SMARTCHAIN
SMART SOLUTIONS IN SHORT FOOD SUPPLY CHAINS

Weather monitoring for agriculture

Campden BRI Hungary

December 2019

Project code: 773785

Project acronym: Smart Food Supply Chains

Internal template:

Template for good practice cases

Work package number: T2

WP leader: CBHU

Work package title: Technological and non-technological innovations

Document issued by:

Delivery month:

Version:

Document language: ENG

Dissemination Level		
PU	**Public**	
PP	**Restricted to other programme participants**	
RE	**Restricted to a group specified by the consortium**	
CO	**Confidential, only for members of the consortium**	

1. **Title of the case description**

   Weather monitoring for agriculture

2. **Indicate your role in the Smart Food Supply Chain:**

   individual member of the chain: ☒
   chain operator: ☐
   network operator: ☐
   association: ☐
   technical, scientific, or management expert: ☐
   advisor: ☐
   policy maker: ☐
   other: ..... ☐

3. **Indicate the region (if applicable):** Biofruit, Vetroz, Valais region, Switzerland

4. WP2 Cross-reference table

Please indicate with an X in the relevant box of the matrix for which needs and the steps / functions of the supply chain the described innovative solution is applicable

		Individual steps of the SFSC							Short food supply chain as whole						
		1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**	**13**	**14**
Needs of the consumers (citizens)	food safety														
	food quality	X													
	trust														
	ethical aspects														
	accessibility														
Needs of the chain actors	fair price														
	increased negotiating power														
	shared use of available resources														
	product development support														
	access to markets and consumers	X													
	access to infrastructure														

1: Farming

2: Primary production

3: Transport

4: Processing and packaging

5: Storage

6: Logistics

7: Sale

8: Product integrity, authenticity, transparency

9: Marketing concepts

10: Food chain management and networking for enhancing cooperation among chain actors

11: Business modelling

12: Policy environment

13: Legal requirements

14: Labelling

5. Short description of the innovative solution

- **Describe the specific need or problem being addressed by the case and please explain what is the novelty of this innovative solution**

  Raw materials supply and food quality (not enough quantity or too much quantity, depending on the meteorological conditions). The meteorogical conditions (rain, the number of hours of sunshine, the amount of heat, etc.) are uninfluenceable. That follows, that the amount of food and the quality of the food is unpredictable, and the products quality is cannot be uniform.

- **Describe the enabling function(s) and the practical benefit(s)-(e.g. for which types of problems and opportunities is used and can it be used, and how)**

  The establishment of a **meteorological station** gives information about the weather conditions (the amount of water, heat, etc.), so the date of optimal harvest can be predictable.

  Vantage Pro2 weather stations are planted alongside crops all over the world because they are affordable, accurate, durable, and easy to use. You'll have real-time data for weather conditions in your fields within minutes of opening the box.

- **Describe the method/procedure/technology/solution implemented. (Please explain, whether the innovative method is a product / service / process / marketing or organisational / management innovation) After completing the description, please indicate, whether this innovation is a technological or non-technological one.**

  - Affordablity and realibility in one, easy-to-use station:
    Monitor in-field evapotranspiration (ET) readings and use soil moisture probes to dramatically improve irrigation decision making.

  - Customize your installation with special stations:
    Davis' Vantage Pro2 and EnviroMonitor systems are flexible and expandable, allowing you to customize your installation to meet your specific needs. Add on special use stations, such as telematics for remote installations, solar radiation sensors for ET, soil moisture stations, or even third-party specialty sensors.

  - Get data from any remote site with cellular coverage:

View a complete picture of current weather conditions anywhere on your properties. Solar-powered, wireless and cellular options provide complete flexibility to collect weather data from the most remote corner of your property. Our EnviroMonitor system employs a sophisticated mesh network that self-optimizes to keep your data flowing.

- Share data:
  Our EnviroMonitor and Vantage Pro2 systems make sharing data secure and easy. Share your weather data and alerts with anyone who has internet access, including field staff, farm consultants and your customers. EnviroMonitor takes it one step further, allowing you to create a team of people who can have varying levels of authority to help you manage your crops.

- Observe wind conditions prior to spraying:
  Easily obtain current weather data on your Smartphone using our free iPhone or Android app.

- Use growing degree days to accurately forecast harvest dates:
  Track heat units every 15 minutes to provide a detailed record of progress for use with crop growth targets in order to improve harvest forecast accuracy. Extend your weather monitoring across your entire property to ensure maximum harvest yields.

- Prevent catastrophic frost demage:
  Thousands of growers trust Davis weather monitoring solutions to help them predict, prepare for and minimize crop damage during frost events. Real-time alerts from multiple cold spots on your farm, sent as text messages to your cell phone, help you respond while damage can still be mitigated.

- Track chilling requirements during crop dormancy:
  Set your own thresholds and start/end dates using in-field data to obtain an accurate picture of chill hour accumulation.

technological ☒ non-technological ☐

- **Describe the business, which implemented the innovated solution (size, country, region, location, type of food)**

- **Describe the distribution channels of the product(s)**

- **Describe what makes the innovation work.**

  Real-time data to increase yield and reduce cost in the agriculture

  Extend your weather monitoring across your entire property to ensure maximum harvest yields while minimizing crop damage risks.

- **Describe the specific prerequisites for the business related to the implementation of the method and/or related to the location, method, procedure, solution**

  a: List the relevant necessary resources (including the estimated cost) for the specific innovation.
  Please list the relevant ones only (list is annexed)

  b: List the relevant necessary capabilities for the specific innovation.
  Please list the relevant ones only (list is annexed)

6. Describe the results, achievements and typical failures

7. **Summarize what makes the case to a good practice for the members of the SFSCs (e.g. lessons learned)**

8. **Aspects, methods for transfer of methods for other SFSC members**

9. **Recommendations for members of other SFSCs for further applications**

.....

10. **More information is available at (web), if it is relevant**

https://www.davisinstruments.com/usecase/agriculture/

Annex

1. Checklist for necessary resources (tangible and non-tangible):

- materials (access to: raw materials/ ingredients - including volume, land – including size, packaging materials
- human: labour force: size, knowledge & skills (production, technical, marketing, managerial, ICT, financial, etc.)
- technology: patents, know-how, trademarks, copyrights, trade secrets
- infrastructure, equipment, facilities, - size, minimum volume of production/sales, IT infrastructure
- information, reputation, brand, trust
- financial*

  *: estimated cost:

  0 - 10 000 Eur
  10 001 - 50 000 Eur
  50 001 - 100 000 Eur
  100 001 - 300 000 Eur
  300 001 – 1 000 000 Eur
  1 000 000 Eur above –

- other specific necessary resources for the application of the specific innovation

2. Checklist for the necessary capabilities

- **food safety:**
  - basic skills to comply with the EU food safety regulations
  - ability to understand what makes the product safe (the key controls, which ensure the safety of the product – biological, chemical and physical hazards, providing the safety shelf life of perishable products)
  - food safety culture (motivation, responsibility for food safety) and basic skills for the implementation of HACCP

- **food quality:**
  - ability to define the target segments of consumers for SFSCs
  - ability to define the product characteristics which are (tacit) basic requirements for the target segment(s) of consumers;
  - ability to define which product attributes/levels and augmented services represent an added value for the target segments of consumers;
  - food quality culture (motivation, responsibility for food quality);
  - production experiences which help to provide the expected quality reliably, uniformly;
  - ability to provide distinguishable quality which meets the needs of the targeted consumer segment;
  - meeting (local) legal requirements, application of the labelling rules;
  - ability to access the consumer willingness to pay for specific products of SFSCs.

- **trust:**
  - ability to ensure product integrity, authenticity and transparent information for the consumers (including systems, tools);
  - ability to access external trust enhancers (third party certification, internal certification system, participatory guarantee systems);
  - application of the labelling rules and branding (mandatory and voluntary);
  - ability to meet third party certification requirements

- **ethical aspects**
  - ability to understand consumer needs for ethical behaviour related to the specific product(s) of the SFSCs;
  - culture for ethical food production and supply;
  - ability to implement necessary measures to ensure ethical food production and supply;
  - ability to access the consumer willingness to pay for products meeting ethical aspects

- **accessibility to consumers:**
  - ability to organize logistics efficiently and to exploit innovative solutions and distribution channels;
  - efficient, innovative sales methods;

	- ability to develop and implement new business models for ensuring access of consumers to products and augmented services;
• **fair price:**	- collecting marketing information; - ability to enhance and maintain cooperation among chain actors including the combined use of available complementary resources, capabilities, competences of SFSCs actors, networking, understanding the principles of food value chain management; - ability to define, develop or maintain unique quality of products and augmented services; - ability to develop and implement new business models; - ability to access the consumer willingness to pay for fair price
• **increased negotiation power:**	- collecting marketing information; - ability to enhance and maintain cooperation among chain actors including the combined use of available complementary resources, capabilities, competences of SFSCs actors, networking, understanding the principles of food value chain management, cooperation culture; - ability to define. develop or maintain unique quality of products and augmented services; - ability to develop and implement new business models;
• **shared use of available resources:**	- ability to enhance and maintain cooperation among chain actors including the shared and combined use of available complementary resources, capabilities, competences of SFSCs actors, networking, understanding the principles of food value chain management, cooperation culture; - the level of value chain management culture; - ability to access the consumer willingness to pay for food with reduced environmental impacts

- **input for R+D:**
  - ability to monitor, research, evaluate, and understand the needs and wants of customers and consumers;
  - ability to develop new products, processes, packaging, preservation techniques, systems and access to new markets, including in other categories;
  - access to innovative technologies; distribution and marketing solutions and methods. management systems;
  - access to local input for R+D covered by other aspects

- **access to markets: and market success**
  - effective promotion, customer service, efficient and innovative sales methods;
  - ability to understand consumer's needs;
  - ability to organise logistics efficiently and to exploit innovative solutions and distribution channels,
  - unique value propositions;
  - ability to develop and implement new business models for ensuring access of consumers to products and augmented services, develop the market accessibility for the suppliers.
  - stock control;
  - ability to access to required raw materials within a restricted geographical area

- **access to infrastructure:**
  - ability to use existing own infrastructure in a focused way to serve consumer needs or to combine it with complementary infrastructures of other SFSC actors, cooperation culture;

- **management:**
  - to implement management systems for vision, planning, implementing), coordinating, controlling, monitoring, continuously;
  - improving; ability to motivate, authorize staff;

- **production, processing:**
  - management system, production experience, specific controlling, monitoring, continuously;
  - willingness to consider and ability to evaluate the adoption of TECI and NTI in the current production processes;
  - any additional specific resources necessary for the application of the specific innovation.