The Marchigiana: a breed to be exported
The development of know-how networks between the two sides of the Adriatic for the modernization of the primary productive structure and the innovation of the provided services and technology is an innovative challenge given the existent differences in the real and perceived quality production in the two areas and bearing in mind the difficulties arising due to the existent differences in the economic, administrative and juridical systems of the Italian Adriatic Region (IAR) and the Eastern Adriatic Countries (EAC). Promoting the sustainable development of the rural development, the strengthening of the public and private assistance structure and the primary sector services are the premises on which the Marcbal project is based, promoted by the PF Pesca e Zootecnia of the Marche Region within the Adriatic New Neighbourhood Programme INTERREG/CARDS/PHARE.

With the involvement of public and private bodies, the project aims at reinforcing the services promoting new techniques in company management, new products and/or productive technologies and new cultural methods in the companies operating in the agriculture sector, by improving the quality systems in the cattle meat sector. With the exchange of know-how between the partners of the two sides of the Adriatic, the project aims at contributing towards the formation of an administrative system in quality zootechnology of the Marchigiana cattle breed in the Eastern Balkans (registry, genetic, research and veterinary) by the spreading of the good practices of the Marchigiana cattle breeding and the methods to improve the zootechnological agricultural productions.

The project strategies include surveying, data analysis and, eventually, the exchange of know-how related to the defined survey areas:

- Herbaceous cultivations, techniques and productions of sustainable breeding
- Reproduction methodologies and techniques
- Food and veterinary safety
- Administrative managements and services to enterprises

The project involves six Italian partners from three Adriatic Regions (Marche, Abruzzo and Friuli Venezia Giulia) and two partners from the Eastern Balkans (Albania and Bosnia Herzegovina) forming a multidisciplinary partnership that includes public entities and advanced education structures of the sector at issue.
The Marchigiana Cattle Breed: historical outline

The bos taurus asiaticus, ancestor of the Marchigiana breed, first appeared on the Italian peninsula, together with men and armies, migrated from the ancient Podolia, an extended region between Galizia and Ukraine, at the time of the renowned Lombard leader Agilulfo during the barbarian invasions of the VI century.

This cattle characterised by a big neck, long and pointed horns, a grey or yellowish cast, black eyelids, switch of tail, horns and nails, indigenous to the Asiatic steppe, can be considered the ancestor of today’s Marchigiana breed, which is indeed called the breed of the Podolica stock.

However, the real history of the Marchigiana breed starts in 1800, intertwined with complex historical-economic events of its native area, the Marche, dominated by the “farm agreement” known as mestayage. Before 1800, the Podolica cattle became the workforce used for the tillage of lands and cultivation. It was the ploughing ox rented by the owner of the grounds to the farmer.

In the early XIX century the number of cattle on the farm increased and it began to be thought of as a necessary investment. However, the production of meat was given very little importance and it was limited to “boiling meat”.

In fact, the Podolica cattle had a very slow body development and was poor meat producer due to scarce fattening possibilities. The change from the double use of the breed for work-meat, to the specificity of the breed as meat producer proceeds hand in hand with the economic and social changes of the region. In order to improve the attitude towards meat production, at the end of 1800 the local cattle was crossbred first with Valdichiana bulls and, later, with the improver Romagnola bulls. This selection produced cattle with strong dynamic capacities and with a good attitude towards meat production, from which the significantly polymorphic “population breed” derived.

In 1900, when the economic conditions of the working class improved, there was an increase in demand for meat and a growing awareness about the problem of specialization (meat or work) of the local cattle that in 198 amounted to 7, animals.

With the Congress of Fermo in 198, decisions were taken to suspend the introduction of the Chianina and the Romagnola bulls to proceed with the “morpho-functional genotype” selection, in order to obtain cattle with its own particular features, characterized by a “unity of blood and type”. Therefore, in 1931 the Herd Book was set up to specify the organisational aspect of the selection which allowed the production of rustic animals, resistant and characterised by a quick growth.

On 14th July 1959, the Provincial Breeders Association of Ancona, Ascoli and Macerata approved the statute that articulates the constitution of A.N.A.B.R.M (National Association of the Marchigiana Cattle Breed Breeders). Therefore, the Marchigiana is known as “the bovine cattle breed with the best qualities to be applied even in the areas that are most significantly marked, in negative terms, with our environmental conditions.”

The ANABIC, the national association which aims at selecting, improving, planning and valorising Italian meat breeds abroad, was set up in 1966.
The breed is now bred in the Marche, in Abruzzo, Molise, Basilicata, Lazio, Sicilia and Campania: in Italy, more than 46,000 are registered in the Herd Book.

In 1956 the Marchigiana was introduced for the first time in Brazil. However, a more consistent exportation of animals to European and Non-communitarian Countries has taken place only as from the ’70s that has gained favour with breeders due to its great productive adaptability and performance.

As from 1998 the meat of the Marchigiana cattle breed, between 12 and 24 months, is among the P.G.I. quality brand “White Bullock of the Central Apennines”, regulated by specific production measures.
The selection of the Marchigiana cattle breed aims at:

• The production of animals with a marked ability to produce meat, in terms of growth speed, precocity and slaughtering and skinning outcome, safeguarding its capacity to adapt to the breeding systems;

• The improvement of maternal abilities and the reproductive efficiency features such as the first delivery and the interval between deliveries in order to obtain the highest number of calves per cow a year.

The universally selected method adopted is the performance test which measures the features of the characteristics for which the animals to be indexed are selected. The performance tests for the Marchigiana breed are submitted by the Genetic Centre of the A.N.A.B.I.C on animals purposely selected from the population. Once submitted to serological tests, the animals then enter a quarantine and an adaptation phase at the end of which there is a 24 week test. During this period the calves are placed in a performance shed, which will host them until the age of one, during which various inspections and zoometric surveying are carried out.

The collected data is then analysed with the BLUP Animal model with which the two indices, Growth and Muscularity, are obtained to form the Bull Selection Index that expresses the bull’s capacity to produce muscular tissue and to provide high meat outcomes. Only the best 30% of the tested bulls are assigned to Artificial Insemination subject to quasi-quantitative checking of seminal material. The Genetic Index of Morphology of the factoring-cow was introduced in 2001, derived from the morphological data regarding muscularity, size, thinness and limbs of the heifers.

The best male reproducers are used, according to programmed breeding plans, for the best cows with high genetic index. The calves born from this breeding will have the priority to enter the Genetic Centre for a new Performance test cycle (source ANABIC).

Genetic improvement and selection: objectives and tools

The Herd Book

• is a selection tool which aims for genetic preservation and improvement of meat breeds;

• gathers, in databases, sets of personal, genealogical, morphological, productive and reproductive data of the cattle being chosen;

• is regulated by specific disciplinary measures approved by the ministry of agricultural policies.
Presently, the adult bovine can reach a weight of 12-15 quintals, the female can reach 7-9 quintals. The coat is white, shades of grey in the front part of the body may also be seen; black pigmentation that varies in intensity can be also seen on the skin, mucosa of oris and natural apertures. The skin is fine in quality, easy to lift and soft, features that benefit commercial value of the animal for slaughter and perform a thermoregulatory function. The head is light with a straight profile and a flat, light and expressive forehead; the eyes are lively and alert. The back is long, broad and with marked muscle development, demonstrating a “double convexity” due to the longissimus dorsi which supplies rich in muscle tissue. Thigh and buttocks present an accentuated development of muscle mass that are important in producing noble cuts of beef.

The slaughtering outcome is about 63% reaching up to 67%. The average daily growth can reach 2 kg.

In the last ten years the Marchigiana breed has shown an increase of 100g/day in ADG both in the performance and the pre-performance.

The muscularity increased from 355 to 387 points with an average increase of 3 units per year. The weight at 356 days has an immediate increase of about 40 kg, exceeding the 550 kg.
Breeding: six good reasons to choose it

The breeding of the Marchigiana breed, in the near future, may become a strength for the traditional breeding areas as well as the new ones since they have certain advantages:

- the genetic type is strongly suitable for difficult environmental conditions;
- high self-management capacities without the fundamental interventions of the breeders;
- low-cost environment friendly operator, a very useful figure mainly in those areas of naturalistic and/or landscape interests;
- germoplasma reserve of considerable value;
- production of food with very high qualitative value;
- source for entrepreneurial activity opportunities in “marginal” areas, for the product processing and marketing.

In fact: rusticity, precocity, harmony in shape and adaptability are the features that allow this breed to be subjugated to the breeding and the semi-breeding system maintaining very good productive and reproductive performance. Therefore, the breeding of the Marchigiana must be considered as a valid opportunity for meat production and for crossbreeding, in territorial areas that can be defined as “marginal”.

As regards reproductive efficiency, in the semi-breeding typology, the breed shows a decrease in the interval between the deliveries and an improvement in the capacity to wean.

In this breeding system it is necessary to prepare health inspection programmes for the herd, use selected breeders and carry out functional inspections.

The cow-calf line is a tool for the valorisation of zootechnology in the mountain areas to minimize herd management costs in order to obtain a weaned calf per cow per year, to produce good quality calves in terms of weight, structure and health state.

Breeding according to the cow-calf line allows the exploitation of cultivated and natural grazing resources creating financial advantages in terms of herd feeding costs which will be linked to the necessity to integrate any nutritional deficit in the ration eaten away when grazing. Grazing can only fully accomplish its multiple productive, environmental, landscape and protective functions if technically well managed. Only rational grazing plans can ensure the good feeding of the animals (samples and quality), the maintenance or the improvement of forage quality, its completeness, the high vegetal and animal biodiversity and the preservation of an open and exploitable space.
The Marchigiana cattle breed reaches the ideal weight at 15-16 months, with outcomes up to 67% given the thinness of the skeletal structure and the skin which gives a better slaughtering outcome. The Marchigiana beef reaches the optimal intramuscular fat rate for the slaughtering when he is 18-24 months old.

**Meat and health**

In recent years, the consumer’s attention towards safer and healthier feeding has generated an increase in quality meat consumption and a consistent revaluation of the rustic breeds which, being more suitable for grazing, have meat with a certain qualitative importance. The Marchigiana breed is part of those native breeds with high prestige which, in the light of their versatility, may have a more extensive breeding system and productions with interesting organoleptic features, appreciated both in Italy and abroad. The quality of bovine meat is affected by exogenous (feeding, environment, post-slaughtering interventions) and biological (age at slaughtering, localization and anatomic functionality of the muscle, sex and genetic type) factors.

Therefore, the qualitative merits of these meats are first and foremost linked to the place and a long selection activity which lasts years and also the semi-grazing breeding system and the type of feeding which mainly consists of wild vegetable essences which give a unique flavour to the meat.

**Quality certification**

From 1998 the meat of the Marchigiana breed became one of the first quality brands for fresh bovine meats approved by the European Community for Italy: the P.G.I. (Protected Geographical Identification) “White Bullock of the Central Apennines”. The reference laws were initially the EEC regulations n.081/92 and 08/92 which established the production measures in order to guarantee maximum quality and food safety for the consumer. In recent years the Communitarian legislative framework was very little adaptable to the changes that took place in Europe and globally, which led to the necessity to replace regulations no. 2081/92 and 2082/92 with EC Reg. no.509/2006 and 510/2006. Besides providing rigid indications about breeding, the measures define the entire productive process at every phase.

**Nutritional quality**

Bovine meat has low lipid content (more unsaturated fats than saturate ones) and an important sources of proteins, minerals (especially Zinc and Iron) and group B vitamins. Studies carried out at the University of Te-ramo have shown that 100 g of meat from the P.G.I Bullock of the Central Apennines provides 50% of Zinc and 16% of Iron of the daily requisites of an adult man (Table 1, page 16).
The privilege of the PGI bullock is also low fat and cholesterol content. With the breeding techniques that involve only feeding with forage from typical Central Apennine meadows and grass cultivations, the meats are submitted to analyses that highlight the good anti-oxidizing properties which allow a better preservation of essential acidic fats that change into the organism and which are necessary for the brain, the gonads, the retina and are opposers for the onset of cardiovascular diseases.

**Technological and organoleptic quality**
The meat of the Marchigiana is rosy in colour, fine-grained and with the right degree of fat infiltration.

**Hygienic quality**
It is based on the concept of traceability of the animal and meat origin in every production and selling phase and the labelling. The production plants (breeding, slaughterhouses and selling points) must have all the requisites according to the communitarian law regarding environment protection and high quality production.

### Table 1: Contents of 100 g of PGI bovine meat

<table>
<thead>
<tr>
<th>%</th>
<th>Average Values</th>
<th>Regulatory Measures</th>
<th>RDA needs of 100 g of meat</th>
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<tbody>
<tr>
<td></td>
<td>Woman</td>
<td>Man</td>
<td></td>
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<tr>
<td>Water</td>
<td>75.4</td>
<td>n.p.</td>
<td>36%</td>
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<tr>
<td>Proteins</td>
<td>22.9</td>
<td>&gt;20</td>
<td></td>
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<tr>
<td>Lipids</td>
<td>1.9</td>
<td>&lt;3</td>
<td></td>
</tr>
<tr>
<td>Ashes</td>
<td>1.1</td>
<td>&lt;2</td>
<td></td>
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<tr>
<td>Zinc (mg/100)</td>
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<td>n.p.</td>
<td>50%</td>
</tr>
<tr>
<td>Iron (mg/100)</td>
<td>1.63</td>
<td>n.p.</td>
<td>16%</td>
</tr>
<tr>
<td>Cholesterol (mg/100)</td>
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<td>&lt;50</td>
<td></td>
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<tr>
<td>Unsaturated/saturates</td>
<td>1.07</td>
<td>&gt;1</td>
<td></td>
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</table>
Four seasons with the Marchigiana

a recipe for every season

**Autumn**
**Roast beef with Pore Mushrooms**
- 1 kg of flank in one whole piece
- extra virgin olive oil
- 2 cloves of garlic smashed
- 600 g of pore mushrooms in thick slices

**Preparation**
Tie the meat and seal it with very hot oil. Heat some oil and the garlic in a low saucepan, add the mushrooms, cook for 5 minutes, add pepper and salt, add the parsley and remove the garlic. Transfer the meat, draining it from the sealing fat, to the saucepan with the mushrooms and cook for 5 minutes.

Isolate the meat from the cooking base by putting a grid on the bottom of the saucepan. Cover and let it rest for at least 10 minutes. Untie the meat, cut slices of about 1.5 cm thick, place it on a hot tray and cover every slice with mushrooms, serve the slices of roast beef sprinkled with grated Parmesan and sprinkle with the filtered cooking base.

**Winter**
**Beef with walnuts**
- 1 kg of fillet steak of beef
- extra virgin olive oil
- a ladle of soup
- 1 small chopped onion
- 50 g breadcrumbs
- half lemon juice
- 1 garlic clove
- 2 cloves garlic
- 10 cleaned artichokes
- parsley, oil, salt and pepper
- 1 glass of marsala

**Preparation**
Prepare the meat for cooking, tie it and seal it in a small saucepan with some oil and then soak it with one ladle of soup. Stir the onion, add the breadcrumbs which have been previously mixed with the lemon juice and squeezed, salt, pepper and garlic. Soak the marinade with marasala, mix and pour it on the meat. Add the soup, cook on a low flame for about 2 hours. Serve sliced.

**Spring**
**Stew with artichokes**
- 1 kg of sottofesa
- dry white wine
- 10 cleaned artichokes chopped in quarters
- 2 onions

**Preparation**
Marinate the meat in the wine with half of the artichokes, the onions, the celery and the garlic for about 8 hours. Trickle the meat, dry it, tie it, seal it carefully with hot oil, add salt, mix the marinade with the vegetables and cook on a low flame for about 3 hours. Whisk the marinade, adjust it with salt and place it on a flame to reduce it. In the meantime cook the remaining artichokes in oil and parsley.

Serve the meat on a hot plate, surrounded by the artichokes and sprinkled with the sauce.

**Summer**
**Cold rump in green sauce**
- 800 g rump of tender beef
- 1 l of water
- 1 l of vinegar
- 200 g parsley leaves
- 25 g capers
- half fresh small onion
- extra virgin olive oil, salt and pepper

**Preparation**
Marinated the rump for 4 hours in equal parts of water and vinegar, remove the meat, bring the water and vinegar to boil and put the tender beef in it for an hour, let the meat cool in the cooking liquid. For the sauce: whisk all the ingredients. Serve the sliced meat with the sauce after savouring the dish for about 1 hour.

**Beefsteak with fillet or the sirloin and the T-bone taken from the sirloin of the White Bullock of the Central Apenines of 16 to 24 months of age, the Fiorentina is a true “ritual” of the Italian cuisine. Its thickness varies from 6 to 8 cm, its weight from 900g to 2kg.**

**Preparation**
It is necessary to have an ardent grill, without flame, the steak needs 6 minutes of cooking on every side and 15 minutes to rest vertically on the bone which acts as a heat conductor to keep it warm and to ensure appropriate cooking.
The initiative has been realized with the financial support of the European Regional Development Fund in the framework of Adriatic New Neighbourhood Programme Interreg IIIA Adriatic Crossborder.

Special Thanks to:
ANABIC
APA in Marche Region
ARA in Abruzzo Region
Consorzio Produttori
Carne Bovina Pregiata delle Razze Italiane
Azienda Agraria Biologica “Arca Felice”

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