



# Enhancing Traceability For Food Safety Across The Supply Chain

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**ARRELL  
FOOD INSTITUTE**  
AT THE UNIVERSITY of GUELPH



## Prepared by

University of Guelph in  
partnership with GS1 Canada  
UNIV\*6050 Students Agri-Food Innovation

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## The Importance of Traceability

Food traceability is essential in Ontario's food production industry for numerous reasons. Firstly, it ensures the safety and quality of food products by enabling swift identification and removal of items in the case of a recall. This is crucial for protecting public health and maintaining consumer trust in the food supply chain and minimizing food waste. Additionally, traceability aids in regulatory compliance, facilitating the tracking of products from farm to fork in accordance with stringent standards set by governing bodies.



# Table of Contents

<b>Challenges &amp; Objectives</b> .....	<b>4</b>
<b>Recommendations for GS1</b> .....	<b>4</b>
<b>Survey Respondents</b> .....	<b>5</b>
Who did we reach? .....	5
What is their business like? .....	6
How do they access information?.....	6
Are they subscribers? .....	6
<b>Learnings: Current Subscribers</b> .....	<b>7</b>
Why did they subscribe? .....	7
What was their subscription process like? .....	7
What were the benefits of subscription? .....	8
<b>Learning: Non-Subscribers</b> .....	<b>8</b>
What are their perceptions of barcodes? .....	8
What do non-subscribers value? .....	9

## The Role of GS1

GS1 Canada is a non-profit organization that plays a vital role in promoting supply chain efficiency through standardized identifiers like barcodes and data-sharing services. GS1 Canada plays a pivotal role in enhancing product tracing capabilities during recalls through its standardized identification systems and data exchange protocols. By assigning unique identifiers to products and leveraging barcode technology, GS1 Canada enables rapid and accurate identification of affected items across the supply chain. This streamlines the recall process, minimizes the spread of contaminated products, and mitigates the impact on consumers, businesses and the broader food industry in Ontario.

The project specifically focuses on leveraging Global Trade Item Numbers (GTINs) to help improve food safety in the supply chain, with a particular emphasis on small-scale Ontario vegetable (field and greenhouse) and egg producers.

## Challenges

Despite the importance of these standards, many small-scale producers operating outside traditional retail settings (i.e., roadside and farmers market) may opt out of them, resulting in challenges in traceability during recalls. This not only limits market access but also increases food wastage during recalls. Our survey gathers insights from Ontario producers regarding their subscription status with GS1 Canada, and aims to identify barriers to adoption and enhanced traceability. This is especially valuable given the escalating concerns surrounding food safety in Canada.

*The higher resolution picture we have of a supply chain, the less food waste there will be during recalls*

## Recommendations for GS1

- Distribute surveys through paper-based formats (i.e., magazines and newsletters) and during face-to-face industry events to avoid biased results.
- Conduct case study on recall processes from non-subscribers and subscribers to see why some subscribers reported a more complicated recall process
- When talking with producers focus on how GS1 subscription will make their life easier
- Create concise documents on how GS1 subscription improves recalls and traceability

*Producers value investments that will make their life easier – How will GS1 do this?*

## Objectives

By understanding the challenges faced by small-scale Ontario producers, we can develop tailored solutions to improve adoption rates and ensure the effective use of GTINs for traceability purposes. Additionally, the survey will shed light on the potential benefits of utilizing GS1 standards, such as the ability to pinpoint exact producers affected by recalls through the use of extension components within Global Location Numbers (GLNs). This information is invaluable for both consumers and producers alike, as it enables swift and targeted responses to food safety incidents, ultimately safeguarding public health and bolstering confidence in the Canadian food supply chain.



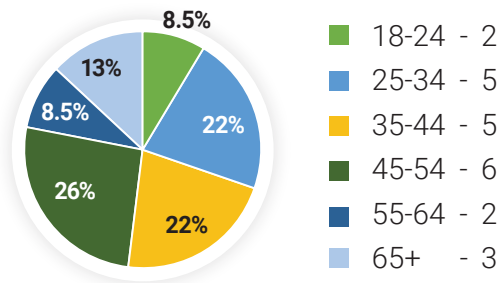


# Survey Respondents

## Who did we reach? \*\*

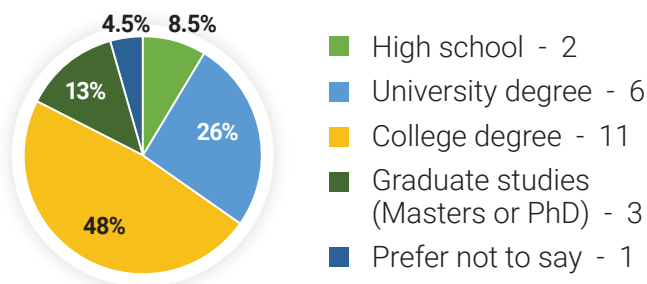
As part of the graduate course UNIV\*6050 at the University of Guelph, graduate students conducted surveys with small-scale Ontario producers to understand their perceptions and use of standards in their operations. We were able to reach a wide age range of producers, with respondents from each age group.

### Age Range of Respondents



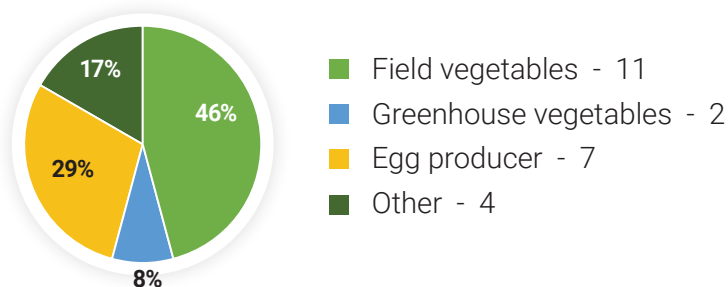
The majority of respondents had a college degree; the second-most-common respondents completed a university degree. This is likely a response to the survey's distribution, as it was shared by University students to a list of producers, in addition to colleagues and University of Guelph Poultry Club.

### Education Level



We received responses from 24 Ontario producers; 46% were field vegetable growers, 8% greenhouse vegetable growers, 29% egg producers and 17% grew other produce including herbs, both greenhouse and field vegetables, apples and berries.

### Agricultural Focus



## Why Small-Scale Ontario Producers?

Creating a survey for small-scale Ontario producers to gauge their experiences with GS1 Canada serves as a crucial step in understanding the challenges and barriers they face in adopting GS1 standards, particularly concerning traceability and recall processes.

Insights can be gained into the practical implications of GS1 standards. This information can identify areas where improvements are needed, whether in terms of accessibility, affordability, or awareness of GS1 benefits.

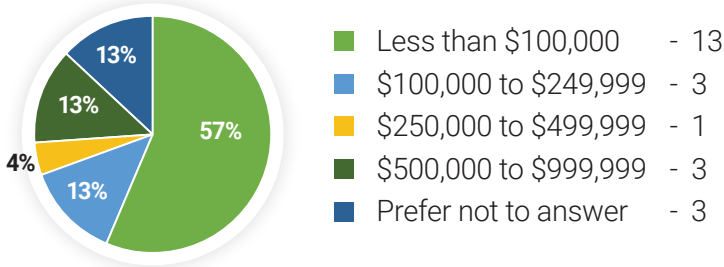
Additionally, understanding the hurdles small-scale producers encounter can inform tailored support mechanisms to facilitate smoother adoption processes, ultimately enhancing traceability and recall capabilities across the sector.

\*\* The questions in each section are ranked from most to least agreed.

## What is their business like?

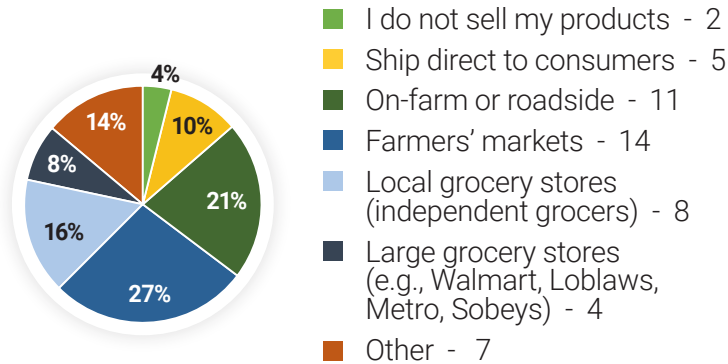
A majority of small-scale producers self-identified as making <\$100,000 net revenue.

### Net Revenue



Most of the respondents sell their produce in farmers' markets, followed by on-site roadside stalls and local grocery stores. This is likely skewed due to development of the survey distribution list: contact information for producers was found through farmers' market websites.

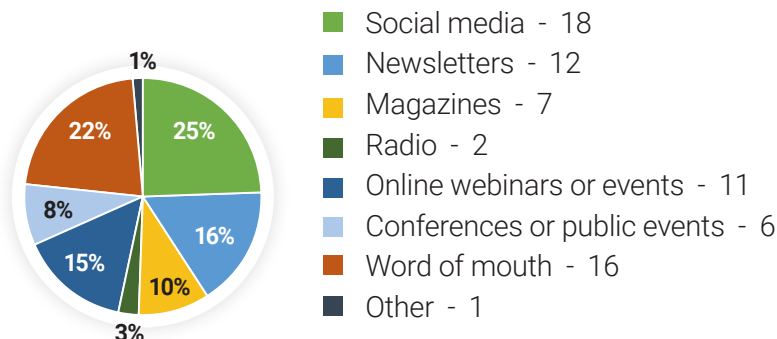
### Current Retailers



## How do they access information?

Producers indicated that they find information on social media, followed by word of mouth and newsletters. This identified how important informal information dissemination is for producers. Future surveys or information can be included in newsletters or social media posts.

### Information Sources



## Are they subscribers?



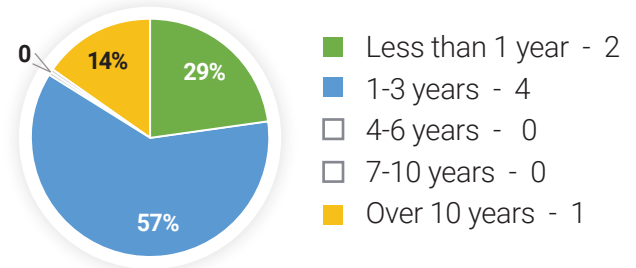
7 respondents were current GS1 subscribers



14 were not GS1 subscribers

This lines up with our previous predictions, that many small-scale producers who sell on-farm or through farmers' markets do not need a barcode, and therefore we see the majority of our respondents are not GS1 subscribers. For the producers that were subscribed to GS1, many of them were relatively recent subscribers (<3yrs) with only one producer who was subscribed for over 10 years.

### Subscription Duration



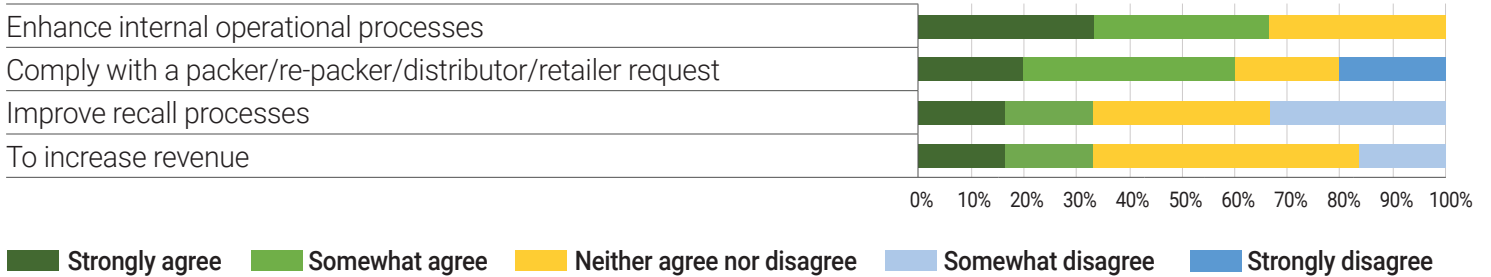
### Takeaways

- Data is skewed due to online-only distribution
- Future surveys should utilize paper-based formats including magazines, newsletters and connecting face-to-face during industry events
- GS1 should determine why the majority of subscribers have been enrolled for <3yrs

# Learnings: Current Subscribers

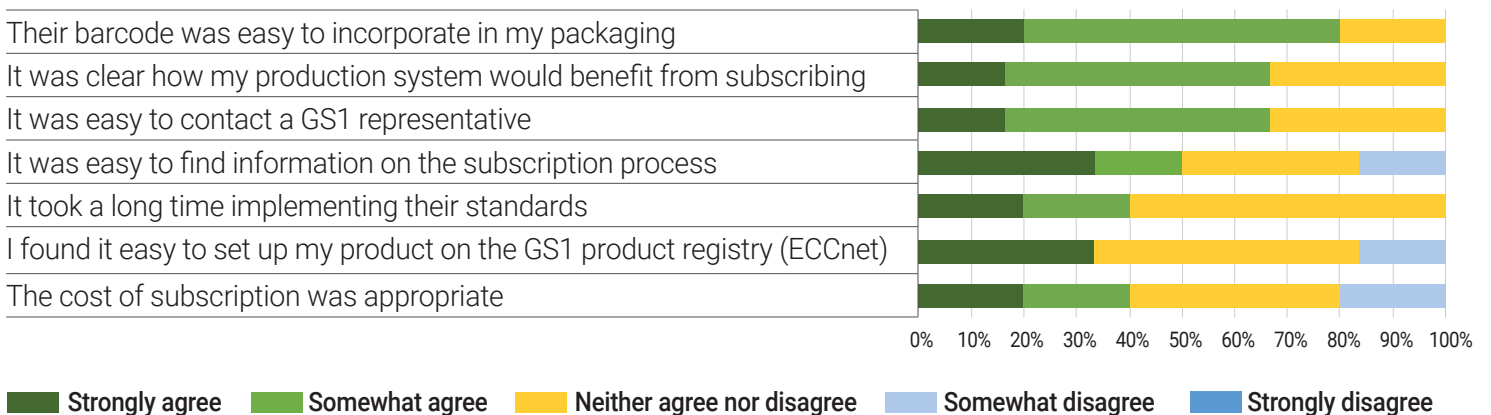
## Why did they subscribe?

Producers said that they became GS1 subscribers to (1) enhance operations (2) comply with distributors/retailers requests (3) increase revenue (4) improve recall processes.



## What was their subscription process like?

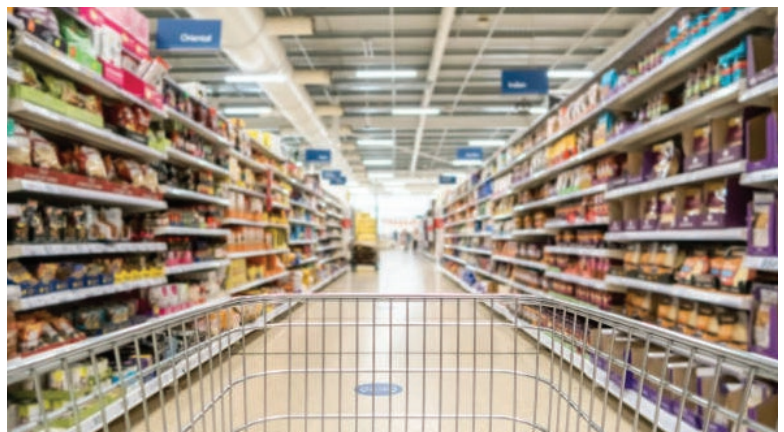
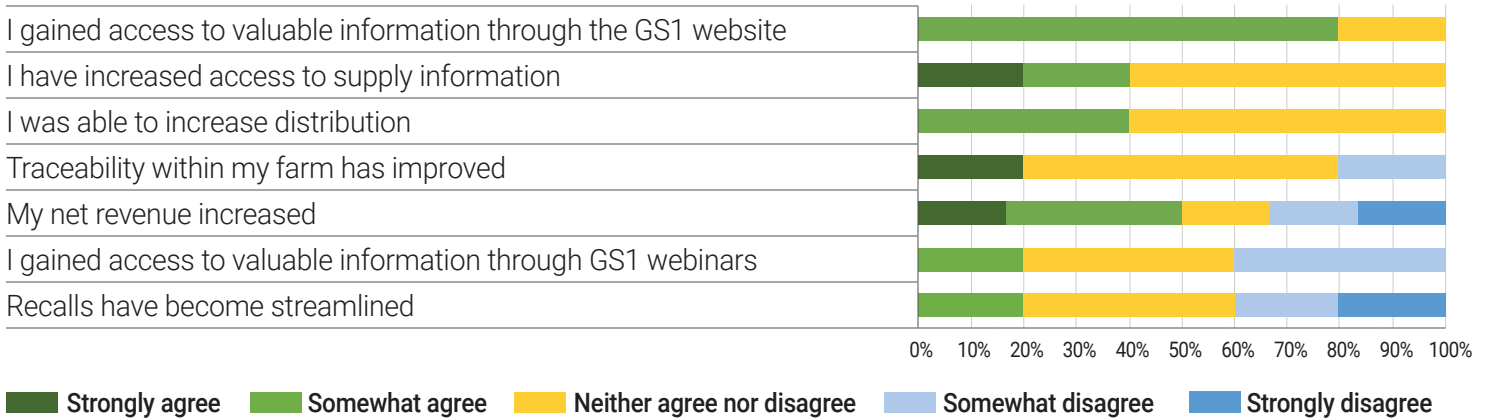
When GS1 subscribers were in the process of becoming subscribed, they found (1) the barcode was easy to incorporate (2) a clear benefit of subscribing (3) GS1 representatives were easy to contact (4) information on the subscription process was easy to find (5) it took a long time between subscribing and implementation (6) they found it easy to set up their product registry on ECCnet (7) the cost of subscription was appropriate.





## What were the benefits of subscription?

After producers became GS1 subscribers they identified the following benefits: (1) gained access to valuable information through the GS1 website (2) increased access to supply information (3) were able to increase distribution (4) on-farm traceability improved (5) their revenue increased (6) they gained access to valuable information through GS1 webinars (7) their recall process became streamlined.



## Learning: Non-Subscribers

### What are their perceptions of barcodes?

Non-GS1 subscribers said (1) they have not looked into a barcode subscription (2) traceability was important for them (3) barcodes are expensive (4) they are not sure what traceability means.

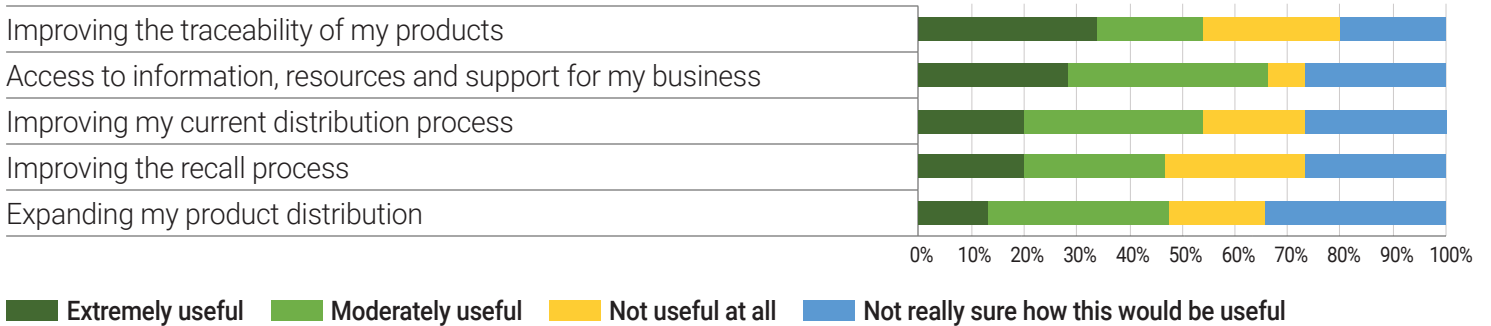




## What do non-subscribers value?

Non-subscribers ranked the benefits of a barcode subscription as follows: (1) improving traceability (2) gaining access to additional information and support for their business (3) improving their current distribution (4) improving recall processes (5) expanding their current distribution.

From this data we can see that non-subscribers would value improvements in traceability and additional support but are not necessarily looking to expand their current distribution.



## Takeaways

- The development of educational pieces on how GS1 can improve traceability is needed
- Subscribers found subscribing easy and were able to contact a GS1 representative
- Subscribers were either neutral or had some trouble setting up their registry on ECCnet
- Individuals who did not respond to online survey may have more difficulty navigating ECCnet
- GS1 should prioritize their website and post a written summary and recordings from webinars
- Perform case studies or interviews to determine why producers indicated a reduced recall experience
- Non-subscribers are generally not aware how a barcode can be beneficial
- GS1 should focus on educating producers of the benefits related to improving traceability and what kind of support they can offer
- Producers will jump on opportunities that are economically feasible that make their operations streamlined: all GS1 information should be clear and easy to understand and access
- GS1 information for non-subscribers should be clear and answer: How will this save me time? What benefit is it? How will improving traceability improve my bottom line?

