Questionnaire monitoring chemical contaminants along the dairy chain

Start of Block: Introduction

Dear participant,

Thank you for taking the time to complete this survey. This survey is part of a research on monitoring of chemical contaminants along the Dutch dairy chain. The aim of the survey is to gain insight in the preferences of the industry (feed companies and dairy processing companies) regarding chemical contaminant monitoring in the dairy chain.  
 [Explanation case aflatoxin monitoring dairy chain](https://wur.az1.qualtrics.com/CP/File.php?F=F_51nNNLSw8ecoxWS)  
 The data you provide will be stored and processed anonymously. The research is for academic purposes only and no commercial companies are involved.

End of Block: Introduction

Start of Block: Questions

Q1 In which sector do you work?

* Animal feed
* Dairy

Q2 To what extent are you currently involved in the monitoring scheme for chemical (aflatoxin) contaminants?

* Never
* Sometimes
* Regularly
* Often
* Always

End of Block: Questions

Start of Block: MCDA

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Q3 Which criteria are most important from the perspective of **your organization** in the dairy chain, with regard to the design and implementation of the monitoring scheme that prevents chemical contaminants (aflatoxin) from entering the dairy chain via animal feed and that milk is further processed?

The sum of the five criteria must be equal to 100. More points = more important.

Public health : \_\_\_\_\_\_\_

Production losses : \_\_\_\_\_\_\_

Customer trust : \_\_\_\_\_\_\_

Monitoring costs : \_\_\_\_\_\_\_

Complexity of implementation : \_\_\_\_\_\_\_

Total : \_\_\_\_\_\_\_\_

Comments

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### Case Description

**Explanation**

The Dutch dairy chain is known for its high-quality control system, starting with feed production until processing of milk into high-quality dairy products worldwide (from grass to glass).

We are interested in your view on the current monitoring of chemical contaminants (aflatoxin) in the Dutch dairy chain.

**Definition monitoring scheme**

A monitoring scheme is defined as the protocol (sampling strategy, analysis method, intensity etc.) on both feed and milk level and the interaction of both programmes, resulting in dairy products for consumption. Specifically, this refers to ‘’Verification Aflatoxin B1 dairy feed’’ om which maize and/or maize by-products are processed, for the feed industry to monitoring the performance of the control system. For the dairy industry, this is the monitoring programme ‘’contaminants and residues’’, to gain a representative picture of the food safety of Dutch milk.

**Description criteria**

De following criteria can influence the decision-making process of the design and implementation of a monitoring scheme for chemical contaminants (aflatoxin):

* Public health: The effectiveness of the monitoring scheme along the dairy chain in minimizing foodborne disease burden (to humans) due to chemically contaminated dairy products.
* Production losses: Costs that are made to replace + recall unmarketable feed and/or milk and compensate affected dairy farmers as a result of a chemical (aflatoxin) contamination of feed and/or milk.
* Customer trust: Likelihood that a customer will purchase the final dairy products if a certain monitoring scheme is implemented and shows favourable results. This reflects the customers’ trust in the safety of the product.
* Monitoring costs: Sampling and analysis costs of the monitoring scheme made by **your** organization.
* Complexity of implementation: Feasibility of implementing a monitoring scheme within **your** organization. This includes everything, **except the costs**, related to the implementation of the monitoring scheme.

**Multi-criteria decision analysis**

The results of the survey will be used as data input for a Multi-criteria decision analysis (MCDA). The aim of the MCDA is to rank alternatives based on an objective performance score and a subjective preference of above-mentioned criteria. Alternatives are monitoring schemes that differ in their probability of detecting the contaminant, ranging from 0% to 90% (no monitoring until intense monitoring), on feed and milk level.

Each alternatives scores differently on the criteria. For example, the costs of monitoring scheme A are significantly lower than the costs of monitoring scheme B, although monitoring scheme A focusses on monitoring at feed level and monitoring B on monitoring at milk level.

A data model is built to construct a hypothetical dairy chain. This consist of feed companies that receive maize to produce dairy feed, which is supplied to dairy farms, where milk is picked up and is transported to the dairy processing plants.

An important input of the model is the contamination scenario. It is assumed that 1% of all dairy feed batches deviated from the normal aflatoxin background level. The aflatoxin concentration in contaminated batches is based on the incident in March 2013. In March 2013 a large shipment of maize, intended for feed was imported from East Europe to the Netherlands. The shipment had passed import controls and was already distributed (mainly to German farms). After it was found that the dairy feed exceeded the regulated maximum level (52.2 ug/kg > EC limit 20.0 μg/kg), a massive recall followed.

**Example**

You are asked to divide 100 points among five criteria. More points mean that you find the criteria more important for the final choice in a certain monitoring scheme.

An example of how the distribution of point can look like:

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| **Criteria** | **Points** |
| Public health | 5 |
| Production losses | 45 |
| Customer trust | 10 |
| Monitoring costs | 25 |
| Complexity of implementation | 15 |
| Total | 100 |