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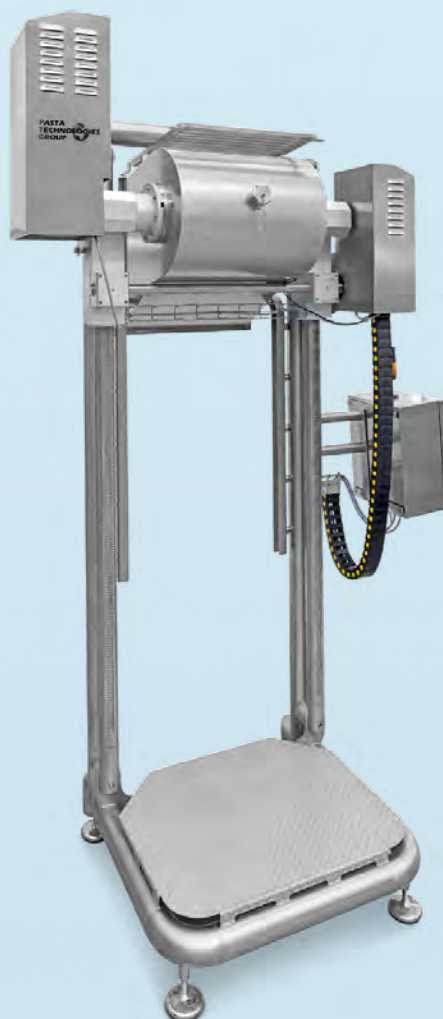
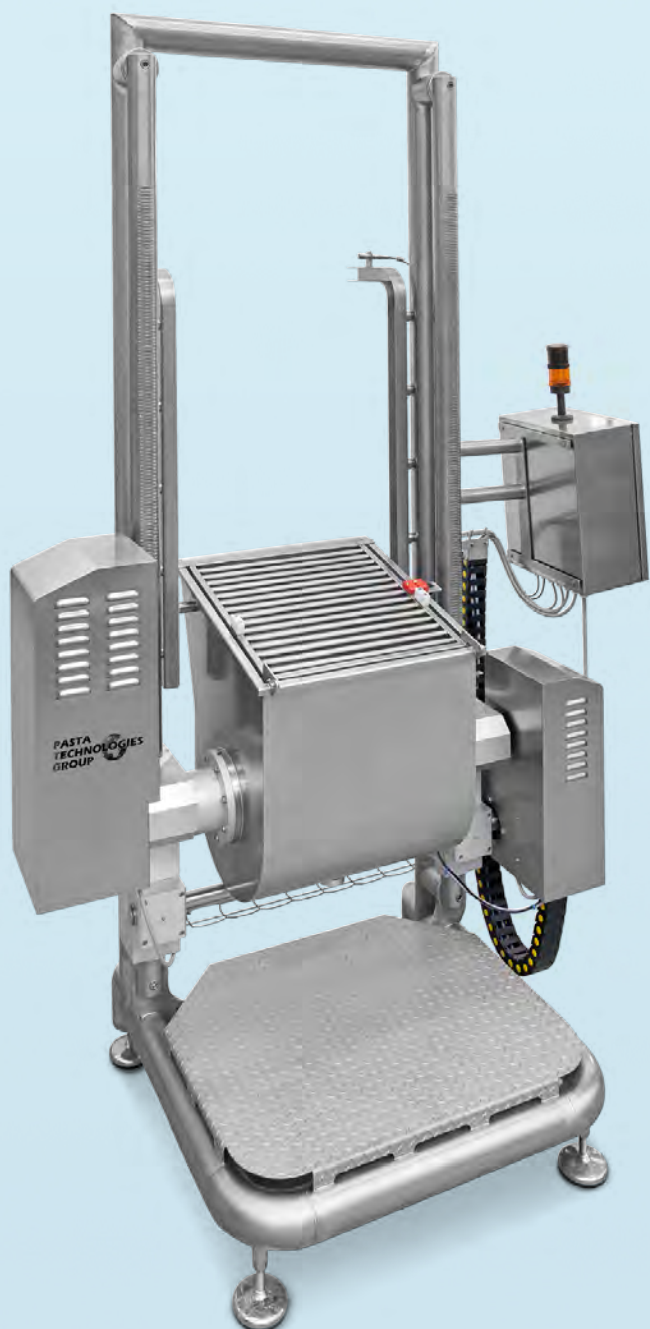
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Jim Peterson, North Dakota Wheat Commission

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Alexandra Ozerkis and Kara Yacovone, NPA Communications

Thursday, October 22, 2:00 – 3:00 pm ET

NPA Technical Affairs Committee (TAC) Report

*Alexis Freier-Johnson, 8th Avenue Food & Provisions
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Thursday, November 12, 2:00 – 3:00 pm ET

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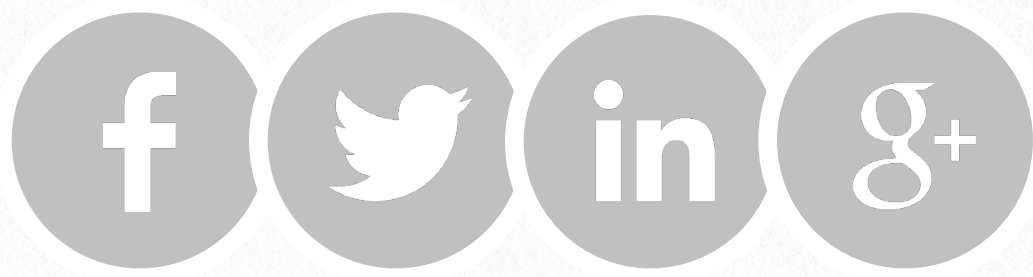


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Proceedings of the Pastaria Festival 2019.

**Maria Ambrogina Pagani,
Alessandra Marti**
Department of Food, Environmental
and Nutritional Sciences (DeFENS),
University of Milan

Whole grain pasta: the “duel” between raw material and process



Here is a brief summary of Maria Ambrogina Paganis’s contribution at the conference *From the field to the table: state of the art of research applied to pasta*, held at the Pastaria Festival 2019.

No doubt about it: dried pasta, one of the most representative products of the Mediterranean diet, known and appreciated throughout the world, is still the food that we Italians love the most. This is demonstrated by our consumption, the highest in the world, at around 24-25 kg/per capita per year. Pasta is considered – by consumers of all ages – to be “good” in every sense of the word: it is associated with tradition, genuineness and embodies the perfect synthesis between health and flavour. Although durum wheat semolina pasta covers 90% of the market for this product, whole grain pasta is displaying the most rapid growth rate – almost 20% per year. The Italian consumer, increasingly more aware of the close relationship between well-being and nutrition, knows that whole grain pasta is an excellent, but economical, source of fibre and mineral salts, that meets the latest nutritional guidelines – [“Livelli di Assunzione di Riferimento di Nutrienti ed Energia-LARN” (Reference Nutrient and Energy Intake Levels)] – according to which the daily fibre intake should be between 30 and 35 g/day in order to exert observable positive effects on our health.

A recent study conducted by our group (Marti et al., 2016), which examined 10 of the most widely-marketed commercial brands of whole grain pasta in Italy, (representing approx. 80% of the market), demonstrated that all of the samples analysed contained considerably more than 6 g of dietary fibre per 100 g of product, the threshold above which the product can be labelled “source of fibre”. The dietary fibre content of refined semolina pasta is generally between 2 and 2.5%. This is 65-75% less than that contained in the whole grain pasta sold on the Italian market (6.5-8%).

Before examining the special properties of whole grain pasta and the role of the raw material and the conditions of the technological process required to obtain a type of pasta that will appeal to consumers, it is essential to clarify what is meant by “whole grain product”, considering various different points of view: those of the consumer, the nutritionist and the food technologist, and, of course, that of the lawmakers. Generally speaking, for the consumer the term “whole-grain” applied to cereals re-

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fers to a food obtained from the whole caryopsis, including all the parts of the grain itself. So the consumer assigns a positive value to this term, even considering it a synonym for genuine, natural, unaltered. For the experts of a number of worldwide associations, operating in the cereals sector, such as the International Association for Cereal Science and Technology – ICC – and the American Association of Cereal Chemists – AACCI International (now known as the [Cereals & Grains Association](#)), “whole grain refers to the caryopsis (often called “grain”) intact or ground, chopped or made into flakes in which the main parts – endosperm, bran and germ – are present in the same proportions as in an intact caryopsis (as is)”. Other information can be found on the website <https://wholegrainscouncil.org/whole-grains-101/whole-grains-z> which underlines that eliminations of the external part can be accepted, due to contamination and/or inedible parts of the grain, provided that such elimination amounts to less than 2% in weight. For Italian legislation (Presidential Decree no. 187, 22 February 2001), the term “whole grain” is only used to define the products of the first and second processing of wheat, such as ground products (flour and semolina), bread and pasta. The definition, therefore, relates to

the conditions of the grinding process and the effects produced during this process. “The term soft whole grain flour refers to the product obtained directly from the grinding of soft wheat after the removal of foreign matter and impurities” (art. 1, paragraph 2), while “durum wheat whole grain semolina, or simply whole grain semolina, is the sharp-edged granular product obtained directly from the grinding of the durum wheat after the removal of foreign matter and impurities” (art. 2, paragraph 2). The verbal description is completed by the compositional characteristics that whole grain flours must have, which, in [Table 1](#), are compared with those of semolina. Whole grain semolina (and whole grain flour) must, therefore, have a minimum protein and ash content (this index is related to the mineral salt content), components present in high quantities in the bran parts ([Table 2](#)). Italian legislation does not indicate a minimum or maximum value for fatty substances, of which the germ (or embryo) is rich, thereby justifying the non-inclusion of this part of the grain in whole grain flours. This practice, common to almost all Italian milling companies, is completely acceptable from a technological point of view, given the rapid and dangerous alterability of the fat fraction and the resis-

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Table 1 NAME AND COMPOSITIONAL CHARACTERISTICS OF SEMOLINA AND WHOLE GRAIN SEMOLINA ACCORDING TO PRESIDENTIAL DECREE NO. 187, 22 FEBRUARY 2001

TYPE AND DENOMINATION	MAXIMUM HUMIDITY %	per 100 parts of dry matter		
		ASH		Minimum PROTEIN (nitrogen x 5.7)
		minimum	maximum	
Semolina	14.5	-	0.90	10.50
Whole grain semolina	14.5	1.40	1.80	11.50

tance of lipolytic enzymes to heat stabilization treatments. However, it is important not to forget that the removal of the germ impoverishes the flour of numerous biocomponents (vitamins, mineral salts, unsaturated fats, antioxidants, phytosterols, etc.). But Italian legislation also presents another critical factor which, at the current moment, would prevent whole grain flours (and the foods obtained from these flours) marketed in Italy from meeting the international standards laid down in the ICC and AACC documentation and hence from fully responding to the definition of “whole grain” according to the opinion of the experts and researchers in the sector, and to that commonly accepted by consumers. The maximum percentage limit of the ash, set at 1.80% DM for whole grain semolina (1.70% DM for whole grain flour), is considerably lower than the ash content in the wheat caryopsis. Both as a result of agronomic practices and the characteristics of the land

suitable for the cultivation of durum wheat, the quantity of mineral salts in the grain is generally greater than 2%, a condition that obliges Italian milling companies to eliminate the bran parts in quantities significantly greater than 2% in weight (threshold indicated at international level as the maximum value), in order to be able to market whole grain semolina in full compliance with legal requirements. As a result, it is all the more urgent to be able to revise the current legal guidelines on this matter, as has been discussed for some time (AISTEC, 2017). But let us return to the characteristics that differentiate whole grain pasta from that produced with refined semolina (which we shall refer to, from now on, as “semolina pasta”). The definition for both is contained in art. 6, paragraphs 1 and 2 of the aforementioned Presidential Decree. Besides the richness of the functional components (or “biocomponents”, another term used for the molecules re-



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Table 2 COMPOSITION OF THE WHEAT CARYOPSIS AND ITS ANATOMICAL PARTS

PART OF CARYOPSIS (% in weight)	PROTEIN	FAT	STARCH AND SUGAR	FIBRE (Non-starch polysaccharides)	MINERAL SALTS
Bran layers (10)	12-16	2-4	10	60-65	5-10
Aleurone (8)	32-35	8	12	35	5-8
Endosperm (80)	10-13	1-1.5	70-75	1-2	0.5-1
Germ (2)	35	20	20	2	5
Whole grain (100)	12-16	2-3	75-80	6-8	2.2-2.5

sponsible for generating a perceived state of wellness), whole grain pasta distinguishes itself from semolina pasta in certain other respects, some of which may be considered unfavourable to its quality. With regard to the reference, the whole grain product is often judged inferior due to sensory characteristics, both before (darker colour and roughness of surface) and after cooking (poorer texture and greater stickiness, accompanied by greater loss of solids in the cooking water; bitter, astringent taste) and the fact that it presents higher thermal damage, responsible for nutritional impoverishment, as discussed later (Marti et al., 2016; Marti et al., 2017).

All the papers published on the subject by Italian and foreign authors agree that its richness in bran particles is the main cause of the sensory deterioration of

whole grain pasta. The high percentage of bran, the part of the grain that is rich in fibre, mineral salts and enzymatic activity (Table 2), is responsible for the greyish-brown colour of the dried pasta, irrespective of the variety of wheat and, hence for native carotenoid content of the wheat. The colouring of the product can, unfortunately, worsen, acquiring a reddish tint if drying temperatures are above 70 °C, conditions that favour the triggering of an intense Maillard reaction (Marti et al., 2016). This phenomenon must be kept under control, not only because strong colouring is undesirable but, first and foremost, in order to limit nutritional damage, as explained below.

The poorer performance during cooking often typical of whole grain pasta is also attributable to the presence of bran. Microscopic images of a whole grain strand

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of spaghetti clearly show the presence of fragments of bran of all different sizes distributed throughout the product, both before and after cooking, creating roughness and a lack of continuity in the protein and starch matrix (Steglich et al., 2015). Structural heterogeneity is not only a phenomenon of its “macrostructure”, but can also be seen at a molecular level. The long linear chains of non-starch polysaccharides that make up the dietary fibre – such as cellulose, β -glucans and pentosans – not only “dilute” the quantity of proteins but break the links in the gluten network, irrespective of their size, impairing its density and effectiveness in responding to the physical stresses associated with cooking. Naturally, the larger the size of the bran particles, the greater the weakening of the structure. However, even those with a small particle size have a negative effect, as they hydrate, rapidly binding water during kneading, removing it from the protein macromolecules: this hinders the interaction between gliadins and glutenins which promotes the formation of a regular and homogeneous gluten lattice. So it is easy to understand why whole grain pasta is frequently characterized by a greater loss of solids in cooking water, less “bite” and more stickiness than semolina pasta. Only whole grain semolina with a high protein content

(>13.5%) can guarantee a sufficiently dense gluten network, effective in preventing the starch from swelling excessively and being released into the cooking water.

Given the many critical factors associated with the production of whole grain semolina, the question that arises spontaneously is whether it is possible to research particular raw materials and/or process conditions in the production of the pasta that could mitigate the extent of the negative effects described above. As already mentioned, whole grain semolina with a high protein and gluten content is preferable because it is more likely to be able to guarantee the formation of a strong, regular protein lattice. However, according to the studies of some researchers from North Dakota (Deng et al., 2017), it is equally important to select certain varieties of durum wheat for the express purpose of producing whole grain products. In other words, varieties known to be excellent for pasta production purposes can give disappointing results if whole grain semolina, as opposed to refined semolina, is used. The worsening, therefore, does not only depend on the quantity of the fibre but also on its quality: in order for the genetic improvement of wheat to be managed effectively, more needs to be known about the role and interaction of



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each type of fibre with the gluten proteins.

In any case, as demonstrated in a recent study by the same North American group (Deng and Manthey, 2019), the bran particle size is a parameter that requires particular attention, not only for the repercussions on the final characteristics of the pasta, but also to ensure the flowability of the whole grain semolina during its transition from the silos to the press, avoiding the formation of clumps inside the piping, with negative impacts both on the effective flow of the raw materials and in terms of hygiene, health and safety. This study also indicates that the finer the particle size (90-100 μm), the more likely the formation of clumps, which also complicate the extrusion phase.

Other studies conducted at our Department (Zanoletti et al., 2017; Abbasi et al., 2020) suggested, in contrast, using only a fraction of the bran, rich in bioactive compounds. This fraction can be obtained through the selective separation of specific layers of bran through hulling (removal, by abrasion, of the outer layers of the whole grain), which can then be followed by turboseparation or ventilation, i.e. physical classification based on the particle density of the hulled material (Verardo et al., 2011). These physical processes make it possible, therefore, to selec-

tively separate the fractions rich in soluble fibre, those of most interest from the nutritional standpoint. This “concentration-based” approach makes it possible to add, for the same amount of bioactive compound desired, a smaller amount of material critical for the structure of the pasta. In the above-mentioned study, for example, starting out from a pigmented variety of wheat rich in anthocyanins, pasta enriched with the same quantity of fibre (8.5%) was produced, using bran or material separated through hulling and turboseparation, particularly rich in fractions from the aleurone. Choosing the latter ingredient instead of bran, the quantity required to have the preset fibre content was 14.2% compared to 20.4%; this choice also made it possible to double the quantity of anthocyanins (from 295 to 695 $\mu\text{g/g}$) in the finished product, thereby doubling the antioxidant properties in the food, a characteristic preserved even after cooking.

But the greatest critical factor of whole grain pasta is undoubtedly that of the higher thermal damage that this nutrient suffers in comparison to semolina pasta, when the pasta-making process adopted for both is the same. As mentioned above, during drying, there is a chemical interaction between reducing sugars (e.g. glucose, maltose) and some amino acids



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Table 3 CONTENT OF FUROSINE (MARKER OF THE INITIAL PHASE OF THE MAILLARD REACTION) AND PYRRALINE (MARKER OF THE ADVANCED PHASE OF THE MAILLARD REACTION) IN WHOLE GRAIN PASTA SAMPLES FROM 10 BRANDS AVAILABLE ON THE ITALIAN MARKET

Producer & Ingredients	Protein (%)	Carbohydrates (%)	Fiber (%)	Lipids (%)	Furosine (mg/g proteins)	Pyrraline (mg/g proteins)
1 organic durum wheat whole grain semolina	12	67.5	7	1.5	711	15.5
2 durum wheat whole grain semolina	12	65.5	6	2.2	737	not specified
3 organic durum wheat whole grain semolina	12,2	66.9	6.8	1.7	702	not specified
4 durum wheat whole grain semolina, wheat germ 2%	13	66	7	2.5	715	15.8
5 organic durum wheat whole grain semolina	13	66	8	2	721	7.0
6 durum wheat whole grain semolina	13	66.7	6.5	2.5	657	4.6
7 organic durum wheat whole grain semolina	11,5	64	7	2	368	not specified
8 durum wheat whole grain semolina	11	66	7.8	1.9	578	7.3
9 durum wheat whole grain semolina	14	63	7.5	2.5	228	0.8
10 durum wheat whole grain semolina	14	62.5	7.5	2.5	648	8.6

By Marti et al, 2016 and 2017



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– particularly lysine. This reaction is known as non-enzymatic browning or Maillard's reaction, in honour of the scientist who first studied it. The intensity of this reaction depends both on the intrinsic factors of the raw material and on extrinsic factors, such as the conditions of the pasta-making process. Among the main characteristics of the raw material of importance in this regard is the sugar content, both native (to the limited degree of 2%) and neo-formed during kneading by the α -amylases. These enzymes, chiefly located in the bran and germ of the grain, exist in particularly high quantities in whole grain semolina and, during the kneading process (15-20 minutes), they can hydrolyse the starch, predominantly the granules damaged during grinding, leading to the formation of quantities of sugar as much as 5-8 times greater than the native sugar. As a result, whole grain semolina, especially that with fine particles, presents a series of critical factors.

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In order to obtain whole grain pasta with high nutritional quality, simply checking the parameters of the semolina is not enough; the process conditions must also be carefully evaluated, particularly those concerning the drying cycle. The current preference of pasta factories for high-temperature drying cycles is, as is well known, motivated by the numerous advantages associated with this: first and foremost reductions in process times and improvements in cooking performance, especially when producing pasta with medium-to-low quality semolina, following the formation of a non-deformable protein lattice already in the pasta dough (Lucisano and Pagani, 1997). But it is important not to forget that the changes induced by high temperatures are not all positive, even when refined semolina is used. The interaction between proteins and sugars (both native and neo-formed following enzymatic action), generated by temperatures above 70 °C, can lead to a “nutritional blockage” (or “non-availability”) of lysine of up to 40-50%. Such values are unacceptable if we consider that this essential amino acid is only present to a limited degree in cereals (Lucisano and Pagani, 1997). The worsening of the nutritional quality can go beyond the lysine blockade, which occurs during the so-called initial phase

of the reaction and can be quantified by markers, such as furosine. Other serious damage ascribable to the advanced phase of the Maillard reaction is brought about by the neo-formation of certain molecules, called AGEs (Advanced Glycation Endproducts), potentially involved in the onset of disorders such as diabetes, vascular diseases and Alzheimer’s (Marti et al., 2016; Marti et al., 2017). In order to measure the intensity of this phase, some other markers, such as pyrrolidine, have been identified. The results of Marti et al. (2016 and 2017) ([Table 3](#)) have shown how the thermal damage of whole grain pasta produced and marketed in Italy extends over a very wide range, suggesting great variability in product drying diagrams, not always attributable to the size and production capacity of the company.

Concluding remarks

Although dried pasta has been known and appreciated for centuries, it is a food that has been able to diversify over the last 50 years to meet the demands of the consumer. While in the 1970s attention was mainly focused on quality in cooking performance, a need met by the selection of wheat varieties characterized by strong and tough proteins and the adoption of drying cycles at temperatures above 70-



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75 °C, over the last two decades, the focus of attention has been on the needs of particular groups of consumers, such as coeliacs, identifying suitable processes to promote a structure resistant to cooking even in the absence of gluten. The request to transform this staple food into a “functional” product, rich in bioactive compounds, has been more recent. Whole grain pasta is unquestionably the most interesting example of this trend, but it is of vital importance for pasta factories to carefully select not only the right raw materials for this use, but also the best process conditions to safeguard its nutritional quality.

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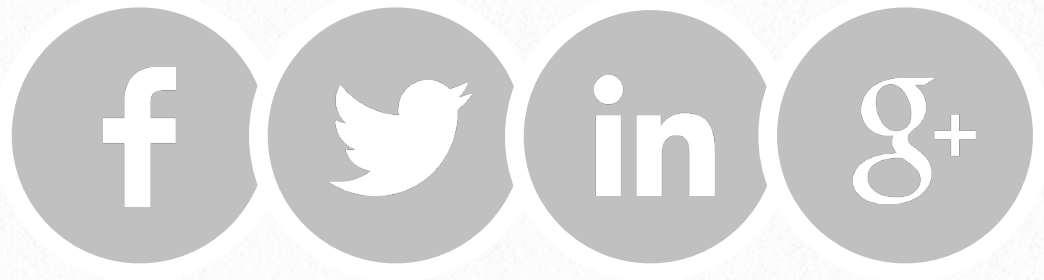
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2



Plant-based protein ingredients: the future of pasta-making... and more

Press release



Plant-based products that can replace gluten and eggs in a wide range of uses. After legume flours and stabilised fibres, in arrival protein isolates, the newest offering from MartinoRossi.

Late 2019 saw the Newgen and Fiberplus lines, developed specifically for the pasta sector with the goal of promoting the creation of new foods capable of fulfilling the latest market trends.

The same concept is behind plant-based protein isolates, the latest news in 2020 from MartinoRossi, the long-established Italian company known throughout the world for its production of legume and cereal flours that are gluten-, allergen – and GMO-free.

“In recent years,” explains Riccardo Sartirana, head of Business Development for the company, “the most important factor guiding our research into new ingredients has been the growing consumer interest in food safety and the benefits of a healthy diet.”

Healthy diet, which not only refers to those who practice sports or are looking to lose weight, but also people who are simply careful about what they eat, or vegetarians, vegans, people with specific food intolerances or allergies and those who are concerned about sustainability.

“Protein isolates,” continues Sartirana, “are the result of a completely natural extraction method, an innovative technique we developed in-house over months of experimentation.”

In fact, the products are 100% plant-based and are obtained by removing the majority of non-protein components, a process that results in a protein content of over 90%.

The goal? To increase the protein content in a number of food products – from pasta to baked goods, beverages, soups, sauces, creams and custards, ice cream and even vegetable burgers.

The wide variety of MartinoRossi plant-based protein isolates available (corn, peas, alfalfa, chickpeas and lentils) makes it possible to provide the food product with specific technological properties. In addition to the nutritional qualities, product texture also improves, i.e., its appearance and colour, as well as its firmness.

In addition, replacing animal proteins and eliminating the use of chemically-produced additives, protein isolates also represent an excellent solution in terms of reducing the environmental impact of productive activity.



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“This new line of products,” Sartirana adds, “is only the most recent step in an on-going process of research and development which distinguishes MartinoRossi. In fact, only a few months ago, we presented Newgen and Fiberplus. The former are high-protein, legume-based flours perfect for making fresh pasta and they are physically modified to be easy to work with and to shorten cooking times. The latter are stabilised and micronised fibres of cereals and legumes, ideal for enriching product fibre and protein content.”

Investment planned for the year 2020 – which includes the expansion of the headquarters in Malagnino (Cremona) and the building of a new R&D department – confirms the company’s commitment to innovation, with the desire to undertake everything necessary to improve the quality and safety of ingredients for the food industry.

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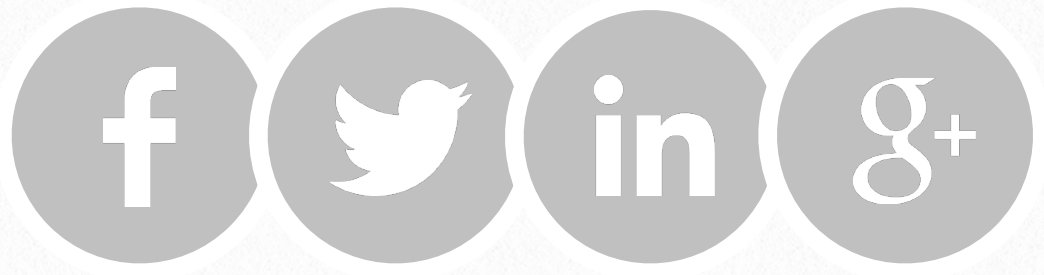
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3



Pasta, 2020 export figures not affected by Covid

Pastaria Centre for Economic Research



March figures show a positive trend in the Italian pasta export market.

March, the first month of lockdown for Italian and European families, is not enough to enable us to draw conclusions on the effect of Covid. Of course, April and May were two equally significant months, with regard to assessing the economic impact of the health emergency, but the data are not yet available. But looking at ISTAT (Italian State Statistics Institute) data updated to the first quarter of 2020, there are no signs of a crisis in the Italian pasta export market.

On the contrary, notwithstanding the Horeca shutdown, which significantly reduced the turnover of the pasta sector as well, the situation appears even better than 2019, a very profitable year that closed with record sales abroad of 2.6 billion euros, an increase of over 7%.

Based on the most recent data, from January to March 2020, reinforcing the positive trend, exports of Italian pasta have generated revenue of over 760 million euros, an amount which, when compared to the same period in 2019, shows a growth of 21.3%. An unexpected result that only incorporates inflationary elements – those linked to price increases – to a very limited degree, since the physical flows of pasta intended for foreign markets also increased by 20.2% to 635 thousand tonnes.

It should also be noted that the bare figure for March, with just under 260 thousand tonnes, shows a growth percentage that tops 41% (compared to March 2019) and a similar positive trend in payments. A maxi performance that seems to reflect the positive contribution of domestic purchases recorded in all the main target markets, driven by the pantry effect that gave a great boost – also in Italy – during lockdown, particularly to products such as pasta, rice, staples (sugar, flour, etc.) and preserves in general. The double-figure growth certified by ISTAT was common to all major trade outlets: there was a 27% increase in value on the German market, 28% in France and just over 20% in the USA. The United Kingdom and Japan also helped boost the pasta market, with increases of +10% and +26% respectively in Italian pasta imports compared to the first quarter of 2019.

It will be a question of assessing whether exports will be likely to maintain this positive trend also in the second – probably more critical – quarter, or



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Table 1 ITALIAN PASTA EXPORTS (€ ,000)

	1 st qtr 2019	1 st qtr 2020	Variation
World, of which:	627,357	760,951	21.3%
EU-27	322,161	409,799	27.2%
Non-EU-27	305,196	351,152	15.1%
Germany	99,809	126,349	26.6%
France	86,294	110,42	28%
United States	83,128	99,991	20.3%
United Kingdom	82,172	90,217	9.8%
Japan	15,982	20,177	26.2%
Canada	11,002	11,992	9%
Russia	6,234	6,059	-2.8%
China	4,893	4,900	0.2%

Source: Pastaria elaboration of ISTAT (Italian State Statistics Institute) data

whether they will come to a standstill. Also looming over the sector is the shadow of US tariffs, which could come into effect at the end of July as a result of the trade dispute between Washington and Brussels over aid to the aviation industry. Also targeted by the US Department of Trade, in addition to pasta, are wine, olive oil and certain types of biscuits and coffee.

Last year the Stars and Stripes market guaranteed a turnover to the Italian pasta system of almost 350 million euros, accounting for more than 13% of the total export share. The objective is to maintain, if not increase, this level at the end of 2020, but in a context that is by no means easy,

also keeping in mind the ongoing dispute with the Trump Administration on the web tax, which is being studied by many European countries, including Italy: the tax that would target the mega profits of the technological giants such as Google, Amazon and Facebook, on the other side of the Atlantic.

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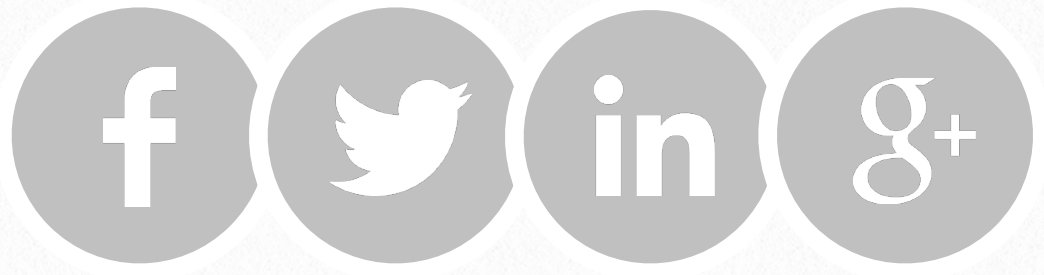
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4



2020 Pastaria Festival to go on-line

Editorial staff



Due to the Covid-19 pandemic, the 2020 Pastaria Festival will take place entirely on-line. The date remains the same – this coming 25 September – when pasta makers from around the world will be able to take part in an event offering a rich programme of webinars and presentations, and be in contact with sector leaders. To take part in the largest free-of-charge event offering information and professional updates regarding pasta production, sector operators are requested to register on the pastaria.it website.

“Unfortunately, the conditions do not exist for holding the 2020 Pastaria Festival in complete security and with the necessary guarantees for a broad-based involvement of sector operators.

In particular, given the health emergency and its consequences which involve the entire planet, we must take into account the impossibility for many pasta-makers from abroad to take part in the event in Parma this coming 25 September.

For these reasons, and regretfully, we have decided to make this year’s a digital event and shift it completely to the web,” says Lorenzo Pini, editor and director of Pastaria.

“Unquestionably it will be something totally new and a major opportunity to acquire new skills.

It is not to be excluded that in the future this experience could be extended to create a hybrid event attended either physically at the event site, or by remote connection via computer, tablet or smartphone,” Pini notes.

The programme

The mode in which the event will take place will change, but certainly not the spirit that has always characterized it and whose distinctive trait is the sharing of ex-

perience regarding pasta production, taken in its broadest sense.

Associations, universities, professional organizations, companies and renowned experts are preparing and finalizing the rich programme of the 2020 Pastaria Festival, the free event dedicated to professional updating for Italian and international pasta producers.

The full programme will be published on pastaria.it and in the upcoming issue of the printed Pastaria newsletter (August 2020).

To take part

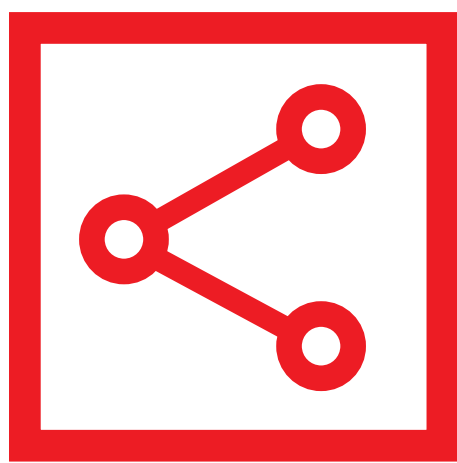
Participation is free, by invitation, and reserved for pasta makers.

Pasta factories interested in receiving an invitation can [register free on the website pastaria.it](http://pastaria.it).

Places available are limited.

Sponsor programme

Pasta producers and companies part of the supply chain involving equipment, installations, ingredients and services for pasta-making who are interested in becoming an event sponsor can request sponsorship information by calling the Pastaria offices (tel.: +39 (0)521 1564934) or sending an e-mail to info@pastaria.it.



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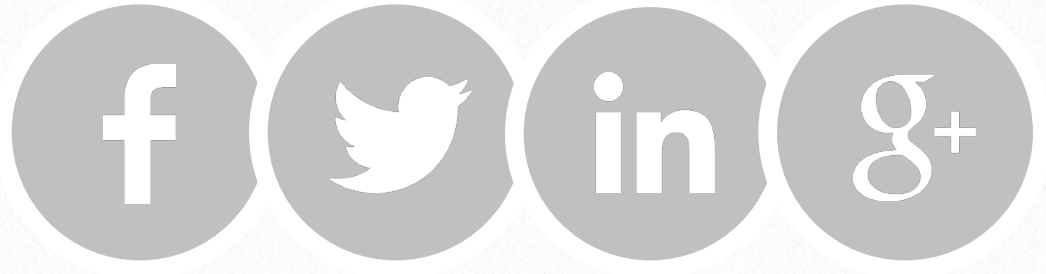
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5



Durum wheat: 2020 harvests increase, but low stocks reduce world supply

Pastaria Centre for Economic Research



For the 2020/21 season, analysts estimate a decline in total availability of durum wheat of around 1.5 million tonnes, corresponding to a drop of 3.5%.

The rebound effect expected in Canada, the world's largest producer and exporter of durum wheat, after the rebound in investment in 2020, will not be sufficient to compensate for the shortage of global stocks, which will lower the effective global availability of wheat.

Let's start from the data of the International Grains Council (IGC) which show, in the forecasts drawn up by British analysts in the June issue of Outlook, a world supply of durum wheat for the 2020/21 season (including new harvests amounting to 34.1 million tons, and stocks from old production) of 41.8 million tons. The comparison between this figure and the levels of the last agricultural year leads to an estimated fall in total availability of around 1.5 million tonnes, corresponding to a drop of 3.5%.

According to the estimates of the IGC, the carry-in stock that left over from the year before will be only 7.7 million tonnes, 2 million less than the previous year. And in the opinion of the experts, at the end of the agricultural year the warehouses will be even emptier, since forecasts at the beginning of July next year point to a carry-out of 6.5 million tonnes, the lowest in 13 years.

Given this situation, which points to some fundamental imbalances in view of a global use of 35.2 million tons, further tensions may arise concerning the prices of durum wheat, also in Italy, the largest user at global level due to the importance of its role in the pasta production sector.

In Foggia, an Italian benchmark market, the price list of durum wheat, with over 13% protein, in the opening session of the new business year, soared to 325 euro per tonne, reaching 335 euro by the end of the month, a price that had not been seen since April 2015.

It should be noted that the market had closed at the beginning of June – before trading was suspended for the start of the harvest – at a level of 302 euros, compared to which there has now been an increase of 11%.

As far as the Italian harvest is concerned, the latest figures from the European cereals association, Coceral, indicate 3.9 million tonnes, a quantity more or less in line with last year. The impression, however, is that the estimates may be revised downwards, especially in view of the disappoint-



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Table 1 DURUM WHEAT: PRODUCTION ESTIMATES FOR THE YEAR 2020/21 (,000 OF TONNES)

	2019/20	2020/21	Variation
World, of which:	33,600	34,100	1.5%
Canada	4,977	5,500	10.5%
United States	1,460	1,550	6.2%
EU-27, of which:	7,525	7,425	-1.3%
Italy	3,888	3,906	0.5%

Source: elaboration by Pastaria of IGC, Statistics Canada, USDA and Coceral data

ment with the yield levels reported by the Apulian producers, in addition to a particularly dry year.

Across the Atlantic, in forecasts dated June 2020, Statistics Canada confirms a 10.5% increase in the harvest in Ottawa, with expectations of 5.5 million tons, but with initial stocks – estimated at a mere 900 thousand tons – halved compared to last year.

The harvest is expected to increase in the US as well to 1.55 million tonnes (up approx. 6%). In the EU-27, on the other hand, Coceral forecasts a slight reduction in the 2020 harvest to 7.4 million tonnes, a figure which, if confirmed, will be 1.3% lower than last year's levels.



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6

Short news



Editorial staff



Di Martino, when pasta rhymes with technology

An IT system on cloud, communication via Microsoft Teams, machine virtualization. The Di Martino pasta factory embraced technology many years ago, and has used it to enhance tradition, with which it goes hand in hand. CEO Giuseppe, namesake of his great-great-grandfather, who founded the company in 1912, explained in an interview how technology came to his aid, enabling him to create, for example, a total traceability system for the production chain. “We have based all our communication activities on digital science – he explained – and were the first in our sector to create a blog hosted by an avatar to publicise our business.” The company has long relied on Microsoft Teams to communicate with its most distant subsidiaries and with major European customers. This software was also used during the lockdown prompted by the Covid-19 emergency for some more fun initiatives, such as “Guess Who’s Coming to Dinner”. Smart working has been enabled for all divisions of the group, from logistics to project management through to marketing. Moreover, the entire information system is on cloud, so that documents can be accessed at any time, from anywhere in the world. The Group also supports the virtualization of machines, choosing Microsoft Hyper-V technology. To-

day it has a turnover of over € 150 million, 440 employees and 7 plants, including Pastificio Antonio Amato, Grandi Pastai Italiani and Pastificio dei Campi.

Garofalo, growing through sustainability

Growing through ecology and welfare seems to be the motto of Pastificio Garofalo, which decided some time ago to embark upon the path of sustainability and is currently aiming to increasingly reduce its water consumption. This process geared towards energy-saving and environmental awareness began many years ago: in 2003 the company obtained Environmental Management Systems certification and a few years later it was also awarded Energy Management Systems certification. Garofalo uses photovoltaic panels, has a trigeneration plant that runs on natural gas in order to reduce CO₂ emissions, and has converted its lighting from neon to led. Its processing waste is converted into feed for the animal husbandry sector, used for the production of biogas, used to create pasta – rather than plastic – straws, or – yet another option – used to make an innovative dough for leavened products. For the packaging, recycled paper from Campania’s landfill sites is used. Further sustainable practices undertaken by the company include the choice to use eggs from free-range hens, the produc-



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tion of classic and wholemeal organic pasta, and the embracing of corporate social responsibility. Once again this year, the company was included among the 20 finalist brands for the Diversity & Inclusion Award.

Pasta Armando celebrates its 10th anniversary and gives its name to a beer

Pasta Armando celebrates its tenth anniversary with a special toast: made with a beer that bears his name. Fruit of a partnership with the Irpinia Serrocroce craft brewery, the beer is produced using the high fermentation method, refermented and refined in the bottle, and sold through the company's e-shop. But this is not the pasta factory's only exciting news! Retailers are about to receive certified pasta with zero pesticide residue and zero glyphosates, wrapped in packaging 100% disposable in the paper waste. The supply chain project created by De Matteis Agroalimentare to select and grow excellent 100% Italian wheat during times in which the supply chain was not yet fashionable, is producing good results: in the first five months of the year, sales in Italy rose by 78% and exports increased by 70%; additionally, 2019 ended with a 30% increase in turnover, reaching € 155 million. Today Pasta Armando is exported to 43 countries and has a direct subsidiary in the

USA, its main historical reference market. Soon it will be sold by the three main retailers in China, South Korea and Finland.

“Who's the boss”, the consumers' pasta

Good, high quality pasta that respects workers and the environment. This is the message behind the pasta named “Who's the boss?! The consumers' brand”, which took its place on the shelves of Carrefour at the end of June, and which was founded by a consumer association that arose out of the protests of French farmers against the underpricing of milk sales. The association has 30 products on the market in France, in 12,000 points of sale, with 14 million buyers. The initiative has also spread to Spain, Belgium, Greece, Germany and Britain, Morocco and the United States. In Italy, already 4200 people have decided to join by making a contribution of € 2 in order to take part in the various decision-making phases. This new pasta is produced by Sgambaro from Castello di Godego, a company in the province of Treviso founded in 1947, with its own mill, that keeps direct contacts with farmers. The production plants are run on 100% green energy and are involved in reforestation projects. Three types of pasta will be produced (spaghetti, fusilli and penne) with mill-ground durum wheat from



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the Po Valley and Apulia. It will be bronze-drawn and dried in the traditional manner: slowly, at low temperatures. The price will be € 1.07 for a recyclable paper package containing 500 grams of product.

The Orogiallo challenge: using hydrogen to produce *orecchiette*

The fuel of the future comes from a pasta factory, through the production of *orecchiette*. This is the challenge that unites Orogiallo, in Naples, and Snam, one of the largest energy infrastructure companies in the world, with the aim of reducing emissions to combat climate change. The only by-product of hydrogen is, in fact, water, so this means that excess energy from renewable sources is not wasted. Using hydrogen, explains Marco Alverà, CEO of Snam, “would mean creating a large – but clean – battery”. Although “green” hydrogen costs money, the goal is to rapidly bring down the cost by integrating hydrogen into the piping network, as Snam does with Orogiallo, and increase the demand for electrolysis equipment. In terms of image, the operation appears to be working. Vincenzo Milito, founder of Orogiallo, explains, in fact, that customer requests have risen because this is a topic of general interest. The New York Times was also interested in the project and dedicated an article to the

story. In 30 years’ time, according to Snam estimates, at least 25% of Italian energy will be derived from hydrogen.

Divella, a postage stamp to commemorate 130 years

Divella is 130 years old and celebrates... with a postage stamp. In the background, *penne rigate*, and in the foreground the logo of the company which has become one of Italy’s leading pasta manufacturers. This specially issued postmark, valid for ordinary mail, was made in Rutigliano, in the province of Bari, where the company has its headquarters. The long-established pasta factory’s first mill was opened in 1890 by Francesco Divella, and today, in the form of a joint-stock company, it plays a key role on the national and international market. On the illustrative bulletin accompanying the special stamp we can, in fact, read: “Thanks to the daily commitment of 320 direct employees, Divella has grown into a company capable of imposing itself with determination both on the domestic market and on the foreign and global market. And the figures speak for themselves. Its mills grind 1,200 tonnes of durum wheat and 400 tonnes of soft wheat per day. The pasta factory produces about 1,000 tonnes of dried pasta per day, 35 tonnes of fresh pasta, in over 150 different shapes”.



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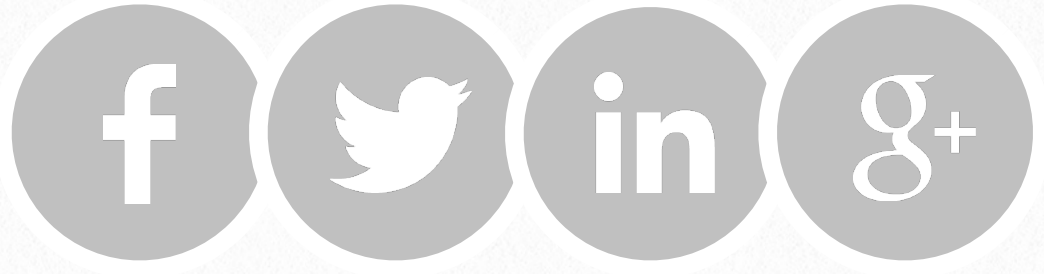


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When the problem lies with the raw material

Lino Vicini



Horse meat in Bolognese-style lasagna: the lawsuit involving an Italian manufacturer a few years ago demonstrates how the careful choice of suppliers and strict compliance with raw material traceability provisions are crucial in order to avoid disagreeable criminal charges.

According to an old legal maxim “*ex facto oritur ius*”, i.e. “the law arises out of the fact”.

This means, first and foremost, that the law evolves to regulate new, emerging situations, on a case by case basis, in the reality of everyday life.

There is also a second meaning of this expression which concerns the procedural aspect of the application of the law.

According to the insightful teachings of Pietro Calamandrei, one of the greatest Italian legal experts of the past century, the first duty of a judge is to ascertain the facts precisely, and only apply the law after this has been done.

These general concepts being understood, and with reference to our specific field of interest, it appears clear that an in-depth examination of food safety regulations must, of necessity, begin from the events submitted to the attention of the judges who have had to deal with these issues.

Case law is, therefore, of fundamental importance in order to discover – and hopefully avoid – the critical situations that might arise.

In this article, we are going to recount an event in which a frozen food manufacturer became embroiled, notwithstanding its good faith.

The precise foodstuff subjected to the control was Bolognese-style lasagna which

contained horse meat in addition to the declared beef, and was therefore non-compliant with the information declared on the label.

In order to understand what actually happened, we have to go back to the beginning of the story.

The problem of finding horse meat in products that were supposed to be made of other types of meat came to light in Ireland in January 2013 when the British authorities analysed some hamburgers sold in supermarkets.

To their great amazement, they found that, instead of beef, the hamburgers were made from horse meat.

The case spread beyond the borders of the British Isles and immediately took on a continental dimension, affecting France and Romania as the supplier countries of meat marketed as beef only.

Subsequently, Italy also became involved with the discovery of horse meat in compound products declared as only containing meat from other animal species.

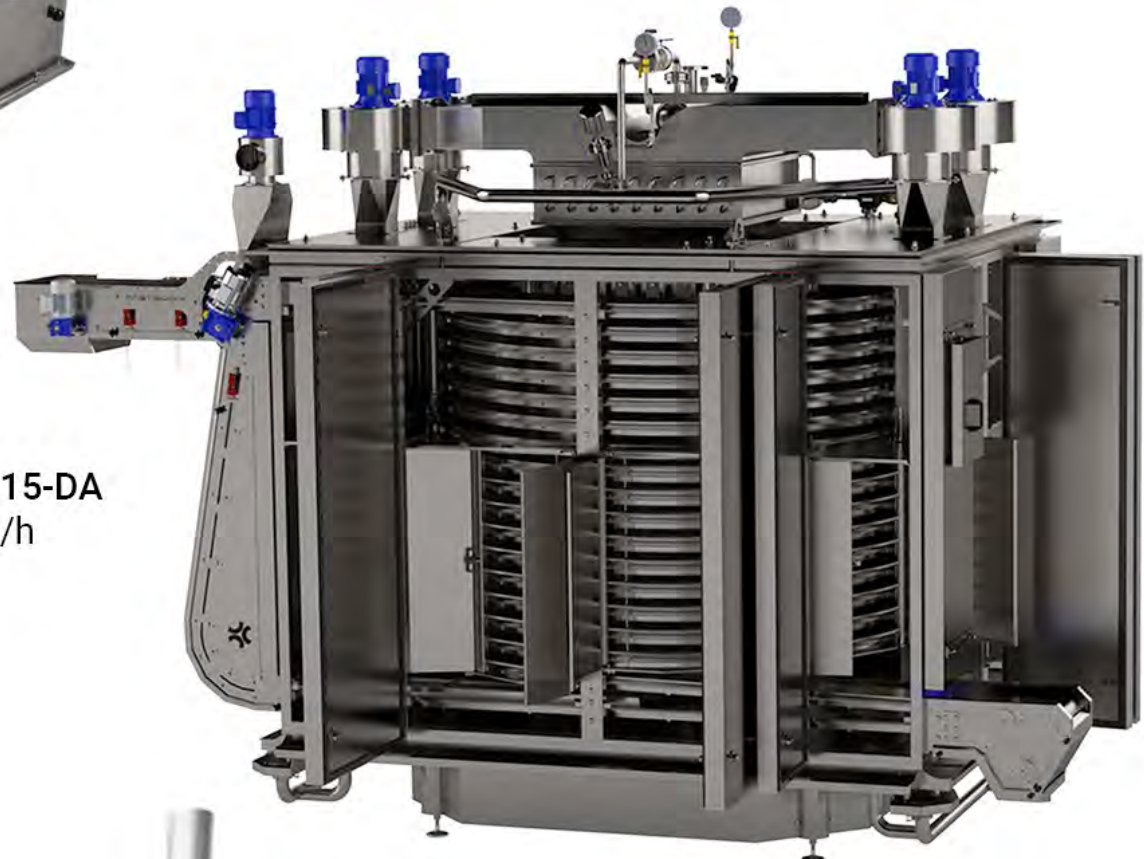
At the beginning of 2013, following reports from the countries initially involved, the Public Prosecutor’s Office of Turin began a criminal investigation into a variety of compound food products adulterated by the undeclared presence of horse meat.

What they were trying to establish was whether some manufacturers had also

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made food using horse meat instead of just beef, as declared on the label, thereby profiting from the difference in cost of the raw materials used.

So in February 2013, the Carabinieri carried out an inspection and took samples of “frozen Bologna-style lasagne” at some of the large scale retail outlets.

The merchandise deemed to be non-conforming was also confiscated pursuant to art. 354 of the Italian Code of Criminal Procedure which expressly prescribes that any traces or items pertinent to a crime be preserved by the officials and agents of the investigative police.

The Public Prosecutor then validated such confiscation within the space of 48 hours by issuing a decree attesting to the possible commission of the crime of commercial fraud and the trading of counterfeit or adulterated foodstuffs.

To this end, at the same time, a number of molecular biology professors belonging to the departments of genetics, biology and biochemistry of the University of Turin were assigned to analyse the samples taken from the retail outlets by the Carabinieri NAS (Nuclei Antisofisticazioni e Sanità – Anti-Adulteration Unit) of Piedmont’s regional capital.

In this sense the consultants were required to focus on two particular aspects: the detection of any veterinary drugs in the horse

meat and the checking of the degree to which the products under investigation could be harmful to the public health.

Following the analyses carried out using the Polymerase Chain Reaction (PCR) and the PCR Real-Time methods on three samples of material, the consultants formulated their judgement.

In particular, the PCR Real-Time analysis method enabled them to estimate the presence of horse meat in the compound products examined, at a percentage of around 1.4% (± 0.14).

The animals used for the production of the meat, moreover, did not present any diseases, nor had they been treated with any prohibited substances, so there were no contraindications to the use of the meat for human consumption.

The Carabinieri then proceeded to inform the manufacturer, pursuant to art. 18 of Presidential Decree 327 of 1980, that, according to laboratory analysis, the sample of Bologna-style lasagna (batch 28.11.2012) had been found to contain the horse meat in a percentage of 1.4%.

The company therefore applied to the Istituto Superiore di Sanità (Italian National Institute of Public Health) for a review of the analysis, after the issuing of a copy of the certificate of analysis not attached to the notification received from the investigating authority.



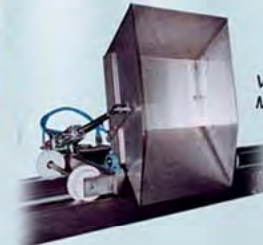
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Premixer



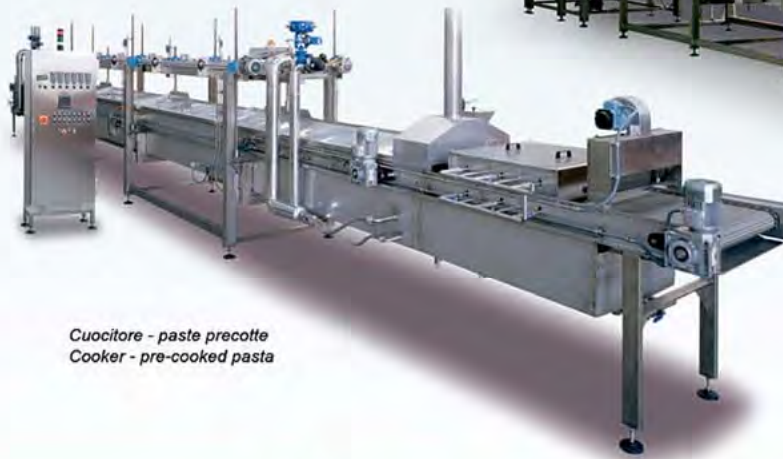
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The Piedmont Public Prosecutor therefore asked the Judge for Preliminary Investigations to dismiss the case originally based on Article 442 of the Criminal Code, since there were not sufficient elements to proceed criminally.

At the same time, it transmitted the preliminary investigation file to the Parma Judicial Authority, within whose territorial competence the remaining crime of commercial fraud fell.

In fact, as far as this is concerned, the offence was allegedly committed at the place “where the compound food was produced”.

On receiving the deeds, the Public Prosecutor’s Office of Emilia had proceeded to request from the Judge for Preliminary Investigations a criminal conviction in the sum of 7,500.00 euro for violation of art. 515 of the Criminal Code. The judge had, in turn, issued the decree after approx. a year, but the defendant had only been notified in October 2016. After receiving notice of this criminal conviction, the man-

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ager of the lasagna production company had lodged an objection, requesting an immediate trial to prove his innocence.

Finally, the trial before the monocratic judge had begun in February 2018, five years after the allegations.

A number of issues were addressed during the criminal proceedings, which we deem useful to summarise below.

The first question raised by the defence concerned the usability of the analysis report on the sample taken from the batch of Bologna-style lasagna confiscated by the Carabinieri.

In this particular case, after discovering that the analysis carried out by the Public



Prosecutor's consultant had detected contamination with horse meat, the manufacturer had asked the Istituto Superiore di Sanità to review the analyses.

In fact, as we may recall, the first analysis was carried out without the possibility of a counter-analysis by a consultant for the defence.

During the review of the analyses, on the other hand, the presence of the party's own consultant is permitted and can take part in all of the operations and verify compliance with all technical aspects.

In this particular case, notwithstanding the request for this review, it had never been carried out. This is borne out by the fact

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that the sum of money required to carry it out had even been returned.

Prior to the opening of the proceedings, the defence had asked the judge to exclude the report of the analyses carried out by the Public Prosecutor's consultants because the examination had taken place without a counter-analysis by a consultant for the defence.

The objection was rejected on the grounds that the judge deemed that the document could remain in the file, since the violation in question did not render the report totally unusable.

In agreement with the parties, the crime reports drawn up by the NAS branch of the Carabinieri in Turin, and those of their colleagues in Parma who had inspected the production plant, were acquired.

From these documents, it emerged that in addition to lasagna, other frozen ready meals were also made in the factory.

The company had never used horse meat in its products and had purchased the minced meat used for the preparation of the lasagna from an Irish company, in early October of 2012.

In particular, it was established that the meat used belonged to two separate batches.

The Irish company supplying the raw materials also undertook to supply the Emilian company with beef only, as shown by the

transport documents and labels on the product packaging.

It was demonstrated that the manufacturing company had adopted an effective corporate self-control system and had gone as far as to ask its suppliers for certifications issued by a third party.

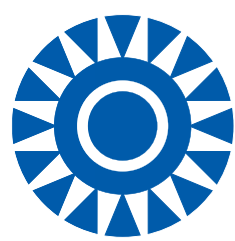
The Court therefore deemed proven that the 500-gram batch of Bolognese-style lasagna contained a minimum percentage of horse meat of around 1.4%.

In fact, the Public Prosecutor's consultant had used an impeccable scientific method and approach that demonstrated the presence of horse meat in the product.

From this fact, according to the Court, there was evidence of the objective element of the crime of commercial fraud. It had also been established that the manufacturer had put at least five products on the market which, contrary to the label, contained a meat sauce consisting not only of beef but also of horse meat, as established in the analytical report.

The contested crime in question serves to protect loyalty and fairness in trade and hence also the interests of the buyer and the consumer, guaranteeing that they will not receive something different from requested, irrespective of whether the product delivered is harmful to health.

In this case, therefore, the lasagna had a qualitative difference in composition with



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respect to what had been declared, that could have affected the choices of final consumers/buyers, because of their food preferences or even their religious beliefs. It is well-known, for example, that practising Jews are forbidden to eat horse meat. Nevertheless, according to the Court, there was no evidence that the defendant was aware of delivering anything other than what had been declared.

It is important to point out that in order to commit the crime of commercial fraud, the trader must not only put on the market a product that is different from that declared, but there must also be general intent, i.e. the awareness and the intention to deliver something different from that agreed.

On the basis of the preliminary investigation, the judge deemed that there was evidence that the packages confiscated were different, but the low percentage of horse meat contained in the products led the judge to believe that the defendant could not have been fully aware of the alleged offence, inasmuch as he could not have obtained a concrete advantage from the difference that which would have justified a fraudulent business choice.

This conclusion was also reached on the basis of the analyses carried out by the various private laboratories entrusted by the manufacturer after February 2013, since all the analyses had established that

the percentage of horse meat was below the 1% threshold.

Ultimately, the judge deemed that the defendant should be acquitted in accordance with the formula laid down in art. 530 of the Code of Criminal Procedure because the case in point does not constitute a crime under the law.

It should also be noted that the defendant was acquitted for lack of the subjective element (intention) which is essential to establish the existence of the crime of commercial fraud.

The case demonstrates once again the importance of choosing suppliers carefully and complying strictly with the provisions on the traceability of raw materials laid down in food safety regulations, also in order to avoid becoming involuntarily embroiled in criminal charges while acting totally in good faith.



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Pastificio Kapunto

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She wanders among the machinery in an inquisitorial manner amidst the general silence, while everyone awaits her verdict. She rarely gives her full approval right away because, when it comes to pasta, Signora Nina is a real expert and demands perfection. She demands it first and foremost from Tommaso, the majority shareholder of Primi e Dintorni, the company in the heart of the old-town of Matera, that runs the pasta shop-restaurant Kapunto. It was from her that her son drew his inspiration when he decided – after 25 years in restaurant kitchens, 15 of which abroad – to come back home and set up his own business. Ever since early childhood, Tommaso Perrucci had watched his mother make pasta, 3 times a week, all year round. In a family of farmers and cereal producers, it could not have been otherwise. And it is precisely from this typical local pasta shape, the Capunti, which his mother often prepared – strictly by hand – on the kitchen table, that the shop has taken its name.

But Kapunto does not only specialise in local shapes. Perrucci and his five employees range from the traditional to the innovative, not only in terms of shape, but also in terms of doughs and fillings. They make ultra-fresh, unpasteurised products,





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free from preservatives and additives. The plain pasta catalogue contains *Capunti* and *Capuntini*, *Strascinati*, *Orecchiette*, *Scorze di mandorle*, *Puntini*, *Ferricelli*, *Fusilli*, *Trofie*, *Foglie di ulivo* and *Miskiglio*. Extruded and laminated pasta, on the other hand, is made in the following shapes: *Calamarata*, *Caserecce*, *Tagliolini*, *Miskiglio*, *Paccheri*, *Conchiglioni*, *Tagliatelle*, *Spaghettoni alla chitarra*, *Lasagne*, *Pappardelle* and *Taglierini*. The doughs are many and various: semolina, spelt, Senatore Cappelli cultivar, wholemeal, burnt wheat, Senise pepper, spinach, miskiglio (barley, chickpeas, semolina, lentils). The filled pasta varieties, no less impressive than the plain, are a tri-

umph of shapes and colours, with the richest and most extravagant contents. Examples include *Quadrati*, *Tondi*, meat-filled *Tortellini*, *Fazzoletti*, *Mezzalune* and round *Tortelli*. The types of dough are innumerable, vary according to the season and – like the fillings – can also be made to order, at the customer's request: cuttlefish ink, spinach, turmeric, beetroot, tomato, basil, wine, artichokes, truffle, rosemary, mushrooms and cocoa. But it is in its fillings that Kapunto really shows off the creativity and inventiveness of its master pasta-makers. The versions available include *burratina* (a kind of soft buffalo mozzarella) and dried tomatoes, *burratina* and

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pistachios, braised beef, sugar lemon and cinnamon, ricotta and spinach, Senise peppers, porcini mushrooms, *Cardoncelli* mushrooms and *robiola* cheese, *radicchio* and *stracciatella* cheese, *radicchio*, walnut and *gorgonzola*, truffle, sausage and turnip tops, strawberry and capocollo (cured pork), pear and speck, asparagus and *Primo Sale* cheese, pumpkin and *amaretti* biscuits, aubergines, oranges and ginger, *Taleggio* cheese, speck and almonds, buffalo mozzarella and Parma ham, aubergine and *Primo Sale* cheese, ricotta and walnuts, passion fruit. Then there are the fish fillings: the delicacy and taste of the sea, in a bite-sized morsel, in the following versions: cod and *broccoli*, grouper, prawns

and courgettes, salmon, salmon with dill and Philadelphia cheese. Many of the shapes mentioned are also suitable for those who are lactose intolerant and for those who prefer a vegetarian diet. Special shapes can also be created by hand on request. The rule that applies to all of the products – with the exception of certain ingredients that are, by their very nature, not local – is that they are strictly typical to the territory, in an endeavour to express all the very best of Southern Italy, not only in terms of semolina pasta, but also as regards the local cheese, vegetables, herbs, meat and fish.

Kapunto's fresh pasta is only sold loose, at the counter and either can be taken home

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or enjoyed on the spot, because the pasta shop is also equipped with a kitchen, tables and a delicatessen offering a wide range of dishes to accompany the main course. Those who choose a first course can watch it being prepared, since the kitchen is open. They can even choose the sauce they prefer, from the menu of the day.

Pastificio Kapunto is a niche market. It produces around 500 kg per week, which it mainly sells over the counter and at its tables: around thirty seats in all, almost always occupied by tourists and visitors to the old-town of Matera. Among the customers there are also restaurant owners and the company may soon start selling

online. “But I’m very jealous of my product,” says Tommaso Perrucci, adding: “I’m still not sure if I want to embark on this adventure. I could only agree to sell via the web if I was sure that my pasta was in good hands. Hands that do not impair its quality”. But there are also other projects in store for the future: soon Kapunto’s regional pasta types will also include Senatore Cappelli organic, with semolina from a local farm.

The capital of Basilicata is well worth a trip in its own right, but the chance to taste Kapunto pasta as well, makes it an absolute must.



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