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Review of Agricultural Changes at Euphrates and Steppe Sites in the Mid-8th to the 6th Millennium BC.

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Abstract
Review of D. de Moulins, 1997. - *Agricultural Changes at Euphrates and Steppe Sites in the Mid-8th to the 6th Millennium BC.*

Disciplines
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RECENSIONS

D. de MOULINS, 1997. – Agricultural Changes at Euphrates and Steppe Sites in the Mid-8th to the 6th Millennium BC. BAR International Series 683. 192 p. Par Naomi F. MILLER.

The earliest human manipulation of vegetation or of particular plants, the origins of plant cultivation, the origins of plant domestication, and the origins of agriculture are conceptually separate "events." Fascination with the origins of agriculture has in practice led archaeologists and botanists to focus on the origins of plant domestication – the "point" at which human manipulation of plants changed individual crop species (mainly cereals and pulses in the Near East). *Agricultural Changes at Euphrates and Steppe Sites in the Mid-8th to the 6th Millennium BC* deals with the time period during which plant cultivation became transformed into agriculture, that is, when societies became dependent on domesticated plants and animals for their livelihood. It presents important new results of archaeobotanical work at three Pre-Pottery Neolithic sites, Cafer, Abu Hureyra, and El Kowm II-Caracol. Though well-intentioned, the book suffers from a number of avoidable problems.

The book appears to have been neither edited nor proofread. This circumstance has made it very difficult to evaluate the arguments presented in a dispassionate and logical way. Occasional mistakes would not be cause for concern, but the text is strewn with errors. To mention just a few : 1) there are many typographical errors. In a botanically oriented publication, it is disheartening to see, as on page 10, six misspelled plant names and two more on the following page; 2) at least one illustration is missing (fig. 3c), and many others have errors or are illegible; Cafer and Abu Hureyra, for example, are placed on the wrong side of the Euphrates; 3) most serious, the proofreading problem extends to the data charts – I refer the reader to sample 150 (p. 68) and the summary version (p. 72), where the number of cereal grains and number of cereal grain + chaff categories do not add up. It worries me that I can trust neither the words nor the numbers. If the reader cannot believe the numbers, what was the point in documenting the samples? In the context of so many errors, poor presentation of data would seem to be a minor flaw. But it can be a struggle to make sense of the illustrative tables and graphs.

De Moulins set herself a difficult task – integrating the archaeobotanical results of excavations led by different archaeologists who followed different sampling and flotation procedures. Fortunately, archaeobotanical data are fairly robust, so if the distribution of plant remains on a site has strong patterning, different methods will probably lead to similar results.

Even in antiquity the sites were in three distinct ecological settings – Abu Hureyra, on the Euphrates at the edge of the steppe, Cafer Höyük near the oak forest zone, and El Kowm II-Caracol in a dry steppe. The site with the longest sequence is Neolithic Abu Hureyra (7,600 BC to ca. 5,000 BC). Cafer overlaps with the earlier levels (7,400 BC to 6,600 BC), and El Kowm (5,800/5,600 BC) with the later ones (p. 169).

De Moulins sets up her discussion in terms of "intensification." For hunter-gatherers, intensification might mean using a wider range of resources, or the proportion of person-hours spent in food procurement. With agriculture, she suggests considering an increase in yield per unit of labor or per unit of land. Detailed discussions of her material and comparisons with previously published sites follow.

Despite the valiant efforts of Willem van Zeist, his colleagues, and a few other archaeobotanists, there is still such a paucity of archaeobotanical data from the PPNB that we can only welcome the data-filled discussion of Cafer, El Kowm, and especially Abu Hureyra. Let us assume that the patterns de Moulins has uncovered are real.

Cafer, like many other PPNB sites, has a relatively large number of pulses. Apparently de Moulins did not have access to the Çayönü final report, not published until 1994[1], but even the preliminary reports are detailed enough to show the similarity between those assemblages. At Cafer, "all the samples included a fair amount of wood charcoal" (p. 57). The high proportion of cereals and pistachio relative to non-food wild types might indicate that the food seeds represent accidentally charred material or crop-processing debris, as wood was readily available for fuel.

In contrast to Cafer, pulses (large-seeded legumes-members of the pea family) at Abu Hureyra are not a prominent part of the assemblage. Cereals, too, are relatively few in number. Rather, the small-seeded, clover-like legumes dominate until after the introduction of sheep and goat. De Moulins suggests they were "food collected for human or for animal consump-

1. VAN ZEIST and DE ROLLER, 1991/1992.

tion... (or) formed part of the technology of the day, a fertiliser or green manure" (pp. 93-94), so cultural practices differed from those at Cafer. The significance of green manure is that it would reflect intensification of land use.

But de Moulins does not propose a plausible mechanism relating fertilizer use to the archaeobotanical record. A more straightforward explanation for the differences between the Cafer and Abu Hureyra assemblages, however, starts with the relevant archaeological context : the material is burnt, and therefore many of the seeds could come from dung fuel. The most compelling argument against this for sites occupied before animal domestication is that dung would not have been deposited in settlements by wild animals. I have argued, however, that even in the Epipaleolithic, the Abu Hureyrans collected gazelle dung[2]. As the PPNB seems to have been a time of increasing animal manipulation, availability of animal dung for fuel would only have increased.

Thanks to its long sequence, Abu Hureyra is probably the most important excavated site for our understanding of the transition to farming, the subject of this book. De Moulins reports Andrew Moore's current thinking that Abu Hureyra may have been occupied nearly continuously between the Epipaleolithic and Neolithic (p. 91). One might expect the introduction of farming would change people's relationship to the land. Yet De Moulins shows that there is virtually no difference (except for the absence/presence of cultigens) between the Epipaleolithic and early PPNB plant assemblages. Indeed, "nearly all the wild species mentioned for the Epipalaeolithic were present in the early Neolithic levels" (p. 91). The next important subsistence shift at Abu Hureyra occurred at c. 6300 b.c.; in period 2A, most of the bones come from gazelle, and in 2B sheep and goat bones dominate the faunal assemblage. Here too, one might expect to see some corresponding shift in the plant remains. Yet de Moulins points out that the only clear change is the loss of wild wheat. Thus the Abu Hureyra evidence shows that the two great junctures in the development of agriculture, the beginning of plant cultivation and the beginning of animal domestication, did not "revolutionize" land use, or at least fuel-gathering practices. Rather, domesticated plants and animals were incorporated into existing modes of subsistence.

So, we may ask, when did agriculture actually change the landscape? The distribution of the small-seeded legumes may provide an answer (p. 94). The seeds of these clover-like plants, which herbivores eat preferentially, begin to decline toward the end of phase 2B. By the pottery Neolithic, phase 2C, they had nearly disappeared. If, as I believe, the seed assemblage comes from animal food by way of dung fuel burning, it appears that permanent human impact on the landscape is archaeobotanically invisible at Abu Hureyra until the end of the PPNB, when over-grazing by flocks of sheep and goat altered the composition of the vegetation.

Turning to El Kowm, de Moulins reluctantly admits that the remains could come from dung, mainly because there is not an obvious source of wood; perhaps the samples did not contain charcoal. Even so, the El Kowm seed assemblage is not that different from the others she examines; she suggests that here, too, the seeds could come from crop-processing.

De Moulins emphasizes some interpretations of archaeobotanical remains over others. Because she is interested in the development of agriculture, she reports and reads the archaeobotanical data accordingly. She considers various possible explanations for the charred seeds she analyzes, and concludes that the ultimate source of most of her seed assemblage is crop-processing debris, accidentally or intentionally put in fires. Consequently, she makes several assumptions with which I disagree. First, she suggests that the bulk of material is seeds, thereby ignoring wood charcoal (p. 42). Second, she thinks most of the seeds come from crop-processing, and third, she seems to think that the assemblages represent "activities linked to plants" (p. 6) rather than activities linked to the burning of plants. Given that approach, it is no wonder that she discounts the importance of dung fuel as a source of charred seeds in the archaeobotanical record. Yet, as I have suggested above, some of her results are indeed consistent with the burning of dung.

One of the main justifications for a book like this is the data; it is unusual to have so much in one volume. As is true of much archaeobotanical work, many of the samples are disappointingly small (through no fault of the author, it should be pointed out). In view of the significant results de Moulins was able to extract from her study of the material, it is a real shame that she did not succeed in presenting them effectively.

2. MILLER, 1996; see also HILLMAN *et al.*, 1997 ; MILLER, 1997.

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