

## From the farm to the fork: food security as a fundamental purpose. The case of Capitanata (Apulia)

### Abstract

*The globalization has taken on our tables many food products of which has become increasingly difficult to establish both the origin, and the quality and healthiness, therefore scandals and food frauds have become so widespread that must immediately stopped. Traceability of products and of raw material and importance of "km 0" are two of the key weapons to defend from above problems and they act like a certain base for making food security, the analysis of which will be limited in this contribution to the territory of Capitanata (the province of Foggia, Apulia).*

**Keywords:** Food security, Traceability of products and of raw material, Capitanata.

### Introduction

The phenomenon of globalization has brought on our tables products whereof it is becoming increasingly difficult to determine both the origin and characteristics related to quality and security. Precisely for this reason the topic of food security has recently become more and more important, leading geographers to deal with multi-sectoral issues and surveys, and legislators, both at a national and EU level, to enact specific laws to curb the numerous food scandals and frauds occurred so far.

The profound changes which affected agriculture over time, the centrality of rurality in the European integration process, the overwhelming role of industry at the expense of agricultural smaller realities, led to reflect on issues rather delicate including: the protection of health and consumers, the protection of the quality and typicality of the products; placing on the market exclusively of safe and wholesome food in accordance with the guidelines; the protection of agriculture and food products, witnesses of an agricultural biodiversity; the relationship between food business and farms, the relationship between food security, farms and local crafts, the relationship between supply chain, tracking and tracing, examining the role of food security and food security in search of a truly sustainable agriculture.

### Food security: a multidimensional and varied concept

Food security is a varied concept, namely that

lends itself to having different forms of interpretation, so its analysis is necessary in order to bring order into this conceptual chaos.

Food security is not just limited to people, but it is also for animals and plants, both because of the diseases of plants and animals which can be transmitted or generate toxic effects for the human being, and of the direct and indirect economic damages that these diseases cause.

Actually, «food security exists when every individual, at all times, has access to an amount of sufficient, safe and nutritious food, in order to meet dietary needs and food preferences to ensure a healthy and active life» (Sassi, 2006).

Food security can be also defined «as an assurance that food will not cause harm to the consumer at the time of preparation and/or consumption, depending on its purpose» (Raspor, 2007). Quality assurance is the guarantee of compliance with the default specific conditions of production (Holleran *et Al.*, 1999) and its purpose is to prevent the occurrence of problems, to identify them in case they arise, to identify the causes, to find a remedy and to prevent its recurrence. Basically, the more high quality there is in a food product, the safer it is, therefore we can consider security as a component of quality, particularly and concretely related to the characteristics of the food that can potentially generate or transmit diseases to the consumer. Some of the most important features of the product, associated to the concepts of quality and security by consumers, are actually attributes of trust. This means that consumers need to trust the information on the label, i.e. origin,



composition, chemicals used and production technology. One should consider that the toxicity of food can cause serious consequences for the entire population of large areas, giving rise to a community health problem, whereof authorities are concerned. However, in the organizational structure of most national public administrations, responsibilities for quality and security fall on different authorities and ministries – the first ones concern agriculture and the latter ones concern health. Providing food quality and security normally requires government intervention.

From these first two meanings, fundamental definitions of food security are emerging: the quantitative one, which guarantees access to a “quantity” of sufficient food to each individual, and the qualitative one, which is precisely ensuring the consumer the “quality” of the food, respecting a whole series of specific default conditions of production that lead to the achievement of satisfactory nutritional levels as well as sanitation ones.

Nevertheless, we have to clarify that, in the context of food security, the quantity/quality dividing line is very thin, because it depends on many variables concerning the dynamics of agricultural production and food consumption including climatic variations, crop diversification from food ones to energy ones, changes in income, etc.

In this regard it is useful to note that the industrialized countries are interested in both the quantitative and qualitative aspects of food security, although with a greater interest in the quality, whereas in the countries of the developing world, where destitution is widespread and food policies have the availability, the access and the utilization of food over time as their main purposes, the focus is more on quantity.

In addition, in order to better understand the concept of food security it is advisable to compare it with the opposite concept of food insecurity, regarding the data of hunger and malnutrition. The data show that global food insecurity and malnutrition mainly afflict the rural areas<sup>1</sup> of sub-Saharan Africa and, to a lesser extent, the urbanized areas, where poor people take refuge in the countryside in search of food and work.

During the World Food Summit, held in Rome in 1996, one hundred eighty six countries had established an overall goal of halving the number of undernourished people by 2015 and to get it to about 410 million. Studies on food security in developing countries are often aimed at analyzing the vulnerabilities<sup>2</sup>, to assess the risk factors<sup>3</sup> and the ability to adapt and recover a system subjected to shocks, as well as to monitor and prevent food crises.

Food security also presents various dimensions, which make it multi-dimensional, they and can be summarized as: availability of food in sufficient quantities, sufficient and secure access to food, usage of food and continued stability of availability, access and usage of food over time.

In turn, the dimensions of food security are characterized by four institutional levels: international/national, EU/ local, family and individual.

These levels interact in the variables of production, distribution and availability of food, the functioning of the internal, regional and international market, and the means/skills of people to access food in sufficient quantity and quality.

It is possible to specify the level of food security in the set of relationships among variables, dimensions and institutional levels that make up the different phases of the “food chain” (from the access to the resources and means of production to the preparation and consumption of food).

In addition, the multidimensionality of food security connects the macro levels with the micro ones, including the eating behaviour of individuals and groups, the distribution of resources within households and the conditions of sanitation.

The paradox of food security is that a better access to food and a satisfactory nutritional status of the population do not always correspond to greater agricultural production, which is why many countries are often forced to trade with foreign countries that act as an additional source of products availability and make food security structured in an open model unlike food self-sufficiency, aimed at measuring resources and means of a country in terms of national production, intended as the production of sufficient quantities to meet food needs.

### **From the farm to the fork and vice versa: food security between supply chain, tracking and traceability**

It is a common opinion that the issue of food security has captured the attention of government authorities of the market through the occurrence of incidents of food contamination of broad reach, such as the BSE, dioxin-contaminated chickens and mercury into fishes, as well as even before that, of serious incidents of food adulteration such as aniline oil and methanol wine: in fact, the episodes mentioned above are nothing more than a demonstration of a situation of frequent attacks on human health, which, as already mentioned, there have been also in the past.



The inseparable link between the ground and food and the awareness that we are what we eat has made the link between diet and health even more evident, confirming the Hippocratic theory according to which the food must be the medicine of men.

Often we are led to believe that in the past there was a greater food security, but actually the occurrence of a number of health food crisis<sup>4</sup> has denied this widespread belief. However consumers then felt a greater confidence in the security of food than what we currently have, since the path of most of the consumed food was well known, it was possible to perfectly reconstruct each step of their production. The problem of traceability did not exist at all, as the consumption was linked to a local market level. The so-called short supply chain, in which there are only two main characters, i.e. the producer and the consumer, was once a widespread reality, which guaranteed genuine and affordable products. In modern agro-industrial systems, however, the short supply chain has been replaced by increasingly longer and more complex supply chains, across a range of economic and institutional figures which take part in the various stages that lead from the production to the consumption.

Moreover, since the extension of the agro-food chain and the internationalization of markets have led to the increase of the distance between farmer and consumer, it is extremely important today to integrate the product certification system with the certification of the chain, which has the essential task of ensuring traceability and tracking of the product, in the plurality of its constituents and the various stages of the production process.

It should be noted that the concepts of traceability and tracking refer to two different moments: traceability is the mechanism that allows us to travel back along the history of the product and trace the starting point; and it is designed to enable risk management and retirement of the defective product, allowing the production of agricultural products out of obscurity and assigning responsibility to the actual producers, processors and distributors, therefore, it is a tool that the EU legislature uses to pursue a high level of protection of human health and interests of consumers and to ensure the effective functioning of the internal market; tracking is useful for traceability, because it is the mechanism through which we trace the history of the product and follow it.

We have also noted that as the gap between producer and consumer in the path of the supply chains has increased, even the food legislation

has increased in quantity and variety. We know that the bulk of the normative references in that field is very impressive and difficult to summarize, but the real turning point came in 2000 with the publication of the White Paper on food security by the European Commission, which «committed to face the food issue in a global way, by establishing a common strategy for all EU countries to provide consumers with products that are safe and to try to cover all the elements of the food chain as a whole and, therefore, the entire production food process (i.e. from farm to table)».

The White Paper paves the way to a complete review of EU legislation on food hygiene. In fact, in 2002, the so-called General Food Law was enacted (Regulation EC 178/2002) and the «Hygiene Package» in 2004 (which entered into force in 2006), a set of rules that must be applied at every stage of the food chain. The main pillars of the EC Regulation 178/2002 are:

- the creation of the European Food Security Authority (then established in Parma, Italy);
- the definition of the general principles of food law;
- establishing procedures related to food security, including the mandatory traceability and accurate information on the origin of the products.

The issue of food security therefore takes on new aspects: the traditional one of food security, meant as a guarantee of supply, is now coupled with that of food *safety*, namely the safety and hygiene of food, «from the farm to the fork».

The characters involved in this delicate process are both public and private, farmers and food industries, large-scale distribution, consumer and companies, the latter ones obliged to produce keeping into consideration a huge load of rules that must be followed, and which are subjected to constant inspections, witness of an articulated traceability system aimed at protecting our health.

### Food security in Capitanata

The entire province of Foggia – the Capitanata – holds numerous points of excellence now recognised both nationally and internationally. Its territorial peculiarity, the strategic geographic position, the strong agro-industrial production witnessed by the significant contribution and both theoretical and applied experimentation in the field of cereal, forage and industrial crops of tomato, sugar beet, asparagus and artichoke, intensive livestock, wine and oil sectors, as well as giving rise to major production clusters and numerous active



and functional research centres, the presence of the University, led the city of Foggia to be nominated natural home to the National Agency for food Safety.

Well known are the sad vicissitudes of this ambitious project started in 2005 and that in 2006, with the Minister of Agriculture and Forestry of that period Paolo De Castro, was made official that there without the implementing decrees. In 2007 the city was designated as the seat of the National Committee for Food Safety, composed of eighteen members, who took office in February 2008. In 2009, after a further attempt to get the much-needed implementing decrees, the Agency was included in the list of useless bodies to be abolished and the dream of Foggia to raise, through this failure, the role not only of the Capitanata and Puglia, but also of the entire Southern Italy, and to become the national benchmark for food safety and quality, was thus broken. Basically it is a missed opportunity to “export” the Capitanata out of the provincial and regional borders.

In fact, the greatest paradox is that Italy is the only nation devoid of such an agency, and that the European Food Safety Authority (EFSA), based in Parma, works together with other authorities present in all EU countries except ours, which does not have one. Foggia was thus denied of the opportunity to become the only representative of EFSA in Italy, namely, as the then Minister De Castro said, «the representative that must create the coordination between all institutions, both of the Department of Health and the Ministry of Agriculture to carry out the proper role of the General Secretariat that other European countries have already and that Italy is going to have».

The city of Foggia, however, did not give up and continued, despite the disappointment, to engage in food security, promoting a range of initiatives to bring on the tables safe and guaranteed products directly from the producer to increase the awareness on the part of the citizens and the institutions that the safeguard of landscape, biodiversity, together with originality, creativity and common sense of local producers are tangible and intangible goods on which to focus in order to defend our productions, as they represent that unique added value, and which cannot be relocated: the Made in Italy food.

The commitment towards food safety carried out by Coldiretti, in general, and the provincial Federation of Foggia, in particular, deserves to be mentioned, enacted through the project «Campagna Amica», a trademark to protect the consumers, makes available sales points, markets and

shops, which are real shops where you can find the best of Italian agriculture directly from the farm to the table, showing that through the direct relationship between producer and consumer are the full respect for tracking is possible, assuring consumers fresh, wholesome and healthy products at the right price.

Other initiatives to safeguard food security are carried out by the Istituto Sperimentale per la Cerealicoltura (ISC) of Foggia, today also Research Centre<sup>5</sup>, chasing the dream of making so-called “perfect” pasta.

After about a century since the invention of the Senatore Cappelli wheat, a durum wheat variety created in Foggia in the then Masseria Manfredini<sup>6</sup>, the researchers are able to track the area of cultivation of a product starting from molecules<sup>7</sup>, through sophisticated instruments that allow tracing its lineage, to reconstruct the metabolic profile until you discover the land from which it comes. If Foggia became seat of the Agency for Food Safety, just to go back to what has been said earlier, this Centre could take care of molecular diagnostics and traceability. Thanks to the presence of sophisticated pilot plants for pasta analysis reaches up to the transformation process of the product, to study the nutritional quality and organoleptic properties. Here in this centre, in addition to pursuing quality, there is also environmental sustainability involved: reduction of energy inputs, production in conditions of nitrogen-reduced fertilization, climate change, etc. The genetic improvement program is carried out between the laboratory and the fields, with the aim of cultivating them at the best, consuming less energy, less diesel fuel for tractors, smaller amounts of nitrogen released into the environment, less pesticides and fertilizers and a better ability to adaptation to environmental stresses. All this would also result in lower costs of processing. Moreover, thanks to the PLASS project (AGROFOOD PLATFORM FOR SCIENCE AND SAFETY), in association with the University of Foggia, related to issues concerning the relationship between health and food, metabolomics platform has been implemented, allowing Foggia to be home to one of the most important platforms in Italy and with instrumentation that allows advanced chemistry to quickly analyze all the metabolic components of a given tissue. This means that we can obtain an analysis of the whole composition and all the molecules present. All this can be very useful for traceability and we might get to create a mapping, which is a kind of product certification. Also in laboratories researchers are also trying to develop



a patent of an innovative system of sowing for the biological sector.

Finally we should not forget the contributions of other companies, institutions, organizations and associations, of which for the sake of brevity it is impossible to mention here, but which perform an important action in the field of food security: the 'Laboratorio polifunzionale delle imprese' (Lachimer), the former Faculty of Agriculture of University of Foggia, now Department of Agriculture, Food and Environment and its Interdepartmental Research Centre 'Bioagromed', the ASL FG/3 with the Servizio Igiene degli Alimenti e della Nutrizione (SIAN), the company Rasa Realtur, the Associazione degli Industriali di Capitanata, etc., that were and still are organizing several training courses on issues concerning the enterprise management systems related to the concept of food security, not least the one that will take place in September 2013, in collaboration with the CSAD (Centro Studi Ambientali e Direzionali).

The above-mentioned initiatives in favour of food security in the Capitanata not only represent a growth factor in geographical and economic terms, but also in terms development and promotion of local products.

## References

- Amadei G., Segrè A. (2007), *Il libro nero dell'agricoltura italiana. Cinque anni di politica agraria italiana, europea ed internazionale*. Franco Angeli, Milano.
- Capelli F., Klaus B., Silano V. (2006), *Nuova disciplina del settore alimentare e autorità europea per la sicurezza alimentare*. Giuffrè, Milano.
- Ciancio M., Miletta A. (Eds.) (2009), *Impresa agricola e sicurezza alimentare. Esperienze e regole*. "Collana del Dipartimento di Diritto dell'Economia dell'Università di Napoli Federico II", 21, Edizioni Scientifiche Italiane, Napoli.
- Germanò A., Rook Basile E. (2005), *Il diritto alimentare tra comunicazione e sicurezza dei prodotti*. Giappichelli, Torino.
- Grazia C., Green R., Hammoudi A. (Eds.) (2008), *Qualità e sicurezza degli alimenti. Una rivoluzione nel cuore del sistema agroalimentare*. Franco Angeli, Milano.
- Holleran E., Bredahl M. E., Zaiet L. (1999), "Private incentives for adopting food safety and quality assurance". *Food Policy*, 24: pp. 669-683.
- Jannarelli A. (2001), *Il diritto agrario nell'era della globalizzazione*. Cacucci, Bari.
- Manzone G. (2003), *La nuova sicurezza alimentare. Dal sistema HACCP alla rintracciabilità di prodotto e di filiera. Aspetti cogenti e volontari*. M&M Associati srl, Catania.
- Ranieri R., Pascale M., Arlotti G., Visconti A. (Eds.) (2007), *Sicurezza alimentare della filiera del grano duro*, Piano Operativo Nazionale 2000-2006. Progetto MIUR n. 12792, Grafiche STEP, Parma.
- Raspor P. (2007), "Total food chain safety: how good practices can contribute?". *Trends in Food Science & Technology*, XX: 1-8.
- Sassi M. (2006), *An introduction to food security issues and short term responses*. Aracne, Roma.
- Segrè A. (2008), *Politiche per lo sviluppo agricolo e la sicurezza alimentare*. Carocci, Roma.
- Zicari G. (2003), *Gestione della sicurezza alimentare*. Gruppo editoriale Esselibri - Simone, Napoli.

## Websites

- <http://agricoltura.puntopartenza.it/>, accessed 16/02/2015.
- <http://europa.eu.int/eur-lex>, accessed 16/02/2015.
- <http://safetynet.edulife.com>, accessed 16/02/2015.
- [www.ambientesicurezza.ilsole24ore.com](http://www.ambientesicurezza.ilsole24ore.com), accessed 16/02/2015.
- [www.bioagromed.unifg.it](http://www.bioagromed.unifg.it), accessed 16/02/2015.
- [www.cia.it](http://www.cia.it), accessed 16/02/2015.
- [www.coldiretti.it](http://www.coldiretti.it), accessed 16/02/2015.
- [www.confagricoltura.it](http://www.confagricoltura.it), accessed 16/02/2015.
- [www.eccellenzeitaliane.com](http://www.eccellenzeitaliane.com), accessed 16/02/2015.
- [www.lachimer.it](http://www.lachimer.it), accessed 16/02/2015.
- [www.politicheagricole.it](http://www.politicheagricole.it), accessed 16/02/2015.
- [www.siafoggia.it](http://www.siafoggia.it), accessed 16/02/2015.

## Notes

- <sup>1</sup> Still three-quarters of the world population live in rural areas, drawing subsistence from agriculture mainly characterized by low levels of productivity and exposed to the risks of natural and/or human disasters. On the one hand agricultural production and the stock of commodities quantify the availability of food in a geographic area, on the other hand the demand for and access to food indicate the well-being and nutritional status of people.
- <sup>2</sup> Vulnerability refers to people and environmental contexts. A person is considered vulnerable to food insecurity when he/she cannot access the food sufficiently and safely. The environment may become vulnerable when subjected to phenomena that alter the balance, such as desertification, flooding, soil erosion, etc. The analysis on food insecurity are meant to correlate the various aspects of vulnerability, namely that one related to people with the one related to the environment, to try to identify the causes and what and how many vulnerable groups are.
- <sup>3</sup> Rural communities, living in subsistence economies, are exposed to a number of risks, some of which are controllable because depending by human actions, and others are uncontrollable because depending on exogenous factors like the climate. In addition to the natural and environmental risks, there are also risks depending on human action in the social and political, economic and health fields.
- <sup>4</sup> In the past toxic infections were widespread especially for the products of animal origin and for the frequently inadequate techniques of storage and processing.
- <sup>5</sup> With an EEC funding in 1998 the 'Centro di Collegamento Ricerca Divulgazione' was carried out in the ISC (CCRD), where there are technical meetings, refresher courses and training, conferences, seminars, internships. Among the research programs those of toxicity, immunogenicity and safety of use of food grains and similar can be distinguished. The Institute has agreements with the University of Bari, Bologna, Foggia, Lecce and Udine, as well as collaborations with Italian and non-Italian research institutes.
- <sup>6</sup> In 1919, by acquiring the Masseria Manfredini, the 'Istituto Nazionale di Genetica per la Ceralicoltura' formed the 'Stazione di Fitotecnica per la Puglia', which, through the DPR (De-



creto del Presidente della Repubblica) 1318/1967, became 'Sezione Operativa Periferica' with tasks related to the genetic improvement of durum wheat, barley, sorghum, oats and corn, and the experimental activity for updating cereal cultivation techniques. In 1975 the current site of 145 hectares was built, of which 20,500 square meters of facilities used as offices, laboratories and administrative offices of various types that operate

for genetic transformation of wheat, for technical and commercial analysis of seed and genetic improvement.

<sup>7</sup> Researchers are trying to identify useful genes for genetic improvement through non-GMO techniques, a molecular kind, to make it more effective and faster in terms of classic goals, such as quality. For durum wheat, quality is meant as proteins, gluten and colour.

