INFLUENCE OF FRENCH DAIRY FEEDING SYSTEMS ON COW MILK FATTY ACID COMPOSITION

AIM OF THE STUDY
Assess the impact of diet composition on the fatty (FA) acid composition of dairy cow milk in some French feeding systems.

MATERIALS AND METHOD
17 farms located in lowlands (dominance of grass and/or maize silage) and montains 5 samples over a year (May, July, September, January and February)
Gas-chromatography analysis to determine 58 fatty acids
Principal component analysis to identify different diets and variance analysis to characterize the fatty acid compositions

RESULTS
7 different diets identified.

- Milk produced from grass-based diets, and especially from pasture-based diets (P-Diet), contains more health-promoting FA than milk from maize silage-based diets (MS-Diet).
- Hay-based diets produce milk with a high percentage of SFA but a low omega-6/omega-3 ration.
- Variations in fatty acids composition over a year is due to the succession of diets during spring, summer, autumn and winter in different regions.

<table>
<thead>
<tr>
<th></th>
<th>MS-Diet</th>
<th>MSH-Diet</th>
<th>MSGS-Diet</th>
<th>MSP-Diet</th>
<th>H-Diet</th>
<th>GS-Diet</th>
<th>P-Diet</th>
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</thead>
<tbody>
<tr>
<td>SFA (% of total FA)</td>
<td>72,3</td>
<td>69,7</td>
<td>69,1</td>
<td>67,3</td>
<td>71,6</td>
<td>70,8</td>
<td>64,2</td>
</tr>
<tr>
<td>MUFA (% of total FA)</td>
<td>23,9</td>
<td>26,5</td>
<td>26,7</td>
<td>28,4</td>
<td>24,0</td>
<td>25,1</td>
<td>29,9</td>
</tr>
<tr>
<td>PUFA (% of total FA)</td>
<td>3,0</td>
<td>3,0</td>
<td>3,3</td>
<td>3,4</td>
<td>3,3</td>
<td>3,1</td>
<td>4,6</td>
</tr>
<tr>
<td>Omega6/Omega3</td>
<td>7,6</td>
<td>6,7</td>
<td>4,1</td>
<td>4,3</td>
<td>2,4</td>
<td>3,4</td>
<td>2,1</td>
</tr>
</tbody>
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CONCLUSION
This study shows a large diversity of milk fatty acid composition in France. It also underlines fast, efficient and reversible diet solutions to improve milk regarding health-promoting fatty acids.

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