Innovation Networks of Cork, Resins and Edibles in the Mediterranean basin - INCREDIBLE

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Deliverable 3.1 – Dissemination Material from crosscutting Seminar

Third cross-cutting seminar: Innovation and emerging technologies for non-wood forest products

Coordination and Support Action H2020-RUR-2017-1: Thematic Networks compiling knowledge ready for practice

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Coordinator   Partners

www.incredibleforest.net

Contents

List of abbreviations

The following acronyms have been used across this document:

- **CCS**   Cross-cutting seminar
- **OIC**   Open innovation challenge
- **NWFP**   Non-wood forest products

1. Agenda

Day 1. Tuesday 6th October	
09:45	Registration of participants and opening of the room online
10:00	<u>Opening</u>: Welcome and presentation
10:15	PRESENTATION OF PROJECTS The INCREDIBLE Project: Innovation, Technology and Non-wood Forest Products Opening of the information table on the knowledge context of INCREDIBLE The SustForest Plus project: an innovation challenge for the natural resin sector
10:45	<u>**Good practices in digitization in the agricultural and forestry sector**</u> - Internet of Things and the agricultural sector. Reality and future. BISITE-University of Salamanca. Juan Manuel Corchado - Mycological production studies and remote sensors. Föra and University of Valladolid. Raquel Martinez - Machine vision and production studies: Agerpix. Codesian Software Tech. David Francés - Marketing of hunting on the Internet: transparency and traceability Cesefor Foundation. Rodrigo Gómez
11:45	**Coffee break**
12:00	- Presentation of the DRIADA Project, winner of the Resin Innovation Challenge. Fernando Julián Martín Moreno, inventor and technical director of the project. - Presentation of TRACE-ME App. A traceability app for non-wood forest products. Anton Brenko, Croatian Forest Research Institute.
12:30	Morning session closure
17:00	<u>Seed ideas:</u> Presentation of technological project proposals for natural resin and other non-wood forest products.
18:00	<u>Seed selection:</u> Evaluation and proposal of finalist ideas and formation of work teams.
19:00	**Session closure**
Day 2. Wednesday 7th October	
9:45	Opening of online room
10:00	<u>Presentations</u> - Artificial intelligence. State of the art and opportunities for the forestry sector. Quanticae. Rafael Rivera - Food security and ICT. Hispatec. Rafael Ángel Ferrer - Traceability solution in the resin sector: ResinApp. Cesefor Foundation. Franciso Gallego - Sensorization of chestnut trees for the production study in El Bierzo. Cesefor Foundation. Roberto Rubio

11:15	Techday coffee break and networking
11:30	**TechDay-ForXplora, Innovative forestry products and services**
	Meeting point between startups that develop projects, services and prototypes in the field of forest resources and environmental services, researchers and companies in the sector that seek new innovative lines of work.
	-Institutional welcome. Enrique Baeyens, Director of the UVA Science Park. Lola Borén, Regional Director of the Institute for Business Competitiveness of the Junta de Castilla y León in Soria
	Exhibition startups
	-**EASYQ**. Quality management and food management software, which facilitates and streamlines all food safety and quality work of the different companies in the food sector. Gonzalo García, Operations director.
	- **M2Sensors**. Company focused on offering management solutions based on wireless sensor networks. Marian Chiriac, CEO.
	- **Block Impulse**. Company dedicated to the development of Blockchain technology for companies. Cover integral business solutions from a technical, legal and economic point of view supported by new technologies. Carlos Callejo, CEO.
	- **AGM GLOBAL**. Consulting services through technological solutions for water management in order to make vineyards better and more efficient. Silvia Tomillo, director.
	In collaboration with: Institute of Business Competitiveness ICE, Junta de Castilla y León, Scientific Park of the University of Valladolid
13:00	Morning session closure
17:00	Online workshop:
	Agile methodologies to start a business
18:00	Planting the seeds:
	Group work in different online rooms with the assistance of mentors
19:00	Session closure
Day 3. Thursday 8 October	
9:45	Opening of online room
10:00	Online workshop:
	Financing of entrepreneurial projects
11:00	Watering the seeds:
	Group work in different online rooms with the assistance of mentors
12:00	Morning session closure
17:00	Online workshop:
	How to present your project
18:00	Seed irrigation II:
	Group work with mentor assistance
19:00	Session closure

Day 4. Friday 9 October	
9:45	Opening of online room
10:00	Welcome and opening session
10:15	Online presentation of worked ideas
11:15	Coffee break
11:30	Voting and selection of the best projects Dynamic World-Coffee online Challenges and solutions in the resin sector
12:30	Institutional closing of the day
13:00	End of the event

2. Foreword

This deliverable, aims to summarize the main contents and contributions obtained during the Cross-Cutting Seminar (CCS) idiForest, organized as an online event as a result of COVID-19 and coordinated by Cesefor. This event should have taken place in May 2020 in Spain, but due to the pandemic it was postponed to October 2020 and was held online. This CCS is organised in collaboration with SustForest Plus project and features natural resins as the focus product. The seminar is addressed to forest entrepreneurs, technology and forestry companies; resin workers, academic sector, students and investors.

Furthermore, the planned field trip could not be carried out due to the nature of the event. In this sense, and to try to make up for this lack of the event, the organizers included some dynamics in collective work sessions in which different aspects of interest for the promotion of innovation in the forest area of non-wood forest products (NWFP) have been worked on. These sessions are described in Section 5. Workshops.

Organised by Cesefor, the CCS was held over 4 days in morning and afternoon sessions between the 6th and 9th of October and its main objective was to boost the competitiveness, sustainability and social impact of NWFP through the use of emerging Information and Communication Technologies (ICT).

This general objective has been worked on through a combination of 3 elements (1) conferences to stimulate the transfer and exchange of knowledge on the use of emerging technologies that can radically improve productivity, sustainability, supply capacity, benefits and social impact. (2) conferences promoted by the Institute of Business Competitiveness (ICE), the Regional Government of Castile and Leon and the University of Valladolid Science Park to create effective links between NWFP entrepreneurs, technology makers and potential investors, and (3) workshops on the acceleration of innovation and entrepreneurship in non-wood forest products, in which special mention has been made to resin exploitation.

3. Attendees

As not all attendees gave their consent to disseminate their personal data, therefore aggregated figures of the attendance are presented here.

Day	Registered	Attended	Speakers
Day 1. 6th October. Good practices in digitization in the agricultural and forestry sector	97	38	6
Day 2. 7th October. Innovative forestry products and services	86	42	8
Day 3. 8th October. Online Workshop	33	16	-
Day 4. 9th October. Online Workshop	33	16	-

Country of origin	
Belgium	1
Croatia	1
France	1
Italy	3
Spain	86
Portugal	2
México	1
Peru	1
Turkey	1
Grand Total	97

Sector of activity	
Academia	13
Agroforestry	4
Architect	2
Biologist	2
Commercial	3
Consultant	8
Engineer	2
Entrepreneurship	5
Forestry	13
Green chemistry	2
Innovation	3
Mushrooms & Truffles	2
student	10
journalist	1
Local-National Administration	9

Resin	4
Rural development	2
(blank)	13
Grand Total	97

Country	Position
Spain	Head of the ecological transition ministry area
Spain	Developer of air pollution maps, European project, "lulucf"
Spain	Journalist
Spain	Contracted professor Doctor UCLM
Spain	Forestry technician
Spain	Commercial
Spain	Architect
Spain	Professor
Portugal	Agricola, Animal e Florestal
Spain	MAPA grant holder
Spain	Student
Spain	Computer engineer
Mexico	Biologist
Spain	Forest Engineer Pyrenean Rural Development Company
Spain	Agronomist
Spain	State forestry engineer
Spain	Mount engineer
Spain	R+d+i Technician
Spain	PhD Student
Spain	Forestry engineer
Spain	Technician of the University of Valladolid scientific park in Soria
Spain	Head of the territorial section of forest management iii
Spain	Technician
Spain	Entrepreneur in forest bioeconomy
Spain	Carpenter
Spain	Technical forestry engineer
Spain	Forestry engineer
Spain	Forestry technician Transfer and Entrepreneurship
Spain	Technician Technical forestry engineer
Spain	Forest manager of natural resins in Soria
Spain	Student
Spain	Student
Spain	Forestry technician
Spain	Resin
Spain	Forestry engineer
Spain	Forestry engineer

Spain	Technician
Spain	GEA Forestry
Spain	Agronomist
Spain	European project manager
Peru	Forestry engineer
Spain	Junior researcher
Portugal	Administrative technique
Spain	Researcher
Spain	Environmental agent and inventor and project developer.
Spain	Contracted Professor Doctor
Spain	INCREDIBLE consortium member
Spain	Researcher
Spain	Administration technician
Spain	Research technician
Spain	Technician
Spain	Student
Spain	Technician
Spain	Director-manager of Prosecar studies and consulting SL
Spain	Forest pest and disease control
Spain	Agronomist
Spain	Mount engineer
Spain	Graduated in Forest Engineering and Environmental Sciences
Italy	Public Officer
Spain	Industrial
Spain	Predoctoral student, Forestry engineer
Spain	Professor
Spain	Agroforestry teacher
Italy	Forestry and agricultural entrepreneur
Spain	Forestry engineer
Spain	Environment
Spain	European project manager (CSIC)
Spain	Luresa Resins SL
Spain	Public worker
Spain	Project manager
Spain	Journalist
Spain	Research staff in training
Spain	Businessman
Turkey	Landscape Architect
Spain	Manager
Spain	Entrepreneur technician
Belgium	Consultant strategy, innovation, stakeholder engagement
Croatia	Associate expert
Spain	Wood/resin
Spain	unemployed
Spain	Head of the area of promotion and management of natural resources
Italy	Pubic worker Agenzia Forestas

Spain	Innovation and design agent
Spain	Consultant
Spain	Quality manager for the Iberian pinion manufacturing company
Spain	CEO
Spain	Technology consultant
Spain	Self employed
Spain	Mountain community coordinator
Spain	Forestry engineer
Spain	Forest Nursery Technician
Spain	UPM Projects Collaborator
Spain	Föra forest technologies
Spain	Student
Spain	Technical forestry engineer

Table 1. List of attendees to the interregional workshop.

4. Main contents of the seminars

4.1. Summary of first day

Good practices in digitization in the agricultural and forestry sector

Juan Manuel Corchado, BISITE-University of Salamanca: Internet of Things and the agricultural sector. Reality and future.

There is currently a lot of cheap and affordable technology available to use all the accumulated knowledge of the primary sector. It is also very easy to access communication systems remotely, interacting in real time with the field where we want to act. BISITE has developed its own technology to have robust and reliable systems, improving communication capacity and greater bandwidths to enhance efficiency. In addition, with blockchain technology they can certify that all the data are real and reliable. BISITE tries to listen and focus on the real world to design products that don't exist on the market yet and satisfy current needs. They work with different models and technologies already used by the clients adapting them to the needs and budget of each project. They are currently working on InTelWINE, which allows the total traceability of a product in the wine value chain, from the elements used to grow the grapes to the final consumption of the wine. Another project is SMARTFARM, a service that monitors how silos are being filled and emptied in rabbit cages to evaluate how they eat and grow. Allowing control of rabbit's growth and when is the best moment in the market to buy more feed.

Raquel Martinez, Föra and University of Valladolid: Mycological production studies and remote sensors.

Fungi are key organisms for ecosystems functioning. In terms of exploitation, they are important for their medicinal, commercial, nutritional and recreational uses. The variation in the harvest will be determined by different variables. The specific variables for each site will be the climatological (temperature and rainfall), the soil (humidity) and the topography (slope, altitude and orientation).

All this information can be obtained through satellite images and radar images. The structure of the forest mass is also critical for mushroom prediction, as mushroom harvests are influenced by age. LiDAR can be used to understand the structure of the forest. To know the forest species, multispectral images and spectral libraries can be used. Thus, with remote data, temporal data, and time series data that already exist, we can make predictions of mushroom harvests. Studies have been carried out with data accumulated for 24 years, and they have found that models made with the combination of climatic variables and remote sensing data significantly improve the prediction of mushroom production.

David Francés, Agerpix. Codesian Software Tech: Machine vision and production studies.

Agerpix is a software company focused on the fruit sector. On Fruit is a service created to solve problems of deviation in the amount of harvested fruits. Through artificial vision and a specific hardware a system allows to automate and simplify the grading of the plantations. It gives very specific data to improve the decision making process and therefore profitability. Through hardware they map, georeference and analyze the information of each piece of fruit. With statistical models it makes the necessary corrections, reaching accuracies of up to 90-95%. In addition to the quantity of fruit, it can obtain more information like the size, the count of all the fruit or the leafiness index of the plant which enables better decision-making in the plot management. All this information is presented in a visual platform easily accessible for the clients who will obtain benefits in the efficiency of the plantation, in sales, in HR, logistics and stock. Dendrofruit is another project that arises to solve the problem of collecting data on the size of the fruit. It is a sensor that performs an automatic fruit calibration on the tree on a daily and cheap basis. This information is collected allowing to draw growth curves and make better decisions both when it comes to handling and fruit selling.

Rodrigo Gómez, Cesefor Foundation: Marketing of hunting on the Internet: transparency and traceability.

Hunting is a non-wood forest product that in addition to its recreational use, has great importance in rural communities. It generates stable activity but in the last few years the number of licenses are decreasing. In Castilla y León there are 10 regional reserves with its management highly controlled by the administrations and municipalities. The traditional model is based on physical auctions with no digitization and no real-time information or control. The proposal is an online auction web to manage all hunting sales through the internet, as a complement to physical auctions. The analysis of all the data collected on the platform allows an improvement on season planning and management. This system offers total transparency for the owner of the hunting ground and for the hunters, reducing the intermediaries in the process and offering real information on supply and demand. Now the same solution is being launched for private reserves, a portal where the quality of the product is controlled without intermediaries.

Fernando Julián Martín Moreno, inventor and technical director: DRIADA Project, winner of the Resin Innovation Challenge, of SustForest Plus coordinated by Cesefor in April 2020.

Driada is an innovative system that helps forestry operators and companies in the sector to optimize the pine forest management and to discover new saving opportunities. It allows to add value to the resin resource, achieving total traceability of the final product. Each resin pine is geolocated and identified with a unique QR code. Subsequently, the routes to be followed by the workers are defined. Through the App, forestry workers report in real time each of the activities

carried out (resin and pine cone harvest, felling, etc.). The information is sent to the web platform that allows real-time analysis of the true performance of the different species, lifetime control, detect points of improvement and optimize efficiency. It also facilitates all transport logistics and payments to the actors involved. The advantage that Driada offers is a lot of real time information of each individual tree: the existence of live pines in production, the species and fauna that inhabit them, the cubic meters of wood they represent, the amount of resin collected by pine, the amount of CO_2 absorbed, the oxygen released, its aquifer recharge capacity, etc.

Anton Brenko, Croatian Forest Research Institute. Presentation of TRACE-ME App. A traceability app for non-wood forest products.

Trace-me.org is developing under the Incredible project. The idea is to provide more information about the product to potential customers, by scanning a QR code you can find more information about place and species of origin, method of harvesting, harvester, procedure and producer. On the platform, you can search and filter the information of a final product or raw material. This platform can be used as a map to find more sustainable products with all the information presented in a transparent and clear way.

Take-home messages

1) Although seemingly different in basis and procedures, there are a lot of products and services already working to improve the agricultural and forest sector through the digitization of the processes.

2) With all the data already collected, there are a lot of opportunities to create new services and products for the sector.

3) The application of new technologies to more traditional sectors can boost their improvement in terms of scalability and growth pace.

4) All the information collected allows the companies to improve the working conditions and offer more sustainable and stable positions throughout the year.

4.2. Summary of second day

Rafael Rivera, Quanticae: Artificial intelligence. State of the art and opportunities for the forestry sector.

AI is a concept that responds to the desire of human beings to make machines that mimic our behavior. AI includes many concepts and terms, one now predominating is Machine Learning, where machines are able to learn from the world, from data and recognize patterns to act. AI has grown exponentially in recent years and is translating into spectacular real results. The success has come by the confluence of the great computational capacity, the millions of data available and a very generous environment for the development of platforms and open models. With all this technology, descriptive, causal, predictive and prescriptive analysis can be carried out to get the information we want. In the forestry sector, causal analysis could be efficiently applied, machine learning to process all images, reinforcement learning, transfer learning, IoT ... In short, thanks to the large amount of information we produce, AI can make precise predictions of different scenarios. It allows for example recommending methods or actions in a personalized way, anticipating

situations, predicting the success of a plantation, recognizing the most suitable species, assessing the risk of fires, etc.

Rafael Ángel Ferrer, Hispatec: Food security and ICT.

In the current environment we are facing great challenges and crises, there is more and more competition and technological development. In the food sector, people have more and more access to information and demand more security and control. At the same time, consumption habits are changing, food is becoming timeless and consumers want to eat safely and healthily. There are three key parameters in food consumption, which is nutritious, sustainable and healthy. The main challenges of agriculture in the world are the growing demand for food, the preservation of the environment and the creation of profitable companies while maintaining food security. Hispatec, through an intelligent coding system, achieves total traceability throughout the entire supply chain. Data can be obtained from all steps of the value chain, from the seed, the production farm, the agri-food industry that processes it, logistics and delivery to the final consumer. This information can be enriched with IoT and thanks to the analysis of the data, be presented in a very simple way to the final consumer. This transparent information achieves total traceability of the product and guarantees food safety and a healthy product obtained in a sustainable way with the environment.

Francisco Gallego, Cesefor Foundation: Traceability solution in the resin sector: ResinApp.

Due to the growing worldwide concern about environmental problems, traceability systems have acquired crucial importance in recent decades. Resinapp is a traceability system based on a web platform and an Android app, which allows to document in real time resin path from its extraction in the forest to the factory where the first transformation is carried out. It is offered as a solution for controlling the origin and ensuring sustainable practices for the harvesting and marketing of forest products. This traceability of the product facilitates the accreditation of the origin of the resin and serves as a business management tool for first processing companies. It facilitates the monitoring and transactions between resin manufacturers and companies. In the resin sector there are no applications specifically developed for the characteristics of this activity, very different from the tree logging. ResinApp not only has a utility as verification tool resin origin but also it offers services like business management or commercial promotion.

Roberto Rubio, Cesefor Foundation: Sensorization of chestnut trees for the production study in El Bierzo.

The chestnut problem is a serious phytosanitary condition and one of the causes of chestnut regression in the Bierzo region. In addition, there is still much ignorance of the chestnut varieties. These two factors limit the development of the sector in the area. On this basis, the proposal is to monitor remotely the chestnut's physiological parameters in real time through the use of IoT systems. Sensors are installed in trees and soil to measure different variables. By a radio system a signal is emitted with the information that is stored in the internal server. Data are collected such as sap flow, xylem moisture, radial growth, temperature and soil moisture... A platform developed by Cesefor specifically for the project allows data to be stored, consulted and exported. Obtaining precise information on the state of the trees and their possible treatments and the different varieties present

TechDay-ForXplora, Innovative forestry products and services

Gonzalo García, EASYQ. Quality management and food management software, which facilitates and streamlines all food safety and quality work of the different companies in the food sector. Operations director.

Food quality and safety are fundamental and differentiating factors for companies. EasyQ is a quality control software that offers many advantages for the company mainly in an improvement in global quality control. It offers a total control on task execution; monitoring of corrective actions and non-conformities; improvement in document system management and a global improvement in job satisfaction for the quality department. The program is SAAS and offers many direct savings in terms of working times, paper support and space needed. It also offers indirect savings such as claim reduction and improvement in incident tracking.

Marian Chiriac, M2Sensors. Company focused on offering management solutions based on wireless sensor networks. CEO.

M2Sensors offers monitoring services based on wireless sensor networks and R + D + I (Research, development and innovation) services. In monitoring service, the company designs, manufactures and installs its own monitoring platform. They also allow the visualization, monitoring and analysis of the data. For this it is necessary to have a traceability of the entire product cycle. The client has a need for monitoring, so they perform a complete study of the necessary sensor, its location and installation. They apply their knowledge to know how to monitor and interpret this data as well as how to maintain the correct operation of the sensors. When designing the service, they make the general scheme and use technologies such as LoRa to configure the appropriate parameters. They offer their services to integrate their equipment and offer a solution tailored to the client's needs. With more than 15 years of experience in software and hardware, they offer their services to carry out an intelligent management of data through sensors.

Carlos Callejo, Block Impulse. Company dedicated to the development of Blockchain technology for companies. Cover integral business solutions from a technical, legal and economic point of view supported by new technologies. CEO.

Blockchain is a technology based on a chain of blocks where data is recorded and the blocks are linked, avoiding manipulation of the information. The benefits of this technology are traceability, immutability, security and decentralization. Traceability offers an extra layer of security and transparency by offering truthful, immutable and instantaneous information. Stocken capital is a corporate management platform of the digital company where a digital representation of social shares is made through tokenization. All that information is digitized and saved in a blockchain and the company can use the benefits of this technology. This allows to reduce costs and times, reduction of validation processes through public notaries, improve communication and operations between partners and reduce legal conflicts of the company. It allows more democratic financing by opening foreign financing options in a simple way. It is the blockchain technology applied to the legal aspect of the companies.

Silvia Tomillo, AGM GLOBAL. Consulting services through technological solutions for water management in order to make better and more efficient vineyards. Director.

AGM Global is focused on the wine sector, offering a water management monitoring and improvement service. They carry out complete projects where they can install the technology and

the service from scratch or work with the technology already handled by the client. They offer adapted and personalized services to the problem of each client. Through non-invasive and vine-friendly sensors, they control up to 43 environmental parameters (water capacity of the plant, radiation, precipitation, shadow area...) for a more efficient management of water resources and to achieve greater productivity. The client can access their profile through an App, with information in real time and the possibility of two-way communication. The system is trained with AI and allows to improve the results. The technology is user-friendly and the data is at their disposal to make better decisions in later years. The sensor network is specially designed for each crop, always offering a tailored system.

Take-home messages

1) Traceability is a key issue in most companies that can be easily addressed with the implementation and usages of new technologies.

2) Monitoring and data collection have proven benefits on companies' economic, environmental and social results.

3) High technology must be accompanied by visual and easy to interpret interfaces that can create needed links between clients and companies.

4) Adapting solutions to client requirements is key for obtaining successful outcomes.

5. Workshops

The main objective of the Seminar was to boost the competitiveness, sustainability and social impact of non-wood forest products through the use of ICT and emerging technologies. This was achieved through applied workshops on ideas presented by the participants.

During the first afternoon any participant could present an idea to work and develop during the rest of the days. The last day of the event, all the ideas were presented to share the advance and knowledge applied throughout the seminar. From 9 ideas presented the first day, all the participants voted to choose 5 and work on them in different teams.

The 5 selected ideas, in different stages of development, were:

1. A company / service that makes resin exploitation work compatible with forest cleaning work to prevent forest fires throughout the year.

2. A test to extract the percentage of turpentine from the resin at different times of the process to calculate its potential value.

3. Assessing the potential of using hydrogenated turpentine as a biofuel for transport.

4. Complement the resin activity with guided tours of mountains and plantations.

5. A traceability app for non-wood forest products.

The different teams applied the theoretical knowledge acquired in the workshops to the different aspects of the project.

Each of the teams listened to the workshops and subsequently carried out teamwork with the assistance of mentors. In this way, each team was completing online and in real time the work materials that allowed the advancement of the methodology.

The last day, they presented the full frame of the idea to the rest of the participants in order to get feedback on the work and future development.

<u>Agile methodologies to start a business</u>

The main objective when starting a new business is to fail fast and cheap. This will allow us to pivot and focus the business towards new possibilities. The reasons for wanting to start a business can be to solve a problem, help customers or use a product or technology. In this workshop, we discover agile methodologies like the Lean Startup method and Design thinking so we can start agile and flexible businesses to achieve success.

The practical part of the session is an exercise to validate our hypotheses or beliefs about our own project. We identify the hypotheses we have about the business model, about the client and their problem, and about our product or solution.

To start a business, you have to know the client well and the next exercise is an empathy map of our client. We need to know the client and their thoughts in depth in order to offer a product or service that meets their needs.

Here you can see some of the CANVAS panel methodology developed along the different workshop sessions:

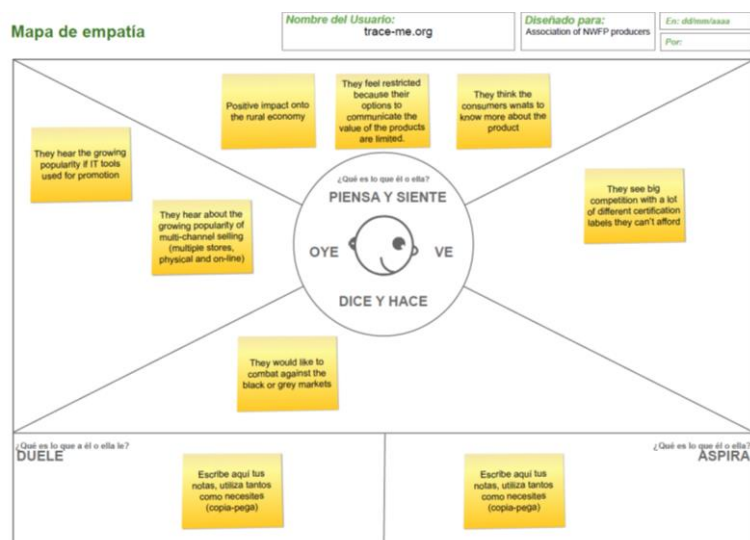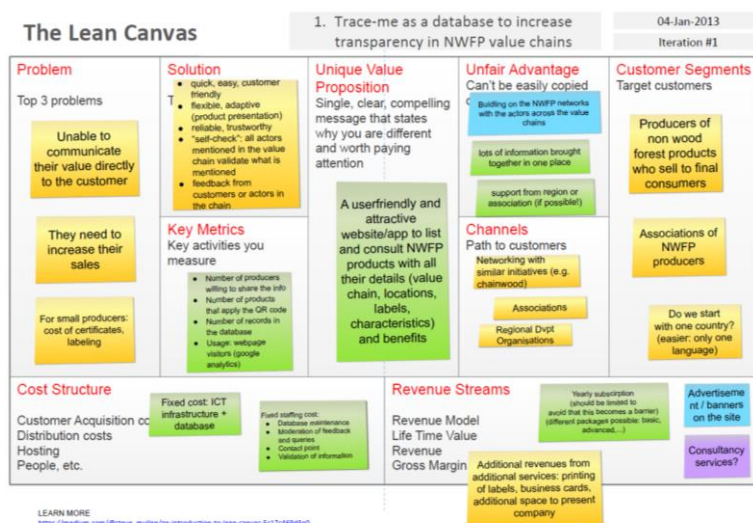*Fig 1: Canvas for the ResinExperience project*

Fig 2: Canvas and empathy map for the Trace-me app project

Financing of entrepreneurial projects

In order to successfully develop the project, we need it to be economically sustainable. It is important to know if you really need financing, what it means to obtain it and where to obtain it in the best possible way. There are 3 formulas to obtain it, with your own resources, with debt and with aid and subsidies and all have their own characteristics. In this workshop they are all described in order to choose the one that best fits each project.

How to present your project

On many occasions we need to present a project to investors or a jury and it is important to clearly present the most important information. In 5 minutes, the participants have to present their project and, in this workshop, they learn the key points that cannot be missed in any presentation:

customer, problem, value proposition, solution, business model, competition, marketing strategy, team, current results and growth strategy.

Fig 3: Example of ResinExperience presentation.

After the four-day workshop, the different projects were presented and an online vote was held. Here you can see the results
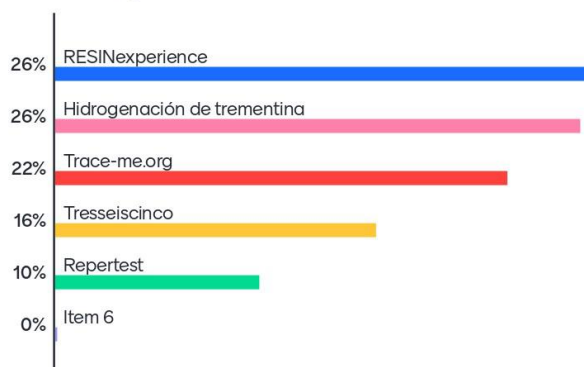
Fig 4: Result of the voting of the projects worked on during the workshops

Take-home messages

1) The main objective when starting a new business is to fail as soon and cheap as possible, learning the most in such process.

2) If you need external aid to finance your project, consider waiting until you are in a good position to negotiate and get better financing conditions.

3) A bad presentation of a good idea can ruin your possibilities of getting funding, clients, collaborators or aids.

6. Outputs described through infographics

6.1. ResinApp, traceability solution in the resin sector

SPAIN

RESIN APP

TRACEABILITY SOLUTIONS FOR THE RESIN SECTOR

A WEB/ANDROID APP FOR LOGISTICS AND NATURAL RESIN TRACEABILITY

1. Traceability systems have acquired crucial importance in recent decades due to growing concerns about the health of worldwide natural resources. They offer reliable solutions for controlling the forest product origin thus ensuring sustainable practices during the harvesting and marketing phases.

3. Enhanced resin traceability facilitates the accreditation of the resin origin and serves as a business management tool for first processing companies. It facilitates monitoring and transactions between resin manufacturers and companies.

2. Resinapp is a traceability system based on a web platform and an Android app, which allows to document in real time the route of the resin from its extraction in the forest to the factory where the first transformation is carried out.

HOW TO IMPLEMENT TECHNOLOGIES IN THE RESIN SECTOR: TIPS FOR SUCCESS!

COMPLETE TRACEABILITY

Resin traceability and product origin disclosure from the extraction phase to the entrance in the market.

TRANSPARENCY

Improved real time communication, enhancing transparency across all value-chain interactions. All the intervening actors have access to the same information.

TIME AND COST SAVING

Time and costs savings thanks to the document digitization, which also improves actors' coordination.

Currently, the resin sector lacks applications focused on product traceability. Resinapp fills a commercial gaps by providing additional verification functionalities, enhanced business management, and commercial promotion.

Learn more about innovation on NWFPs
www.incredibleforest.net

Coordinator   Partners

6.2. ResinExperience, connecting with the Earth and its caregivers

CASTILLA Y LEÓN

RESINEXPERIENCE

CONNECTING WITH THE EARTH AND ITS CAREGIVERS

SHARING EXPERIENCE WITH RURAL PEOPLE AND RESIN PRODUCERS

1. Lack of economic dynamization, increasing rural depopulation and youth unemployment are only some of the challenges that rural agricultural municipalities face. Moreover, the hidden socioeconomic value of natural resins is often unknown to those local administrations that directly own it.

3. Through an online platform and trees mobile sensors, the user can create routes, obtaining live information on the environment (resin practice, environmental issues, culture of the territory, hospitality information, shopping …) as well as sharing and planning trips with the platform community.

2. RESINexperience aims to recognize and promote the fragile figure of the resin producer, offering marketing support so that their activity is stable in the territory and over time.

HOW TO IMPLEMENT TECHNOLOGIES IN THE RESIN SECTOR: TIPS FOR SUCCESS!

ATTRACTIVE DESTINATIONS

The resin sector is uniquely connected with local natural landscapes and traditional village history. However, it is often unknown to outsiders. Resinexperience aims to promote the importance of traditional resin extraction by creating attractive tourist destinations.

LOCAL TEAM

The team is local, made up of people directly linked to the local territory such as village inhabitants, environmental officers, resin workers and technology experts. Resinexperience support local employment halting rural depopulation.

TRADITION AND TECHNOLOGY

Connecting tradition and technology help in revitalizing resin areas and in creating an economically and environmentally sustainable future.

RESINexperience aims to provide a stable work opportunity for local residents, offering support to resin municipalities that wish to valorize their resin tradition through sustainability and local tourism branding .

Learn more about innovation on NWFPs
www.incredibleforest.net

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Innovation Networks for Cork, Resins & Edibles

Coordinator   Partners

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6.3.   365, new business models for forest use

SPAIN

365

NEW BUSINESS MODELS FOR FOREST USE

MULTIFUNCTIONAL SERVICE COMPANIES IN THE FORESTRY SECTOR

1. Non Wood Forest products (NWFP) as cork, resin, red fruits or mushrooms suffers from a high seasonality and, in many cases, low profitability. This implies fragmented value chains and discontinuity in row material industrial supply.

3. This will implicitly benefit forest product transformation industries through guaranteed NWFPs row supply.

2. To revert NWFPs fragmentation and rural abandonment, "Tresseiscinco" proposes, through training and professional guidance, the creation of a multifunctional service company focused on promoting continuous forest use throughout the year.

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SUSTAINABLE STRATEGY

Adaptation to the multifunctional role of forests, enhancing ecological and environmental services.

AD HOC TRAINING

Practical and professional orientation tailored to each type of harvest and season, can support the creation of dynamic and adaptable companies, able to face changes in the sector.

ADAPTED SALES STRATEGIES

Marketing strategies adapted to each service. The resources exploitation will move towards the most profitable products according to the evolution of the market.

Forest multifunctionality 365 days a year can act as a source of quality employment in a sustainable and lasting way. It provides permanent supplies of raw NWFP materials and stable work conditions to local and rural populations.

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6.4. Driada, Big Data applied to the resin sector

CASTILLA Y LEÓN

DRIADA
USING BIG DATA IN THE RESIN SECTOR
CONTROL, MANAGE AND OPTIMIZE THE PINE FOREST IN ONE CLICK

1. Driada is an innovative system that helps forestry operators and to optimize the management of pine forests and to discover new saving opportunities. It allows to add value to the resin resource, achieving total traceability of the final product.
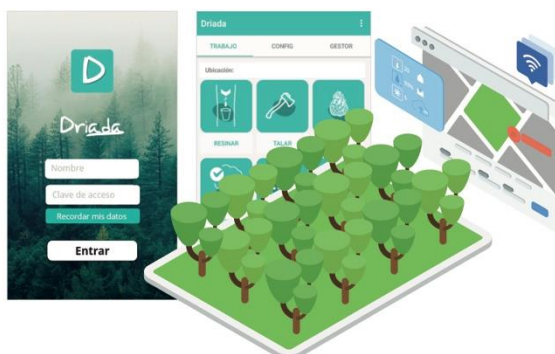
3. The information is automatically sent to the web platform that allows real-time analysis of the true performance of the different species, lifetime control, detect points of improvement and optimize efficiency. It also facilitates transport logistics and payments to the actors of the value chain.

2. Each resin pine is geolocated and identified with a unique QR code. Next, the routes to be followed by the workers are defined. Through the App, forestry workers report in real time all activities carried out (resin and pine cone harvesting, tree felling, etc.).

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INDIVIDUALIZED INFORMATION

Full and real-time coverage of individual tree health conditions, to monitor impacts from plagues. Biodiversity assessment at tree level (bird nesting grounds, mammal dens, etc.).

FULL SYNCHRONIZATION

Synchronization in all phases of the process with data accessible from anyone and anywhere. Full control of all the steps of the process, improving time, efficiency, and costs.

EXTRAPOLABLE

Information is adaptable to any other resources exploitation sector. This supports technology interoperability in sectors requiring the collection of multiple datasets.

Driada offers real time information of each individual pine tree: the existence of live pines in production, the species and fauna that inhabit them, the cubic meters of wood they represent, the amount of resin collected by pine, the amount of CO_2 absorbed, the oxygen released, its aquifer recharge capacity …

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6.5. Trace-me App, know your products!

CROATIA

TRACE-ME.ORG
# A TRACEABILITY APP FOR NON-WOOD FOREST PRODUCTS
HAVE YOU EVER WONDERED WHERE YOUR PRODUCTS COME FROM?

1. Many producers cannot communicate the values of their product directly to the final consumer because they do not have means to do so. Labeling or certification costs can be very high, impacting profits. In addition with COVID, many artisan markets were forced to close and they have lost sales channels.

3. It is intended for NWFP collectors, processors and producers as well as their regional development associations and organizations but it also includes an online store that can reach end consumers.
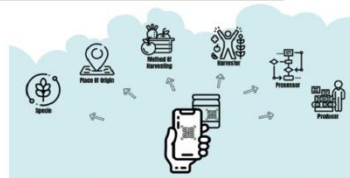
2. Trace-me is an application and web platform that allows, by scanning the QR code on the product label, to present in a clear way all the information of the product's value chain. This includes information about place and species of origin, method of harvesting, harvester, processor, etc.

HOW TO IMPLEMENT TECHNOLOGIES IN THE NWFP SECTOR: TIPS FOR SUCCESS!

RELIABLE SYSTEM

Trace-me is a trusted system where all actors in the value chain can validate the information. Consumers can also give feedback and share opinions.

COMPLETE INFORMATION

All information can be categorized by various custom filters. The app includes a map to visualize the results and can integrate videos of the producers and harvesters.

EASY TO ACCESS

Trace-me can be accessed by either scanning the trace-me.org QR code of the product or by visiting the app website, searching for relevant information.

A user-friendly and attractive website/app to list and consult NWFP products with all their details and benefits. This platform can be used as a map to find sustainable products with their information presented in a transparent and clear way. Trace-me.org is in development under the INCREDIBLE project.

Learn more about innovation on NWFPs
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7. Outputs described through factsheets

ResinApp: A Web/Android App for logistics and natural resin traceability, available at:
https://repository.incredibleforest.net/oppla-factsheet/19976

Aromatic and Medicinal Plants Traceability System, available at:
https://repository.incredibleforest.net/oppla-factsheet/20874