

Factors Associated with Off-flavours in Milk in Prince Edward Island Dairy Herds

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Introduction

Absence of off-flavours in milk is a major factor in consumer acceptance of milk and milk products. In the last three years, the Prince Edward Island (P.E.I.) dairy industry has been facing considerable economic loss due to the development of off-flavours in milk. Review of the literature on off-flavours, even though voluminous (mainly referring to oxidized and rancid milk), provides little insight as to why outbreaks suddenly occur in certain localities, and how best to predict and avoid their occurrence. While many herd- and farm-level factors have been associated with off-flavours in milk in the literature, these associations are rarely based on controlled epidemiologic studies. The purpose of the present study is to investigate the factors associated with the production of off-flavoured milk and to elaborate practical management control strategies.

Materials and Methods

The study has been designed as a matched, case-control study. So far 30 cases have been registered, with data collected from these herds and their respective control herds.

Results and Discussion

Preliminary results indicate that three categories of off-flavours are of major concern in P.E.I.: transmitted (73%), rancid (17%) and oxidized (10%). It appears that transmitted flavours are associated with feeding cows with round baled silage (timothy), feeding fresh silage two to three hours before milking, poor air quality in the barn (poor ventilation), poor sanitation in the barn (and/or milking room), and recent changes in the feeding routine. The strong association of feed off-flavor with feeding freshly opened bales of silage (even of good quality) shortly before milking has prompted an investigation into the characteristics of the timothy round bale silage.

Diagnosis of off-flavoured milk, based solely on organoleptic assessment, is performed by the milk haulers. Because of the subjectivity of this method, the evaluation of the agreement between a group of six milk haulers has been performed, and the inter- and intrarater agreement obtained were satisfactory with significant Kappa values ranging from 0.4 to 0.7.

Incidence of transmitted off-flavours in milk in P.E.I. dairy herds is unusually high. With ongoing laboratory assessment of collected milk, blood, forage and water samples, we expect to come forward with other recommendations to assist farmers in avoiding transmitted off-flavours derived from round bale timothy silage.

Table 1. Preliminary major risk factors of transmitted off-flavours.

Factors	Odds ratio	p-value
1. Feeding round bale silage	1500	<0.00
2. Feeding freshly unwrapped silage < 3 hours prior to milking	7.50	< 0.00
3. Recent (abrupt) changes in feeding routine	4.43	< 0.00
4. Poor sanitation	3.67	< 0.03
5. Poor air quality in the barn	3.61	< 0.04