help in struggle against international terrorism
 - 17.2 = Sex determination
 - 17.3 = Sheep cells
 - 17.4 = Research on stem cells
 - 17.5 = Research on embryo's
 - 17.6 = Bio-ethics
 - 17.7 = Gen therapy
 - 17.8 = Genetic tests
 - 17.9 = Gene transfer
 - 17.10 = Organ transplants from cloned pigs
 - 17.11 = Cloned animals can provide medicine for humans

- 18 = Genetic modified (organisms/food)
 - 18.1 = Genetic modified bull, Herman
 - 18.2 = Genetic modified soy
 - 18.3 = Genetic manipulated pigs (organ transplantations)
 - 18.4 = Genetic modified rice
 - 18.5 = GM Chickens (laying live-saving eggs)
 - 18.6 = GM Crop testing
 - 18.7 = Genetic changed mice staying mince forever
 - 18.8 = Genetic manipulation of corn for cornflakes
 - 18.9 = GM's + costs for eco-farmers
 - 18.10 = War EU-USA over GM's
 - 18.11 = Greenpeace protests against use of GM's in Danish pig food
 - 18.12 = GM-free pigs
 - 18.13 = GM of pigs
 - 18.14 = Subsidy for GM-free fodder
 - 18.15 = GM's – British boycott Danish pork
 - 18.16 = Greenpeace activists arrested for labelling GM foods in supermarkets
 - 18.17 = Labelling GM foodstuffs
- 19 = Policy
 - 19.1 = EU: marking calves ears
 - 19.2 = EU allows import ban on bacteria infected meat
 - 19.3 = EU to force Denmark to remove food controls
 - 19.4 = EU allows Denmark to use fat substitute (salatrim) in cakes
 - 19.5 = EU refuses to allow fat substitute (salatrim)
 - 19.6 = Call for stricter EU controls of food
 - 19.7 = 'Greener' EU subsidies
 - 19.8 = Chocolate food banned for children
 - 19.9 = Safety for farmers at work
 - 19.10 = New environmental policy threatens Danish farmer
 - 19.11 = Policy concerning GM's
 - 19.12 = EU approves export of GM's
 - 19.13 = Antibiotics in animals
 - 19.14 = EU gives bio farmers impossible choice
 - 19.15 = Better information about food in EU
 - 19.16 = Farmers agree to allow easier access to nature
 - 19.17 = Minister calls for tougher rules for bacteria in food
 - 19.18 = EU rules restrict new beef exports
- 20 = New technologies
 - 20.1 = Automatic Milking Systems (AMS)
 - 20.2 = Biometrical techniques
 - 20.3 = Data chip
 - 20.4 = 'Multi growing system'
 - 20.5 = Biotechnology
 - 20.6 = Milk robot(s)
 - 20.7 = Micro chip which detects bacteria in food
 - 20.8 = Sweet smelling pigs (new product remove smell)
 - 20.9 = Cell sorting technology
- 21 = Environment
 - 21.1 = Protection environment in Denmark
 - 21.2 = No more pig farms near residential areas (smell)
 - 21.3 = Environmental developments

- 21.4 = Greenpeace sabotage at slaughterhouse
- 21.5 = Hormone disturbing poisons in environment
- 21.6 = Less emphasis on the environment in new government
- 22 = Animal rights
 - 22.1 = Animal mistreatment
 - 22.2 = Animal welfare (in general)
 - 22.3 = Demonstration
 - 22.4 = Demonstration GAIA in front of the palace of justice against animal mistreatment in slaughter house Anderlecht
 - 22.5 = Animal transport
 - 22.6 = Actions animal activists
 - 22.7 = Illegal cages for chickens
 - 22.8 = Animal cruelty leads to prison sentence
 - 22.9 = Chickens continued to be gassed (slaughter method)
 - 22.10 = Animal cruelty court case
 - 22.11 = Test on animals for cosmetics
 - 22.12 = Animal activist imprisoned
 - 22.13 = Hundreds of dead pigs in rubbish bags
 - 22.14 = Animal welfare (pigs)
 - 22.15 = Dead cows to be used for central heating fuel
 - 22.16 = Animals die in farm fire
 - 22.17 = Animal rights trio jailed for inciting lab harassment
 - 22.18 = Chickens (slower growing)
 - 22.19 = Battery (hens) farming
 - 22.20 = Animals used in scientific procedures (ethical problems)
 - 22.21 = Animals in live export trade
 - 22.22 = Bears in tiny cages
 - 22.23 = Safe offe (pig) from Christmas slaughter. Buy a letter for 50 Kr.
 - 22.24 = Offe saved from slaughter
 - 22.25 = Christmas presents for Offe
 - 22.26 = Chinese imports
 - 22.27 = Growing support for animal welfare – but not over the supermarket counter (if it costs more)
 - 22.28 = Cattle saved from fire
 - 22.29 = GAIA filmed animal mistreatment in front of the slaughterhouse in Anderlecht
 - 22.30 = Growing support for animal welfare
 - 22.31 = Animal activists offer vegetarian Mc Donald's
- 23 = Food labelling
 - 23.1 = Dutch meat marked as Swedish
 - 23.2 = EU rules on labelling peppers
 - 23.3 = EU allows Denmark to ban labelling of artificial vitamins
 - 23.4 = Labelling of 'healthy' food
 - 23.5 = Demand for labelling of dangerous chemicals in fruit and vegetables
 - 23.6 = Debate on labelling food as being able to prevent illness (Columbus egg)
- 24 = Traceability (food)
- 25 = Healthy food (health tips, etc.)
 - 25.1 = Doggy bag
 - 25.2 = Vegetarianism
 - 25.3 = Functional food
 - 25.4 = Stone-age diet healthy

- 25.5 = Fruit
- 25.6 = Expensive to eat low fat foods
- 25.7 = Fried fat meat doesn't make you fat
- 25.8 = Spinach implants in pigs to reduce fat
- 26 = Fast food
 - 26.1 = Fat in lunch food
- 27 = Bio-food (Organic food)
 - 27.1 = Bio food in schools may be stopped (to save money)
 - 27.2 = Many want to keep bio-food in schools
 - 27.3 = Bio-wine production
 - 27.4 = Subsidy to bio-food in schools in danger
 - 27.5 = Farewell to bio-subsidy
 - 27.6 = Promising attempt at bio-packaging
 - 27.7 = Bio-bacteria replace expensive medicines in pig production
 - 27.8 = Boom in bio-exports
 - 27.9 = Little hope for bio-milk
 - 27.10 = Bio-school food project reduced from 3 to 2 years
 - 27.11 = Bio liver paté
 - 27.12 = Bio milk producer sees bright future
 - 27.13 = Bio meat under pressure (poor sales)
 - 27.14 = Big campaign for bio meat
 - 27.15 = Crisis in bio egg produces
 - 27.16 = Growing surplus of bio milk
 - 27.17 = Growing US market of bio products
 - 27.18 = Problems for bio producers as markets stagnate
 - 27.19 = Bio milk disappears from shops
 - 27.20 = Farmers try to save bio milk (as alternative to 'giant' Arla)
- 28 = Medical genetics
- 29 = Organic farming
 - 29.1 = Bio farmer in economic crisis
 - 29.2 = Fall in sales of bio-eggs
 - 29.3 = Farmers get subsidies for bio-farming
 - 29.4 = Bio farmers use less energy
 - 29.5 = Campaign for bio farming
 - 29.6 = Bio farmers in crisis
 - 29.7 = Week of organic farming
- 30 = Food research
- 31 = Grazing
 - 31.1 = Label for milk coming from grazing cows
 - 31.2 = Grazing cows to become a rare sight
 - 31.3 = Ornithologists complain to EU about over-grazing of animals
- 32 = Dairy strike
- 33 = Yellow earmark for cows
- 34 = Vaccination against BSE
- 35 = Ritual slaughtering
- 36 = Milk cows die in fire
- 37 = Milk industry withdraws financial support for researchers
- 38 = Dead carcasses in animal food burned by the EU
- 39 = Swedish breeds threatened
- 40 = "Maskinerna" give farmers more time
- 41 = Dogs abandoned after their farm was hit by FMD

- 42 = Social implications of FMD
- 43 = Obesity
 - 43.1 = Diabetes as a consequence of obesity
- 44 = Biodiversity
- 45 = Export of British beef to France
- 46 = Meat (normal, in general)
- 47 = Meat export control
- 48 = Emergency helps to preserve old breeds of farm animals
- 49 = Cows on its way to exhibition
- 50 = Last parade for the Red cow (changes in breeds)
- 51 = Animal show
- 52 = Efforts to save old breeds
- 53 = Modernization of butchers shops
- 54 = EU-research on hormones
- 55 = Front formed against import of cheap Chinese chickens
- 56 = Fewer pigs in Denmark
- 57 = New rules for better hygiene in slaughterhouses
- 58 = Fear for gigantic 'pig factories'
- 59 = Fewer cows in Denmark
- 60 = Need to save money reduces food controls in shops and restaurants
- 61 = Danish meat must wait to gain import entry to China
- 62 = Chinese agriculture becomes industrialized
- 63 = Danish Crown strengthens its grip on the Danish slaughter industry
 - 63.1 = Danish Crown slaughterhouse mergers acceptable
- 64 = Increased mortality among cows
- 65 = Criticism of measures taken against campylobacter
- 66 = Alarm over use of poisons in agriculture
- 67 = More agricultural waste in water than at first thought
- 68 = Milk transport
- 69 = Fried fat meat doesn't make you fat
- 70 = Arla food advertising of dairy products
- 71 = Dairy farmers protest against Arla's minimum limits for collecting milk
- 72 = Arla to introduce milk in plastic bottles
- 73 = Plan to burn animal fat (as oil substitute)
- 74 = Private slaughter house to close (because Danish Crown no longer delivers animals)
- 75 = Farmers dissatisfied with Arla's policies
- 76 = Dairy association criticises government's compensation proposal
- 77 = Danish slaughter houses sell foreign meat camouflaged as Danish

H. Actors within the article

- 1 = Scientist(s) (science in general)
 - 1.1 = Severino Antinori
 - 1.2 = Prof. Goddeeris (K.U.Leuven, Dept. Animal production)
 - 1.3 = Karel Van Damme (K.U.Leuven, Centre for Human Heredity)
 - 1.4 = Catherine Verfaillie
 - 1.5 = Centre for Medical Genetics (V.U.Brussels)
 - 1.6 = Dirk Reheul (U.Gent, main lecturer cultivation of plants)
 - 1.7 = Prof. Aart de Kruif (U.Gent, Dept. Animal medicine)
 - 1.8 = Barend van der Ploeg

- 1.9 = Linda Keeling (Swedish University of Agriculture)
- 1.10 = Tom Saldeen (professor Institution of [surgical](#) science of Uppsala University)
- 1.11 = Helena Palmgren (Uea University, microbiology)
- 1.12 = neta Akesson (Karolinska Institute, environmental science)
- 1.13 = Takashi Sugimura (Japanese National Cancer Institute)
- 1.14= Hans Lingnert (Institute of food and bionics Göteborg)
- 1.15= Roy Andersson (BSE researcher London)
- 1.16= Ian Wilmut (Roslin institute Edinburgh)
- 1.17= Anders Engvall (veterinary Sweden)
- 1.18= Janken Myrdal (professor Agricultural History)
- 1.19= Christer Jansson (professor Swedish University of Agriculture)
- 1.20= Lerf Andersson (Swedish University of Agriculture)
- 1.21= Sture Hansson (Stockholm University)
- 1.22= Karin Schutz (Swedish University of Agriculture)
- 1.23= Stig Hadenius (professor)
- 1.24= Gunnar Steineck (Karolinska Institute)
- 1.25= Gregory Hartl (researcher)
- 1.26= Lennart Balk (University of Stockholm, Lecturer)
- 1.27= Songhua Hu (University of Agriculture in Staten)
- 1.28= Margareta Tornquist (University of Stockholm, Lecturer)
- 1.29= Eden Tareke (University of Stockholm Ph.D. Student)
- 1.30= London School of Hygiene and Tropical Medicine
 - 1.30.1 = Andrew Prentice (professor)
- 1.31= University of Düsseldorf
- 1.32= Thomas Manske (Swedish University of Agriculture)
- 2 = Governmental person/political person
 - 2.1 = Magda Aelvoet (minister of Consumer Health)
 - 2.2 = Piet Vanthemsche (delegate Federal Food Agency, FAVV)
 - 2.3 = Jacinta De Roeck (senate commission Bio-ethics)
 - 2.4 = Inspection (food safety)
 - 2.4.1 = Etienne Cobbaert
 - 2.4.2 = Irish samplers
 - 2.4.3 = AID (General Inspection Service, the Netherlands)
 - 2.4.4 = Inspection Service of Goods, the Netherlands
 - 2.5 = Vera Dua
 - 2.6 = Patrick Dewael
 - 2.7 = Bart Maes (FAVV)
 - 2.8 = Pascal Houbaert (spokesman FAVV)
 - 2.9 = FAVV
 - 2.9.1. = Hotline FAVV
 - 2.10 = European Commission/Parliament
 - 2.10.1 = David Byrne (EU-officer of consumers)
 - 2.11 = Etienne Vermeersch
 - 2.12 = Alida De Bie (mayor Stabroek)
 - 2.13 = Müller (state secretary for Agriculture, Germany)
 - 2.14 = Luc Beernaert (FAVV)
 - 2.15 = Gilbert Houins
 - 2.16 = Jaak Gabriëls (Flemish minister of Economics)
 - 2.17 = Etienne Cobbaert (public servant)
 - 2.18 = José Happart

- 2.19 = Freddy Willockx
- 2.20 = Louwet (mayor of Herstappe)
- 2.21 = German Parliament
 - 2.21.1 = Renate Künast
 - 2.21.2 = Margit Conrad (minister of ecology, SPD)
 - 2.21.3 = Bartels (minister of farming, SPD)
 - 2.21.4 = Backhaus (minister of farming, SPD)
 - 2.21.5 = Ministry of Consumers
- 2.22 = Guy Swennen (SP.A)
- 2.23 = Gerolf Annemans (Vlaams Blok)
- 2.24 = WHO
- 2.25 = Ministry of Foreign Affairs
- 2.26 = Xavier De Cuyper
- 2.27 = Parliament commission Public Health
- 2.28 = Opponent parties
- 2.29 = Johan Vande Lanotte (Minister of Budget)
- 2.30 = Patrick Dewael
- 2.31 = Ministry of Agriculture
- 2.32 = Flemish government
- 2.33 = CDA
 - 2.33.1 = Pieter van Geel (CDA delegate)
- 2.34 = Ministry of Agriculture, the Netherlands
 - 2.34.1 = Minister Brinkhorst
- 2.35 = Yvan Vanden Bosch (responsible for hotlines FAVV)
- 2.36 = Willy Lagrillière (local food inspection)
- 2.37 = American army
- 2.38 = British Food Standards Agency (FSA)
- 2.39 = Consum
- 2.40 = Top public servants Agriculture
- 2.41 = Freddy Willockx
- 2.42 = Dick Cheney (American vice-president)
- 2.43 = Justice, Brussels
- 2.44 = Environment and Health Office
- 2.45 = EU-ministers of Agriculture
- 2.46 = Senate commission Bio-ethics
- 2.47 = Public prosecutor
- 2.48 = Hubert Cooreman (spokesman ministry Annemie Neyts)
- 2.49 = Bart Staes (European parliament)
- 2.50 = Margareta Winberg (Swedish minister of Food)
- 2.51 = Local police South-Holland
- 2.52 = VROM (Dutch political party)
- 2.53 = Gudrun Lindvall (member parliament Environment, investigator)
- 2.54 = Spokesman Amsterdam
- 2.55 = Polish authorities
- 2.56 = RIVM
- 2.57 = Margaret Beckett (minister of Agriculture)
- 2.58 = WFP
- 2.59 = Maria Wetterstrand (spokesperson ecology party)
- 2.60 = W. Serafin (EU-Commission)
- 2.61 = AFFSA (French food agency)
- 2.62 = Veerman (Minister of Agriculture, the Netherlands)

- 2.63 = HAK
- 2.64 = Tony Blair, British prime minister
- 2.65 = Balkenende (prime minister of the Netherlands)
- 2.66 = Inger Schörling (EU, ecology party)
- 2.67 = Johnny Gylling (Christen Democratic Party, Sweden)
- 2.68 = Marit Paulsen (People's Party)
- 2.69 = Beate Gminder (spokesperson EU)
- 2.70 = Ingvar Carlsson (ex-prime minister Sweden)
- 2.71 = Bill Clinton (ex-president USA)
- 2.72 = Goren Persson (prime minister)
- 2.73 = Nick Brown (former Agriculture minister)
- 2.74 = English Dept. for Environment, Food and Rural Affairs
- 2.75 = Helena Kennedy (chairman of the human genetics commission)
- 2.76 = Ministry of Agriculture
- 2.77 = Defra (Rural Affairs Ministry)
- 2.78 = The Army
- 2.79 = French food safety agency
- 2.80 = Federal criminal investigation department (Germany)
 - 2.80.1 = Hans Ludwig Zachert (German president 1990-1996)
- 2.81 = German Agriculture Company Union (DLG)
- 2.82 = OECD
- 2.83 = Gorn Persson (prime minister)
- 3 = Association for pigs farmers
 - 3.1 = André Bracke (chair)
- 4 = Environmental organisation
 - 4.1 = Bond Beter Leefmilieu (Union for Better Environment)
 - 4.1.1 = Bart Martens
 - 4.2 = Greenpeace
 - 4.3 = Friends of the Earth
- 5 = Trend watcher Herman Konings
- 6 = Cultural person (chair association, coordinator cultural events, ...)
- 7 = Personal meaning (writing) journalist
- 8 = More (different) prominent persons
- (9 = Title)
- 10 = Criminals
 - 10.1 = Osama Bin Laden (bio-terror)
 - 10.2 = Dioxin fraud
 - 10.3 = Illegal manure transport
 - 10.4 = Alex Vercauteren (client of murder on Karel van Noppen)
 - 10.5 = Al Qaida
- 11 = Industrial co-worker
- 12 = Boerenbond (Flemish Farmer's Union)
 - 12.1 = Roger Saenen
 - 12.2 = Jos Matthys
 - 12.3 = Noël Devisch (chair Boerenbond)
- 13 = Consumer organisation
 - 13.1 = Testaankoop
 - 13.2 = VELT
 - 13.3 = OIVO (Research and information Centre of Consumer Organisations)
 - 13.4 = Commission Terlouw
 - 13.5 = CBS (Central Bureau for Statistics)

- 14 = Writer
- 15 = Industry (in general)
 - 15.1 = Vitamergine
 - 15.2 = Bio-industry
 - 15.3 = Fast food industry
 - 15.4 = SBT (Seghers Better Technology)
 - 15.5 = Hanekop (Roeselare)
 - 15.6 = Vandenavenne (West-Flemish Ooigem)
 - 15.7 = Oce Bio (Wommelgem, import babybio in Belgium)
 - 15.8 = Carrefour
 - 15.8.1 = Geneviève Bruynseels (spokeswoman)
 - 15.9 = Delhaize
 - 15.10 = Colruyt
 - 15.11 = Biovoedingsgroep (bio food group) Lima
 - 15.12 = Numico (Dutch food company)
 - 15.13 = Janssen Pharmaceutica
 - 15.14 = Amgen (largest biotech company of US)
 - 15.15 = Immunex
 - 15.16 = Imec
 - 15.17 = Cattle fodder company Hendriks (Wijgmaal, Belgium)
 - 15.18 = Johnson & Johnson
 - 15.19 = Tibotec-Virco
 - 15.20 = KBC Biotech
 - 15.21 = Monsanto
 - 15.22 = Ceres (biotech company)
 - 15.23 = Koppert (Dutch biotech company)
 - 15.24 = Unilever
 - 15.24 = Fedis (Federation of the Distribution Sector)
 - 15.25 = FWA (Walloon Agriculture Association)
 - 15.26 = Cropsdesign (biotech company Gent)
 - 15.27 = Biopower (Zandvoorde)
 - 15.28 = Indaver
 - 15.29 = Innogenetics
 - 15.29.1 = Philippe Archinard (delegate)
 - 15.30 = Ablynx (Spin off VUB, biotech company)
 - 15.31 = Avebe (Potato starch concern Veendam, Groningen)
 - 15.32 = Apoda (Overijssel, company specialised in biometrical techniques)
 - 15.33 = Pronks farm (Meppel, Drente, The Netherlands)
 - 15.34 = Hot Cuisine (delivers food)
 - 15.35 = Bayer Crop Science
 - 15.36 = Eurofins Scientific (Kraainem)
 - 15.37 = Cooperative association “Hagelands Hoevevlees”
 - 15.38 = Seghers Genetics & Seghers Gentec (Buggenhout)
 - 15.39 = Sodexho
 - 15.40 = Genzyme
 - 15.41 = Bauduin-Cambier (Feluy)
 - 15.42 = Van Pollaert (fat melting)
 - 15.43 = Advanced Cell Technology (American company, Boston)
 - 15.43.1 = Robert Lanza
 - 15.44 = Vegetarian vzw Eva
 - 15.45 = Aventis Crop Science (Aalst)

15.45.1 = Aventis (UK)
15.45.2 = Aventis (Germany)
15.45.3 = Patrick Rüdelsheim
15.46 = Lima (Belgian food group)
15.47 = Quick
15.47.1 = Jean-Paul Brayer (top Quick)
15.48 = Nutricia
15.49 = Rendac (destruction company)
15.50 = Hendriks (cattle fodder company, Wijgmaal)
15.51 = McDonald's
15.52 = Unilever
15.53 = Imclone (American biotech company)
15.53.1 = Samuel Waksal (earlier delegate)
15.54 = Biopower
15.55 = GIVF (Genetics & IVF, America)
15.56 = Estée Lauder
15.56.1 = Trui Moerkerke
15.57 = BEBA (Nestlé)
15.58 = Campina
15.59 = Belgomilk
15.60 = Albert Heijn
15.61 = Edah
15.62 = Pharming
15.63 = Friesland Coberco Dairy Foods
15.64 = Avebe (Potato starch concern Veendam, Groningen)
15.65 = APODA (biometrical techniques, the Netherlands)
15.66 = BRITA (water filter systems)
15.67 = (British) PLL Therapeutics
15.68 = Aldi
15.68.1 = Uli Schnier (top Aldi)
15.69 = Isotis (the Netherlands)
15.70 = MODEX (Switzerland)
15.71 = Axfood
15.71.1 = Kenneth Wahl (press chief)
15.72 = Milk industry (in general)
15.73 = ARLA
15.73.1 = Hans Erik Petersson
15.74 = Prime Foods
15.74.1 = Rolf Carlson
15.75 = Loppo Fisk (Swedish company)
15.76 = Burger King
15.76.1 = Stefan Eriksson
15.77 = Peter Nilsson (Swedish country crisps)
15.78 = Roger Johansson (Estrella)
15.79 = PLL Therapeutics (Scottish biotech company)
15.80 = Tesco
15.81 = British restaurants
15.82 = Albert Fischer (Food Group)
15.83 = Marks & Spencer
15.84 = Sainsbury's
15.85 = More food retailers

- 15.86 = BB Biotech (Germany)
- 15.87 = Altana (pharmaceutical company)
- 15.88 = DZ Bank
- 15.89 = Greenspirit (environmental counselling company)
 - 15.89.1 = Dr. Patrick Moore
- 15.90 = AA Action bank (Frankfurt)
- 15.91 = Pharma companies (concerns)
- 15.92 = Ernst & young
- 15.93 = Deutsche Industrievereinigung Biotechnologie (DIB) (German association of biotechnology industry)
- 16 = Cattle fodder industry
 - 16.1 = Yvan Dejaegher (chair Belgian cattle fodder production)
 - 16.2 = Compound feed producers
- 17 = Mestbank (manure bank)
- 18 = Bioland
- 19 = John Banzhaf (American lawyer)
- 20 = FBI
- 21 = Prince Laurent (Belgium)
- 22 = Animal welfare institutions
 - 22.1 = GAIA
 - 22.1.1. = Michel Vandenbosch
 - 22.2 = Stichting Wakker Dier
 - 22.3 = Stichting AAP (relief of foreign animals)
 - 22.4 = Les Associations Animaux en péril (AEP) (associations for animals in danger)
 - 22.5 = Johan Jaatinen (Swedish activist)
 - 22.6 = Odd Lindberg (Activist against seal hunting in Norway)
 - 22.7 = Mona Ronning (Animal safety inspector)
 - 22.8 = WWF
 - 22.8.1 = Lennart Nyman
 - 22.9 = Animal Samaritans
 - 22.9.1 = Carol James (Spokeswoman)
 - 22.10 = Institute for Animal Health
 - 22.11 = CIWF (Compassion in World Farming)
 - 22.12 = WSPA (World Society for the Protection of Animals)
- 23 = Farmer(s)
 - 23.1 = Jesper Westin (Swedish bio-farmer)
 - 23.2 = Gören Seveson (Swedish Poultry farmer)
 - 23.3 = Anders Rundstrom (Swedish farmer)
 - 23.4 = Organic Farmers (general)
 - 23.5 = Olle Rundqvist (Swedish Bio-farmer)
- 24 = Growers
- 25 = Fevia (Federation of Food Industry)
 - 25.1 = Chris Moris (chair Fevia)
- 26 = Manure transport
- 27 = Public prosecutor
- 28 = Belgian Advisory Committee for bio-ethics
- 29 = Special Senate Commission for Bio-ethical problems (Belgium)
- 30 = Biomedical Ethics and Law (K.U.Leuven)
 - 30.1 = Herman Nys
- 31 = Famous people

- 32 = Belgian poultry slaughter houses
 - 32.1 = Johan Van Bosch
- 33 = KVLV (Catholic Association for Rural Flemish Women)
 - 33.1 = Ann Vandenborre
- 34 = Aventis
 - 34.1 = Patrick Rüdelsheim
- 35 = Remi De Schrijver (food expert K.U.Leuven)
- 36 = Fast food chains
 - 36.1 = Jean-Paul Brayer (top Quick)
 - 36.2 = Stefan Eriksson (Burgerking)
- 37 = Opinion/interview unknown person
- 38 = Local bio-fruit grower
- 39 = Jo Wyckmans (organic food expert)
- 40 = Dick Pound (chair World anti dope agency)
- 41 = KBS (Koning Boudewijnstichting) (Foundation King Boudewijn)
 - 41.1 = Herman vanden Berghe
- 42 = ABS (Algemeen Boerensyndicaat) (farmers union)
 - 42.1 = Camiel Adriaens
- 43 = Bemefa
 - 43.1 = Hubert Vandeputte (chair)
- 44 = VIB
- 45 = Luc Busschaert (independent agricultural expert)
- 46 = Personal story
- 47 = Dolly (sheep)
- 48 = Michel Vandenbosch (GAIA)
- 49 = Cattle traders
- 50 = Vegetarians
- 51 = Chinese newspaper
- 52 = VAC (Vlaams Agrarisch Centrum) (Flemish Agricultural Centre)
- 53 = WHO
- 54 = VCM (Vlaams Coördinatiecentrum voor Mestverwerking) (Flemish Centre for Coordination of Manure processing)
- 55 = VVV (Vlaamse Vereniging voor Varkenshouders) (Flemish Federation for pig farmers)
 - 55.1 = André Bracke
- 56 = Fedis (Federation of the Distribution Sector)
- 57 = Pigs companies
- 58 = Judicial authorities Turnhout
- 59 = Local domestic caterer
- 60 = Romain Roose (OCMW-secretary)
- 61 = Copycat
- 62 = Rhys Evans (genetic manipulated kid)
 - 62.1 = Similar 'case' in France
- 63 = Associations active within the food chain (in global)
- 64 = Jan Van den Boeynants (chair hormones cell federal police, Brussels)
- 65 = Dutch animal protection
- 66 = Agricultural organized interest group (West-Zeeuws Vlaanderen)
- 67 = Nature museum 'Naturalis' (Leiden)
- 68 = Department Dairy farming, Agri- and Horticulture Organization, the Netherlands
 - 68.1 = Siem Jan Schenk (chair)
- 69 = Dairy farmers

- 70 = Macro Economische Verkenning van het Centraal Planbureau (CPB) (macro-economic exploration of the central plan office)
- 71 = Belgian top models
- 72 = Muslims
 - 72.1 = Muhammed Gultekin
 - 72.2 = Hassan Omeirat
- 73 = Blik (tabloid)
 - 73.1 = Bart Maes (chair Blik)
- 74 = John Banzhaf (American lawyer against tobacco producers and junk food giants)
- 75 = Gender clinic
 - 75.1 = Bert van Delen (chair)
- 76 = John Walker (American Taliban fighter)
- 77 = Environmental company in Groningen
- 78 = Platform Biologica
- 79 = Interpolis (insurer, daughter company of Rabobank)
- 80 = Bram Brandon (inventor growing vegetables and fruit undergrounds)
- 81 = Dumeco (slaughter house, Son, the Netherlands)
- 82 = Pigs farming
 - 82.1 = Chris van Gisbergen (chair)
- 83 = 'Het Rijk'
- 84 = Inhabitants the U.K.
- 85 = Veterinary surgeon
 - 85.1 = ---
 - 85.2 = ---
 - 85.3 = Lars Thoäng
 - 85.4 = Claes Lundgren
 - 85.5 = Ingrid Eilertz
 - 85.6 = Anne Andersson
 - 85.7 = Lars Plym Forshell
 - 85.8 = Sissel Brenna
- 86 = General practitioner
- 87 = Consumers
- 88 = WHO
 - 88.1 = Gerald Moy
- 89 = Stuart B. Levy (Tufts University School of medicine)
- 90 = Stig Widell (farming department Sweden)
- 91 = Ake Bruce (food department Sweden)
- 92 = LRF
 - 92.1 = Thomas Johansson
- 93 = Asa Odelros (Association for ecological poultry production, Sweden)
- 94 = John Munthe (Swedish Environment Institute)
- 95 = Mikael Horal (Investor Growth Capital)
- 96 = Food department Sweden
 - 96.1 = Leif Busk
 - 96.2 = Cecilia Lindvall
 - 96.3 = Vivianne Abramsson-Zetterberg
 - 96.4 = Ulf Hammerling
 - 96.5 = Agneta Dreber
 - 96.6 = Anna Arvidsson
 - 96.7 = Kettil Svensson
 - 96.8 = Camilla Littorin

- 96.9 = Karl-Erik Hellenäs
- 97 = Lotta Törner (Dairy Association Skåne, Sweden)
- 98 = Staffan Lindeberg (district surgeon Sjöbo, Sweden)
- 99 = Malte Petersson (rabbit breather, Sweden)
- 100 = Swedish government
 - 100.1 = Farming department Sweden
 - 100.1.1 = Jackis Bengtsson
 - 100.2 = Environment administration Sweden
 - 100.2.1 = Lennart Norring
- 101 = ICA
 - 101.1 = Bertil Norbelie
 - 101.2 = Niklas Waren
- 102 = Atlantic Monthly
 - 102.1 = Eric Schlossers
- 103 = Roger Bergström (Swedish water)
- 104 = Bengt P. Gustafsson (Swedish meat)
- 105 = Eva Lithander (social services department Sweden)
- 106 = Pia Gustafsson (farming department Sweden)
- 107 = Leif Denneberg (farming department Sweden)
- 108 = Per Lidell (energy department Sweden)
- 109 = Leo Virta (Konvex)
- 110 = Jan Pedersen (Danish butcher association)
- 111 = Mats Hansson (Farmers Union)
- 112 = Andrew Wadge (UK Food Standards Agency)
- 113 = Victims (consumers)
- 114 = (Organic) consumers
- 115 = FBI
- 116 = Children getting organic meals at schools

I. Geographic situation

- 1 = Regional news
- 2 = Inland news
- 3 = Foreign/international news
- 9 = Not applicable

J. Sort of illustration(s)

- 1 = Picture
- 2 = Drawing
- 9 = Not applicable

K. Size illustration(s)

- % of the text
- . = Not applicable

L. Evaluative analysis

- 1 = Positive
- 2 = Neutral
- 3 = Negative

Appendix 2: Focus Group Interviews

- 1) *Opening question*
- 2) *Introductory question*
- 3) *Transition questions*
- 4) *Key questions*
- 5) *Ending questions*
- 6) *Putting the parts together*

1) *Tell us your name, where you live and something about the place where you are living.*

2) *General attitude towards dairy farming, dairy products, milk production process?*

3) *What is an 'Automatic Milking System' according to you?*

VIDEO INTRODUCTION MILK ROBOT

4) *Automatic Milking System:*

- Possible (dis)advantages as a consumer?
- Possible (dis)advantages as a farmer?
- Animal welfare aspects?
- Food safety?
- Milk quality?
- Investment price?
- Milk price?
- Grazing (image of the dairy industry)?
- Influence opinion formers/leaders?
- Public opinion/acceptance?
- Continuity of the technology?

5) *Do you think that this (new) technology will be easily accepted by the general public?*

6) *Summary of the focus group interview.*