

DO IT IN THE ITALIAN WAY

VEGETABLE SUPPLY CHAINS, HOW TO REORGANIZE AGRICULTURE 4.0

How are the vegetable supply chains reorganised, in the light of the transformations under way in the agro-food sector? The model in our Country was born in the spur of the large-scale retail trade to improve traceability. Today we are witnessing a refinement aimed at enhancing some requirements, such as Italian origin of the product, absence of GMOs, use of some specific varieties. Some changes in progress are pushing in this direction. We are talking about the green revolution, which looks at the defence of the environment, as well as agriculture 4.0, from drones to blockchain, which translates digital data into information for the benefit of greater food quality and safety, to the point that it is possible to convey the nutritional properties in detail. Depending on the objectives, however, the operators rely on a set of sophisticated certifications.

Maria Chiara Ferrarese is vice director and R & D executive manager of Csqa, a leading certification body in Italy in the agro-food sector. She explained: 'On the one hand, the guarantee of Italian origin of the product always represents a great added value for the consumer. On the other hand, there is a growing demand for guarantees in terms of sustainability, according to three values: environmental, social, economic one. We are talking about agronomic techniques of low impact cultivation (respectful of the environment, workers, and community), assessment of environmental impacts (CO₂,

water, waste), equity, management of workers. In addition, there is an increasing attention to the reduction of pesticide residues on finished products, until the guarantee of zero residual presence is reached, even if it goes well beyond the current legislation'.

This green factor has led the vegetable supply chains to acquire specific certifications. The GlobalGap one dominates over all of them. A B2B standard is required above all by large international distribution chains. It does not only deal with traceability issues, but also good agricultural practices, workers' management, environmental and ethical aspects. National integrated production (SQNPI), too, is experiencing a good increase, due to the fact that many Regions have decided to finance agricultural companies through PSR funds (Measure 3.1 and Measure 10). Maria Chiara Ferrarese added: 'Among these regions, there are Veneto, Umbria, Puglia. The interest of the supply chains in this direction is also significant for the possibility of using the 'sustainable quality' mark in the label of certified fresh and processed products'. But sustainability is not just environmental. Maria Chiara Ferrarese pointed out: 'Social responsibility is a topic of great interest, especially for large-scale retail trade and big players, which, from a perspective of due diligence, require third party inspections along the supply chain (for example Sedex, on private specifications), in order to

In order to be attractive on the international markets, the focus is on increasingly specific certifications, which protect both environment and workers. And foodtech revolution, from drones to blockchain, pushes in this direction

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GlobalGap is an international voluntary certification standard, aimed primarily at the fruit and vegetable sector. It was founded in 1997 by an initiative of a group of big European retailers. Its main objective is to share a single scheme able to guarantee the most important points of the production process. In particular, the correct use of the means of production with a view to traceability is considered: plant protection products, fertilizers, quantity and quality of water, soil and energy sources. Safety and health of workers take on particular importance, to arrive at a model of sustainability that coordinates in a balanced view three aspects: environment, economy, and society. The headquarters of the organisation are located in Cologne and the certification takes place on the basis of a check list which includes about 240 checkpoints, which must be checked annually. Alessandro Dalpiaz, director of Assomela and Apot and member of the GlobalGap board, as a representative of the fruit and vegetable sector, explained: 'Today there are about 180,000 GlobalGap certified companies in 125 Countries worldwide. For both companies and societies with interests in international trade, GlobalGap is an essential certification for being a supplier'.

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ascertain compliance with the law on safety in the workplace, regularity of contracts, and more generally rights of workers'. On the other hand, as for certification, such standards as SA 8000, recognized worldwide, are established. Even on the economic side, there are those who move in a sustainable manner, for example by providing for a fair price to farmers by the leading company, thus enhancing this aspect in comparison to the one widespread in the market. The supply chain agreement is in fact very variable: in some cases, aid is guaranteed based on some situations, in other cases this does not happen. The same can be said about the delivery, which may not be mandatory or total: a supplier is part of the supply chain and delivers on request. As for sustainability, there are also some financial institutions that support it, such as Banca Etica, demonstrating that this subject is increasingly of international interest. Maria Chiara Ferrarese pointed out: 'Today the supply chain must broaden its horizons, passing from guarantees of traceability,



hygiene and safety, to environmental, social and economic sustainability requirements. It is therefore essential to invest in some of these aspects, such as workers' conditions (rights, contracts, working time), impact assessments (from chemistry to water management, to CO₂ emissions into the atmosphere). Not only good practices, but a real quantification of the effects of cultivation and supply chain on the territory and on the community'. This approach invites companies to consider certification not only as a valid marketing tool, but also a more coherent and evolved organizational

model. Maria Chiara Ferrarese explained: 'Our hope is the continued affirmation of a renewed certification culture that increasingly places environmental and social issues at the centre, in order to concretely contribute to the achievement of those objectives of sustainable development at international level. This is essential for the well-being of our planet and future generations'.

On the other hand, the situation is more fragmented as for the effects of the other major change in progress, agriculture 4.0, also because of the difficulty of extending broadband in some rural areas. A survey carried out by the Smart AgriFood Observatory of the School of Management of Milan Polytechnic and Rise Laboratory of the University of Brescia highlighted how interconnected agriculture is the key to reducing costs along a too fragmented agri-food chain (1.3 million enterprises with an average of 2.5 employees, and 12 hectares for farms compared to 58 in France). This is intended for the benefit of

ZUCCHI, ENHANCEMENT OF OIL THROUGH NUTRITIONAL INFORMATION

With over 200 million turnover, Oleificio Zucchi, based in Cremona, is a family-owned company that boasts over two hundred years of history. This Company has always been a traditional seed oil producer, but for fifteen years it has gone back to bottling extra-virgin olive oil, focusing on a branded product, which complements the private label activity. Traceability has been the foundation for developing very advanced specifications regulating a supply chain with a hundred subjects, crushers and operators who deliver the raw material (not total). Giovanni Zucchi, vice president of Oleificio Zucchi, explained: '70% of oil is sold in promotion and often below cost. We therefore needed to enhance it. Therefore, with the encouragement of Legambiente, in cooperation with Csqa, a disciplinary has been built (open, anyone can adopt it)



higher product quality and respect for the environment. Yet less than 1% of the cultivated area in Italy is managed with new technologies, with a market of 100 million Euros, 2.5% of the global turnover, which is worth 3.5 billion Euros. Drones, sensors in the field and on machinery, Iot, Big Data, intelligent packaging: there are more than 200 solutions concerning agriculture 4.0, identified by research and adopted by more than 70 entrepreneurial companies analysed, and 27% of them are aimed at fruit and vegetable sector. The fruit and vegetable supply chain, in particular, is the one most interested in traceability. Out of 57 cases of analysed entrepreneurial realities that have invested in digital traceability technologies, 30% concern fruit and vegetables. Among the most used tools to improve traceability there are barcodes (39%), RFID (32%), management systems (32%), Big Data (30%), mobile technologies (21%), QR Code (19%). Such innovative technologies as IoT and blockchain (a kind of tamper-proof digital database), however, are still little explored. Yet even Europe is pushing in this direction. The Commission has inaugurated an Observatory and Forum concerning blockchain, with the support of the European Parliament. And it is betting on this technology, with financing of 340 million Euros up to 2020 for projects that can exploit it.

DANIELE COLOMBO

that has involved all the producers' organizations'. Zucchi participated in the recent research on the state of agriculture 4.0 developed by Smart AgriFood Observatory of the School of Management of Milan Polytechnic and the Rise Laboratory of the University of Brescia. This is an aspect on which Zucchi wants to focus, alongside with the ones concerning nutrition and health. 'Today, by reading the QR Code, the consumer can know the values of the analysis of the lot (including acidity, peroxides, delta K, polyphenols, pesticides, fruity measurement, Ed.) including the provincial origin of the cultivar. It's a subject we intend to consider. Our database, which is accessible to both mill and olive-growing company in data loading, collects 150 environmental indicators out of a total of 180. Today these data allow us to give information to the consumer and in the future they will allow taking further steps in terms of greater nutritional deepening. But also some technological aspects are considered, such as precision agriculture in the field. Today olive farming needs this kind of attention'.



CASALASCO, SOCIAL COMMITMENT RUNS ALONG THE SUPPLY CHAIN

Born in 1977 in the province of Cremona, Casalasco Consortium is the first Italian group for the production and processing of tomatoes: 370 associated farms, 7,000 hectares planted with tomatoes, over 560,000 tons of fresh processed products coming from the Po Valley. The production is either customer branded or with own brand, with Pomi's flagship products and the newly acquired De Rica brand. The cooperative company focuses on the ethical aspect, so much so that it adopted Social Footprint. This protocol was tested for the first time on an agronomic supply chain. Giovanna Poletti, Quality Director of the Consortium, explained: 'Social Footprint is a certification whose purpose is to define the social footprint of the product (location of suppliers and actors involved in the whole process), mapping the entire supply chain in its many aspects, with a detail on the social, economic and ethical impacts of farms and other suppliers (for example of packaging or ingredients)'.

The commitment to environmental sustainability is also very strong: certified packaging with FSC brand that identifies paper from renewable forests, Carbon footprint, measurement of the impact of products through LCA-type studies are adopted. Giovanna Poletti added: 'We request from our members the application of GlobalGap standard, which also includes respect for the environment, in addition to the integrated production disciplinary that regulates the various stages of cultivation. Our company has achieved various system and product certifications over the years. Given the proliferation of many logos that communicate values that are not always easy to explain, we prefer to convey them on our company website as well as to B2B operators'.