

## New data on Neolithic agriculture and environment in Northern Italy

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**ABSTRACT** - On the basis of the data acquired in the last ten years, it can now be confirmed that, in some Neolithic localities in the Po and Friuli plains, the Neolithic in Northern Italy took root rapidly with the contemporary introduction of naked and hulled cereals (*Hordeum vulgare/distichum*, *Triticum dicoccum*, *Tr. monococcum*, *Tr. aestivum/durum*) and various species of pulses (*Pisum* sp., *Lens culinaris*, *Vicia* sp./*Lathyrus* sp., *Vicia* cfr. *ervilia*, *Vicia* cfr. *faba*). The forest development, which was initially quite homogeneous and compact, has progressively changed as a consequence to the intensive anthropic activity. Only further research can confirm how real the differences really are between the various settlements and in which way they are tied to the cultural differences of the various Neolithic groups and to the progressive passages from Mesolithic to Neolithic traditions.

**KEY WORDS:** Neolithic, Northern Italy, Agriculture, Forest development, Anthracological and carpological analysis

**PAROLE CHIAVE:** Neolitico, Italia settentrionale, Agricoltura, Copertura forestale, Analisi antracologiche e carpologiche

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### 1. INTRODUCTION

On the basis of the publication of a note of Evett and Renfrew dated 1971 (EVETT & RENFREW, 1971) on the Italian Neolithic cereal agriculture, it was thought that the Neolithic in Italy was characterised by a slow progressive introduction of cultivated species and by a relatively slow evolution of agrarian techniques. Back in 1987 (CASTELLETTI *et al.*, 1987; BARKER *et al.*, 1987), it was thought that the appearance of various kinds of cereals had come about in successive phases and that, in Northern Italy, cereal agriculture had become an essential element of subsistence only in the Middle Neolithic. The presence of many hazelnut hulls on Mesolithic and Early Neolithic sites suggested the continuity of a system of providing food and the fundamental role of the harvesting of spontaneous fruits in the first phases of the Neolithic.

Although the analysis developed in the last

ten years on a group of Early Neolithic sites in Northern Italy (particularly in Sammartenchia, UD, and Lugo in Romagna, RA) and on other more recent Neolithic sites, is still insufficient to help reconstruct the different phases of the neolithisation of Northern Italy, it radically modifies the hypotheses of the eighties based on inadequate data.

### 2. THE SITES

The archaeo-botanical analysis (anthracological and carpological) carried out on the distribution of settlements is still very superficial and incomplete. Apart from the region of Liguria which presents peculiar characteristics for its geographical and botanical features, the best investigated area in Northern Italy is the Friuli Plain; there are more limited and sporadic data on a certain number of

localities of the Po Plain and of the piedmont pre-alpine and pre-Apennine areas. From a purely chronological point of view, many localities of the Early Neolithic (Fiorano Culture, the Vhò Group, the Gaban and Friuli Groups) as well as those of the Full and Late Neolithic (different Square Mouth Pottery – hereinafter referred to as “VBQ” - phases) are present. It is not always possible to give a precise dating of the analysed materials, especially for analysis carried out on excavations before the 90's and for sites which are still in the process of being studied (for the Early Neolithic see Fig. 1 and the relative bibliography at the end of the text).

### 3. ANTHRACOLOGICAL ANALYSIS

The data obtained through anthracological analysis give evidence of a relatively homogeneous forest composition in the Early Neolithic. The forest development of the Po and Friuli Plains where formations dominated by deciduous oaks (*Quercus* sez. *Robur*, presumably common oaks and/or durmast oaks), by ash trees (particularly *Fraxinus excelsior*) and by maple trees (*Acer* sp.). At a regional level, the greatest differences are connected to species that rarely reach substantial percentages – with the exception of silver firs (*Abies alba*), which are well documented in the pre-alpine and piedmont-Apennine area – but the importance of these should not however be underestimated. So beech trees (*Fagus sylvatica*) are found in Friuli and even on the plains or hornbeams (*Carpinus betulus*) which are non-existent on the Po Plain, but are however documented (as fruit) in Sammardenchia.

The lime tree (*Tilia* sp.) assumes a meaningful role only in Lugo, Romagna, and in Roncade (PIGNATELLI & ROTTOLI, 1996). Common to the greatest part of the investigated settlements is the scarce evidence of elms (*Ulmus* sp.), of willows, of poplars (*Salix* sp. and *Populus* sp., sometimes not distinct), and of alders (*Alnus glutinosa/incana*).

In the Early Neolithic, the use of a limited number of arboreal species, index of a very compact forest development, can generally be observed. The presence of the Prunetalia species (*Crataegus* sp., *Prunus spinosa*, *Corylus avellana*), plants which normally indicate a thinning out and a division of the forest appear quite contained. Only in Sammardenchia do the Pomoideae (*Pyrus* sp., pear tree; *Malus sylvestris*, apple tree; *Crataegus* sp., hawthorn) have a predominant role: this can de-

pend on an intense transformation of the forest development on the immediate outskirts of the site, due to the long duration of the settlement, and/or to a particularly substantial use of live hedges set around the fields to prevent animals from entering and to increase the production of fruit.

The anthracological and sylotomic analysis carried out on the most recent settlements leads to believe in a progressive reduction of the arboreal development and the splitting up and division of the forest. The number of species used tends to increase and the amount of the species of the forest borders and the clearings becomes more substantial. Hazelnut wood – that is only occasionally present on the ancient Neolithic sites, despite the abundant number of remains of fruits found – becomes a component of primary importance in later phases, especially with regard to lake settlements (e.g., Palù-Livenza; CORTI *et al.*, 1998).

### 4. CARPOLOGICAL ANALYSIS

Today, it seems that the idea of a progressive introduction of cereals in Northern Italy has been overcome. Naked wheat (tetraploids and hexaploids: *Triticum aestivum*, *Tr. durum*, *Tr. turgidum*, the distinction between the different species being problematic) appear together with barley (*Hordeum vulgare* and/or *Hordeum distichum*), emmer (*Triticum dicoccum*), and ein korn (*Triticum monococcum*) on sites where sufficient samples exist. The presence of spelt (*Triticum spelta*) appears uncertain both in the Early Neolithic and in Recent Neolithic. It appears to be still difficult to estimate the importance of the single types of cereals: in the few cases where it is possible to have substantial data, the amount of caryopsids does not concord with the remains of the spikelets (forks, glume bases, spikelet bases). Barley and wheat seems to prevail in Sammardenchia; while naked wheat is more important in Lugo, Romagna. Millet (*Panicum miliaceum*) or foxtail millet (*Setaria italica*) seems to have appeared in the late Neolithic.

Documentary data on the Leguminosae is still very limited: during the Neolithic there is proof of lentils (*Lens culinaris*) and peas (*Pisum* sp.), very small vetches (*Vicia* sp./*Lathyrus* sp.), and maybe *Vicia* cf. *ervilia* and *Vicia faba minor* of which, however, no real whole examples exist but which are present in the more advanced phases of the VBQ.

At the present moment it seems impossible to consider any type of statistical relationship be-

tween the species, due to the limited amount of finds.

There is no documentary data for the cultivation of flax (*Linum usitatissimum*) and poppy (*Papaver somniferum*) on the Early Neolithic sites of Northern Italy but only in more humid places later on in time. It is possible that this absence in these ancient places depends on taphonomic factors or is tied to the way in which the samples were found. The flax seeds are fragile; the poppy ones are very small and rarely appear even in later periods among carbonised material. Their cultivation is documented in the Early Neolithic in the South of Italy (COSTANTINI & STANCANELLI, 1994). Documentary data on fruit is very inconstant. There is not much data on fruits on dry sites with the exception of hazelnuts, whereas on humid sites, with reference to later phases of the Neolithic, the documentary data is generally more consistent. An incredible number of fragments of hazelnut hulls (*Corylus avellana*) are present in some ancient settlements: 4000 fragments in Fagnigola, more than 1000 in Sammartendchia, but hazelnuts are also present in Valer, Ostiano, Lugo, Vhò, Pizzo di Bodio etc. The presence of vine grapes (*Vitis vinifera sylvestris*), sloes (*Prunus agg. spinosa*), apples (*Malus sylvestris*), acorns (*Quercus* sp.), blackberries (*Rubus agg. fruticosus*), elder and dwarf fruits (*Sambucus nigra/racemosa*, *Sambucus ebulus*), cornelian cherry (*Cornus mas*) and bittersweeter (*Solanum dulcamara*) have however been confirmed from the Early Neolithic onwards.

There is little documentary data on infesting species with small amounts of caryopsids of faraxacum (cultivated? *Bromus* sp.) and darnel (*Lolium* sp.) and Polygonaceae fruit (*Polygonum* sp., *Rumex* sp.).

## 5. CONCLUSIONS

The increasing number of settlements which have been examined and the specific regional research carried out on the Friuli plain,

with a great number of samples recovered in an adequate way, allow us to formulate a more articulated theory about the resources which were already available in the Early Neolithic and on the evolution of these in the following phases (PESSINA & ROTTOLI, 1996). The possibility of having a larger availability of sites with a more thorough documentary analysis suggests, furthermore, that the differences found in the settlements are a reflection of precise agricultural (and cultural?) differences and are not just casual. However, the large amount of purely qualitative data hinders a more accurate interpretation.

If the new data and in particular that of Lugo in Romagna and Sammartendchia, are proof of the knowledge of a wider amount of resources since the beginning of the Neolithic – with the cultivation of four/five species of cereals and three or more species of pulses together with an intense harvest of wild fruits – the difficulty in supplying a more satisfactory reconstruction from the still punctilious and incomplete data, is evident.

If the limited amount of findings of fruit and seeds of cultivated species up till the 80s suggest a slow acculturation of the Mesolithic populations, today it is possible to assert that the low number of findings basically depends on inadequate samples and unfortunate taphonomic coincidences. When just a slightly more abundant quantity of samples is available, one can observe a richer variety of resources revealing a fast or even sudden neolithisation, even in Northern Italy, with the contemporary acquisition of many imported cultivated species.

It is still too early to adequately reconstruct the different forest landscapes near the sites, the nature and the duration of the process of neolithisation in the more internal areas, the possible relationship – connected with the different use of the territory and the precocious differentiation of the Northern Neolithic groups – between the Neolithic and the Mesolithic populations.

**SUMMARY** - In the last ten years the analysis carried out in some Neolithic settlements in Northern Italy have shown an early and full neolithisation of the people who lived in the Po plain and in the Friuli area (north-East of Venice). Our data demonstrate the simultaneous appearance in these settlements of the hulled and naked cereals (*Hordeum vulgare/distichum*, *Triticum dicoccum*, *Triticum monococcum*, *Triticum aestivum/durum*, perhaps *Triticum spelta* too) and various pulses (*Pisum* sp., *Lens culinaris*, *Vicia* cfr. *faba minor*, *Vicia* cfr. *ervilia*, *Vicia* sp. or *Lathyrus* sp.). The findings of plenty of seeds and fruits (*Corylus avellana*, *Cornus mas*, *Prunus* sp., *Quercus* sp., *Rubus* agg. *fruticosus*, *Sambucus* sp., *Vitis vinifera sylvestris* etc.) suggest that they were harvested and eventually cultivated. In Early Neolithic the original forest, characterised by deciduous oak (*Quercus* sez. *Robur*), ash (*Fraxinus* cfr. *excelsior*) and maple (*Acer* sp.) seems to be predominant, only in the Late Neolithic *Prunetalia* species appear abundant: that is probably due to the increasing of human intervention. We find a

variability of data among settlements, thus allowing inferring a precocious differentiation in food preferences and choices among various groups but further information is needed to explain the progressive development of these processes and their relationship with Mesolithic culture.

**RIASSUNTO** - Sulla base dei dati raccolti negli ultimi dieci anni in alcuni siti neolitici della Pianura Padana e friulana è ora possibile affermare che il Neolitico dell'Italia settentrionale si è affermato rapidamente con l'introduzione contemporanea di cereali nudi e vestiti (*Hordeum vulgare/distichum*, *Triticum dicocum*, *Tr. monococum*, *Tr. aestivum/durum*) e di varie specie di leguminose (*Pisum* sp., *Lens culinaris*, *Vicia* sp./*Lathyrus* sp., *Vicia* cfr. *ervilia*, *Vicia* cfr. *faba*). La copertura forestale, inizialmente piuttosto omogenea e compatta, si è andata progressivamente modificando in rapporto all'intensità dell'attività antropica. Solo il proseguimento delle ricerche potrà chiarire quanto le diversità, oggi solo intuibili, fra i diversi insediamenti siano reali e in che modo siano legate alle differenze culturali dei vari gruppi neolitici e alle modalità del passaggio tra tradizione mesolitica e neolitica.

## REFERENCES

- BARKER G.W.W., BIAGI P., CASTELLETTI L., CREMASCHI M. & NISBET R., 1987 - Sussistenza, economia ed ambiente nel neolitico dell'Italia Settentrionale. In: Atti XXVI Riunione Sc. I.I.P.P., Firenze 7-10 nov. 1985, p.103-118
- CARUGATI M.G., 1993 - Il neolitico antico in Friuli attraverso lo studio dei resti vegetali carbonizzati di tre siti: Fagnigola (PN), Valer (PN) e Sammardenchia (UD). *Quaderni Friulani di Archeologia* III: 17-27
- CARUGATI M.G., 1994 - Nota sui resti vegetali carbonizzati del sito neolitico di Valer (Azzano Decimo - Pordenone). *Atti Soc. Preist. Protost. Friuli-V.G.* VIII:115-120. Trieste
- CARUGATI M.G., CASTELLETTI L. & ROTTOLI M., 1996 - L'agricoltura nel primo neolitico del Friuli. Le ricerche a Sammardenchia, Fagnigola e Valer. In: A.Ferrari & A.Pessina (eds), Sammardenchia e i Primi Agricoltori del Friuli, p.103-112
- CASTELLETTI L., 1977 - Resti vegetali macroscopici da "La Vela". In: AA.VV. (eds), L'Ambiente Neolitico di "La Vela" (Trento); Il Momento Meandrospirale nella Cultura dei Vasi a Bocca Quadrata. Museo Tridentino di Sc. Nat., Mostre temporanee, Trento
- CASTELLETTI L., 1987 - I resti vegetali macroscopici. In: Atti XXVI Riunione Sc. I.I.P.P., Firenze 7-10 nov. 1985, p.462-463
- CASTELLETTI L. & CARUGATI M.G., 1995 - I resti vegetali del sito neolitico di Sammardenchia di Pozzuolo del Friuli (Udine). In: Atti della XXVIII Riunione Scientifica dell'I.I.P.P., Trieste 1990
- CASTELLETTI L., COSTANTINI L. & TOZZI C., 1987. Considerazioni sull'economia e l'ambiente durante il Neolitico in Italia. In: Atti della XXVI Riunione Sc. I.I.P.P., Firenze 7-10 nov. 1985, p.37-55
- CASTELLETTI L. & MADELLA M., 1994 - Appendice 3. *Preistoria Alpina* 27: 236 -238
- CASTELLETTI L. & MASPERO A., 1992 - Analisi di resti vegetali di Campo Ceresole del Vhò di Piadena e di altri siti neolitici padani. *Natura Bresciana* 27: 289-305
- CASTIGLIONI E. & COTTINI M., 1997 - Carotaggi dal fossato di drenaggio. In: Atti del Convegno di Chiasso, Archeologia della Regio Insubrica; dalla Preistoria all'Alto Medioevo, 5-6 ottobre 1996, p.224-225
- CORTI P., MONTAGNARI KOKELJ E., PETRUCCI G., RIEDEL A., ROTTOLI M., VISENTINI P. & VITRI S., 1998 - Siti umidi tardoneolitici: nuovi dati da Palù di Livenza (Friuli-Venezia Giulia). In: XIII U.I.S.P.P. Congress Proceedings, Forlì 8-14 September 1996, p.263-275. A.B.A.C.O.
- COSTANTINI L. & STANCANELLI M., 1994 - La preistoria agricola dell'Italia centro-meridionale: il contributo delle indagini archeobotaniche. *Origini* XVIII: 149-243
- DE GASPERI L. & STEFFÈ G., 1997 - Mostra "L'insediamento neolitico di Fornace Gattelli a Lugo di Romagna" (Lugoro 1996). *Archeologia dell'Emilia Romagna* I,2:191-193. Firenze
- EVETT D. & RENFREW J., 1971 - L'agricoltura neolitica italiana: una nota sui cereali. *Rivista di Scienze Preistoriche* 26: 403-409
- NISBET R., 1993 - Analisi archeobotaniche. *Sopr. Arch. Lomb., Notiziario* 1982: 15. Milano
- NISBET R., 1995 - I resti macrobotanici. *Monografie di Natura Bresciana* 22: 104-106
- PESSINA A. & ROTTOLI M., 1996 - New evidence on the earliest farming cultures in Northern Italy: archaeological and palaeobotanical data. *Porocilo o raziskovanju paleolitika, neolitika in eneolitika v Sloveniji* XXIII: 91-94. Ljubljana
- PIGNATELLI O. & ROTTOLI M., 1996 - Analisi archeobotaniche. *Quaderni di Archeologia del Veneto* XII: 113-118

		Sam	Fag	Val	LaV	Piz	Iso	Ost	Vhò	Fio	Lug	Cec	Alb	Chi
CEREALS														
<i>Hordeum vulgare s.l.</i>	barley	X	X	X	X	X	X	X	X		X	X	X	X
<i>Hordeum cfr. distichum</i>	two rows barley	X												
<i>Triticum dicoccum</i>	emmer	X	X	X		X	X				X			
<i>Triticum monococcum</i>	ein Korn	X	X	X					X		X			
<i>Triticum aestivum/durum</i>	naked wheat	X	X						X		X			
<i>Triticum cfr. spelta</i>	spelt	X												
<i>Triticum</i> sp.	Wheat,	X	X	X	X	X	X							
<i>Bromus</i> sp.	Taraxum (cultivated?)	X		X										
LEGUMINOSAE														
<i>Lens culinaris</i>	lentil	X												
<i>Pisum sativum</i>	pea	X									X			
<i>Vicia cfr. ervilia</i>	bitter vetch	X												
<i>Vicia cfr. faba</i>	broad	X												
<i>Vicia</i> sp.	vetch	X												
LEGUMINOSAE	pulses	X				X								
FRUIT														
<i>Corylus avellana</i>	hazelnut	X	X	X	X	X		X	X	X	X			
<i>Cornus mas</i>	cornelian	X									X			
<i>Cornus sanguinea</i>	dogwood fruit				X									
<i>Malus</i> sp.	apple	X									X			
<i>Quercus</i> sp.	acorns	X							X		X			
<i>Rubus agg. fruticosus</i>	blackberries	X									X			
<i>Sambucus ebulus</i>	dwarf fruit	X	X								X			
<i>Sambucus nigra/racemosa</i>	elder										X			
<i>Solanum dulcamara</i>	bitter sweet										X			
<i>Prunus agg. spinosa</i>	sloe										X			
<i>Prunus</i> sp.	plum	X									X			
<i>Vitis vinifera sylvestris</i>	grape	X				X					X			

Fig. 1 – Species cultivated and harvested in the Early Neolithic in Northern Italy.

Abbreviations of the sites: Sam) Sammardenchia; Fag) Fagnigola; Val) Valer, Azzano Decimo; LaV) La Vela, Trento; Piz) Pizzo, Bodio; Iso) Isolino, Varese; Ost) Ostiano Dugali Alti; Vhò) Vhò, Piadena; Fio) Fiorano; Lug) Lugo, Romagna; Cec) Cecima; Alb) Albinea; Chi) Chiozza, Scandiano. The relative bibliography is at the end of the text.