



## Blockchain and Its Value to Suppliers



The adoption of blockchain among suppliers and retailers is a positive development for all AgTech companies. It provides an opportunity for growers, packers and shippers to embrace technology that can help organize their data and provide new insights for addressing pre- and post-harvest challenges. However, for the adoption of any technology to be successful, there must be proven value to the customer. If growers and retailers don't benefit from a technology, such as blockchain, it likely won't be embraced.

Blockchain, like most technology, must deliver real value to all constituents – growers, shippers and retailers – to be successful. One area blockchain has the potential to help is with food safety.



### Blockchain and Food Safety

The spring of 2018 [romaine lettuce E. coli outbreak](#) put the value of food safety in stark relief. The industry needs a better way to both prevent and manage food safety incidents. Recent announcements related to leafy greens, which include romaine lettuce, open the door for a better way to manage food safety incidents using blockchain technology by quickly and reliably identifying the source of retail food. As claimed, a blockchain-based traceability platform, such as the [IBM Food Trust](#), would be a significant step forward for the industry to provide the consumer with such a solution to determine the source of their food.

## Building on Existing Standards: The Produce Traceability Initiative

Adopting blockchain technology to support produce traceability can be built on the good work accomplished by the [Produce Traceability Initiative](#) (PTI) completed some years ago. While PTI provided the data for source-level traceability, it did not provide a convenient and reliable way for consumers to access that data. A blockchain-based solution can extend that approach by providing a service to consumer mobile apps that access that same data and do so in a standardized and trusted way.

For example, combining PTI information (i.e. supplier GTIN, location, harvest date, lot number) with purchase order and shipping information (i.e. ASN) provides the basis for all the information required for this approach. As a result, consumers are provided with access to the information necessary to reflect the source of the product they scanned. This would help manage food safety incidents by consistently identifying product determined not to be affected – such that unaffected product could be sold and consumed with confidence.

## The Higher Goal: Prevent and Minimize Food Safety Incidents

The best approach for implementing blockchain for food safety is a proactive one: Use the same blockchain technology, but incorporate the data related to preventative measures, such as regular testing of harvested products, as well as key agriculture items such as irrigation water.

Most processed foods (such as bagged salads) are required to provide a HACCP (Hazard Analysis and Critical Control Points) plan that reflect the steps a processor takes to manage product contamination risk. The “Critical Control Points” can be reflected in tests that check for potential contamination and proactively validate product safety. Adding this type of preventive data into a blockchain traceability solution provides instant communication for preventing the distribution of at-risk product by distributors, retailers and restaurants – before the product reaches the consumer.



While field-packed products such as romaine lettuce are not currently required to maintain a HACCP plan, providing a means to proactively manage downstream product would encourage this type of testing for all products. Embracing this methodology and incorporating critical test result data directly into the blockchain data set promotes this proactive approach to help prevent or minimize food safety incidents.

## Get the Data Right

A blockchain only has value if the data is accurate, complete and consistent. Therefore, how product data is captured is a significant factor in determining how reliable the data stored in the blockchain will be.

Manually-entered data may be incomplete or unreliable due to entry errors and can be labor intensive. If inaccurate, incomplete or falsified information is entered into the blockchain, the integrity and value to its subscribers is lost. To address this issue, a blockchain system can boost effectiveness through the use of automated IoT sensors that can accurately, autonomously and securely collect and enter data into a blockchain (or other system). This eliminates paper-based,

manual and labor-intensive processes and reduces costs for growers and shippers and can provide significant additional benefits.

### Returning Value to Growers, Packers, Shippers and Retailers

Each user wants to see direct value in any technology or solution they use, as this reinforces the decision to add or change their current approach. Adding a blockchain-based solution for food safety is no different. As such, defining how to use blockchain technology in a way that returns direct value to growers, shippers and retailers is key to successful adoption.

We have identified the consumer benefits related to food safety – both in preventing or minimizing incidents and reliably identifying the food source. For growers and shippers, the product data captured in the blockchain can provide significant insights into operational efficiencies and product quality and shelf life. Zest Labs, for example, has already demonstrated that value, providing numerous suppliers with significant improvements in both operational processes and key product characteristics. The retailer can also benefit by improving the quality and shelf life consistency of received product. The lack of this information is currently costing retailers significant profit, as waste and markdowns reduce their product margins. A well designed and implemented blockchain solution provides all of these benefits to each constituent – spanning the fresh food supply chain – while embracing a proactive approach to helping prevent and minimize food safety incidents.

### Dealing with Multiple Blockchain Platforms

Finally, blockchain technology will have multiple platforms, each with distinct advantages and some disadvantages. While it is too early to predict which solution will be the predominant one, it is clear there will be multiple platforms that require support across the industry.

For instance, while the IBM Food Trust embraces Hyperledger Fabric, others see advantage in Hyperledger Sawtooth. Then there is the CoCo framework from Microsoft (which is Open Source), and Amazon Web Services support for multiple open source frameworks.

Since suppliers and shippers need to sell to multiple retailers, food service companies or restaurants, and they won't all be on one blockchain platform, the safe choice is to select a solution that supports all of the blockchain platforms through an abstraction layer. This approach future-proofs the grower shipper investment into blockchain technology without delaying the decision to adopt a solution today, realizing the significant added value to operations and food safety.

### The Best Approach

The best approach for a successful solution includes support for blockchain and uniquely offers a combination of proven operational benefits to suppliers, reduced food waste for retailers, and full blockchain traceability. Suppliers should look for a solution that supports multiple blockchain networks as their customer base will span these different networks – such as IBM, Amazon, Microsoft, and others.

Look for solutions that have built-in flexibility to interface to multiple, current and future blockchain platforms. The benefit to growers is that they would implement the solution once, gain operational benefits and be compatible with all food blockchain networks. This approach is simpler, safer and more cost-effective.

You can read more about how to implement a blockchain solution in this Zest Labs [white paper](#) and in this [ChainLink Research report](#).

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[www.zestlabs.com](http://www.zestlabs.com)

info@zestlabs.com