Food supply chain traceability: A multiple case study from Alto Tietê Region, Brazil

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Abstract: The traceability is one way to food supply chain transparency. However, when the food is produced by family farmers, considering in communities with low levels of education and lack of TI infrastructure, traceability becomes a major challenge. This article verified the adequacy of the family farmer to the traceability of the food production chain, through the application of a multiple case study in Alto Tietê region, Brazil. The results showed that most farmers have incomplete elementary education (55%), work practically alone in production and they are unable to carry out traceability due to the lack of pesticide registration, which makes implementation unfeasible even if the community has IT infrastructure.

Keywords: food safety; production control; process quality; supply chain transparency.

This paper aims to investigate the adequacy of the family farmer to the traceability process to guarantee the food supply chain transparency from farm to fork.
Materials and Methods

- All family farmers should answered about social economics and productions process aspect, as well as food supply chain traceability and the governments requirements.

- The data was collected in March 2021 following the design of interview.

Maped the family farms in region
Selecting family farms by convenience
Research Objective presentation
Informed Consent Statement obtained
Applying the semi-structured questionnaire (closed and open questions)
Results and Discussion

Table 1. Highlighted results on socioeconomic variables, values in %.

<table>
<thead>
<tr>
<th>Socioeconomic variables</th>
<th>Highlighted results</th>
<th>Values in %</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gender</td>
<td>Male</td>
<td>80</td>
</tr>
<tr>
<td>Age</td>
<td>Above 46 years old</td>
<td>55</td>
</tr>
<tr>
<td>School</td>
<td>Elementary school</td>
<td>55</td>
</tr>
<tr>
<td>Family income</td>
<td>From 3 to 7 basic salary</td>
<td>67</td>
</tr>
<tr>
<td>Family size</td>
<td>From 3 to 4 people</td>
<td>55</td>
</tr>
<tr>
<td>Legal condition of farmer</td>
<td>Independent farmer</td>
<td>67</td>
</tr>
<tr>
<td>Work experience, in years</td>
<td>Above 31</td>
<td>55</td>
</tr>
<tr>
<td>Production system</td>
<td>Conventional production</td>
<td>89</td>
</tr>
<tr>
<td>People out of family working in farm</td>
<td>No, just family members</td>
<td>67</td>
</tr>
</tbody>
</table>
Results and Discussion

Just one farmer applied the traceability, but in 1% of all production area, so the 99% of production is not traced.

Figure 2. Degree of difficulty to traceability system implementation.

Figure 3. Traceability criteria implementation and farmers perception.

\[ \chi^2 = 16.0; \ p = 0.0137 \]
Conclusions

1) lack of pesticide registration to use in agricultural production;

2) current commercialization design that allow lots product merge and this is inconsistent with traceability premise;

3) lack of government support and training people; and

4) high investment by family farmer and no payback expectative, in other words, the costs is not transfer to the market.
References


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Acknowledgments

Family farmers

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