

Book Review

## A Review of ‘Crop Protection in Medieval Agriculture. Studies in Pre-Modern Organic Agriculture’

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### Crop Protection in Medieval Agriculture. Studies in Pre-Modern Organic Agriculture

Zadoks JC

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*“Tutto quello che fan gli uomini adesso è cronaca, diluita in migliaia di articoli, domani sarà storia, e di un migliaio di nomi, 999 saran perduti”* [1] (transl.: All that human beings now do is news, diluted in thousands of articles; tomorrow it will be history, and, of thousand names, 999 will be lost).

This brilliant and original book by Jan Zadoks, a renowned, prolific and polyglot Dutch plant epidemiologist [2], provides a systematic, learned and well-structured overview of our understanding of medieval crop protection in Europe. This is not the first book in which Zadoks looks at crop protection from a wider perspective (e.g. [3]); the long-term experience of the author in research, teaching and scholarship transpires throughout. The book is peppered with well-chosen verbatim quotes from the examined original sources and is seasoned with pictures (both original drawings and author’s photos with examples of crop pests mentioned in the book). The pictures are not just there for embellishment, we can learn a lot from examining them, e.g. when Zadoks comments that (p. 51) *“frequently, the cereal crop is about as tall as harvesters are, say 1.60 m. Medieval people were, on average, shorter than people today and, at the same time, wheat and rye were taller than today”*.

There are excellent short summaries at the beginning of each chapter. Also, the book is closed by a helpful, brief recapitulation of the contents of each chapter, together with well-prepared and comprehensive indexes. At a time when:

- i) scientific publications are growing at such a pace that the overflow in scientific information might be leading to a decline in overall scientific quality and public trust in science [4–7];
- ii) there is often, unfortunately, little interest of scientists in the history of their own discipline [8];
- iii) nonetheless, historical research is flourishing (e.g. [9–11]), including many historical studies of agriculturally (and environmentally) related topics (e.g. [12–18];
- iv) there are however few incentives for scientists to write books rather than papers (or emails) [19]; and
- v) most scientific books are so expensive that few students and citizens can actually afford to buy them [20,21];

Zadoks reminds us that crafting an affordable e-book, looking at historical times, can be enlightening in many ways.

First of all, by studying history we can learn not only about the past, but also about ourselves, e.g. in the comparison between medieval agriculture and modern organic agriculture. Second, it can be illuminating to stop, for a while, our more and more specialized endeavours for reflecting on a broad canvas of the centuries that led to the present times. Third, writing a book provides the room to investigate an issue with a broader perspective than what a literature review paper allows.

## Personal Recollections

Indeed, personal recollections, often shunned in peer-reviewed papers, add value to the distillation of the literature and sources. For example, Zadoks reports how, (p. 54) “*in Amazonian Peru, 1974, [he] stumbled upon a local rice variety, tall and leafy, that produced a fair yield notwithstanding a moderate attack by foliar blast due to the blast fungus, whereas nearby modern high-yielding varieties had been killed by the fungus*”.

Often, Zadoks’ recollections corroborate an inference from the studied treatises or provide evidence that medieval practices carried on until relatively recent days, e.g. when reporting that (p. 135) “*wheat sown among the olive trees was of common occurrence from antiquity until recently. In the 1950s (Zadoks) saw many such fields in South Spain. There, mulberry trees (to feed the silk worms) were planted in rows bordering the wheat fields*”.

In another example about mixed cropping of cereals, Zadoks relates (p. 137) that, already in 1766, Tozetti noticed reduced rust infestations of wheat in wheat-rye and wheat-vetch mixtures during a rust outbreak in Tuscany.

## Medieval Agriculture vs. Modern Organic Agriculture

These extracts lead us to a core question of the book: whether (p. 217) “*a comparison of medieval agriculture and crop protection with their modern organic counterparts [is] sensible*”. Zadoks finds various reasons to believe so. For example, in both cases (p. 14) “*the emphasis [is] on prevention, . . . and preventive methods [are] embedded in general crop husbandry*”.

Zadoks argues that (p. 43) “*pre-modern agriculture was ‘organic agriculture’, in today’s legal sense*” but also that (p. 224) “*the natural products and botanicals recommended in pre-modern times, being broad-spectrum pesticides, supposedly had the same deleterious effects on beneficials as their modern synthetic counterparts [allowed in organic agriculture]*”. However, the author also finds arguments for a discontinuity, (p. 223) inasmuch as “*modern organic farms [have] yields incomparably higher than those of medieval farms*”.

Today, (organic) food can be easily moved over long-distances to satisfy consumers [22], so that we struggle to imagine what it meant when this was not the case, particularly when far away from the sea (p. 223): “*Medieval farming lacked many stabilising inputs, and this posed serious problems. Buying food when yields were deficient was nearly as difficult as selling produce when it was abundant because the market system did not function well, mainly due to the awkward overland transportation facilities*”. This meant that famine was always looming, but also implied reduced chances of long-distance movement of new plant pests and pathogens, which is now an increasing problem worldwide due to the massive inter- and intra-continental trade of plant commodities [23]. European Medieval farmers did not have the luxury of all the crops that have later

been moved from America to the Old World, but they also did not have to cope with their associated diseases (unless they were already present in Europe on other crops).

## A Holistic Approach Aware of Its Limitations

Studying medieval crop protection and agriculture teaches us that the holistic perspective of organic farming has a long tradition [24]: (p. 16) “*Singling ‘crop protection’ out, separating it from its agronomical context, is an anachronism, a sequel of the analytical approach by the natural sciences in the 20<sup>th</sup> century*”. The approach of the book is also holistic, ranging from storage, weeds and crop mixtures to allelopathy, habitat fragmentation and soil fatigue.

The author is aware of the (i) the risks involved in comparisons of ancient and modern times, (ii) the problems inherent in generalizations for different regions and (iii) the often inconclusive nature of the examined evidence. Zadoks emphasises that, in medieval times, (p. 206) “*the interventive side of crop protection abounded with superstition, magic, and false concepts*”. He also recognizes that, although “*from a present-day viewpoint the scientific status of pre-modern crop protection is modest at best, . . . this judgment does not imply that pre-modern crop protection was without a logic of its own*”. Indeed, modern farmers might still sometimes be rather medieval in their thinking: (p. 233) “*In recent times I have seen cases where, for the treating farmer, the psychological effect of a treatment was more important than the crop protection effect*”. On the whole, (p. 199) “*we might call the medieval approach to pest control a prophylactic or precautionary control. The grower took his precautions and then he had to sit, wait, and pray*”.

This precautionary approach (which is still in use nowadays in risk assessment) was e.g. backed by the wide variety of cultivated crop landraces: (p. 54) “*In the old days farmers went for yield stability rather than for top yields. Old varieties had a certain ‘rusticity’, which implied that they did not produce top yields but produced an acceptable yield under a wide range of environmental stresses of abiotic and biotic nature*”. The importance of old varieties for sustainable agriculture is still recognized, despite some modern misconceptions [25]. We can only try to imagine the slow but widespread and unrelenting networks of seed exchange among medieval farmers, which led to an unmatched diversity of local cultivars. Many of these are now unfortunately lost, despite the value they would have had for adaptation to the expected rapidly changing environmental conditions [26–29]. A similar process took place for the knowledge associated with ancient varieties: (p. 205) “*Old agricultural knowledge was rather like a network originating from many sources with countless deletions and additions*”.

What can we bring home from studying medieval agriculture? Many things, and I recommend making time to read this book in order to discover them, without spoiling further your reading. But may I close with one fur-

ther quote, to whet the appetite with some wise words by Zadoks on the classical pest tetrahedron (p. 218):

*“The original tetrahedron was published in 1979 [by 30]]. The design is characteristic for the optimism of the last quarter of the 20<sup>th</sup> century, an outcrop of the positivist tradition of the 19<sup>th</sup> century: man on top of everything. It represents man as the great maker, able to solve any problem. In retrospect the figure is emblematic for the ‘makeable society’, the idea of ‘engineering the society’, an idea which, in a way, led to the disaster denounced in Rachel Carson’s ‘Silent Spring’. A medieval thinker would never have placed man on top in this way, considering it totally unacceptable hubris”.*

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## Disclaimer

The positions and opinions presented in this article are those of the authors alone and are not intended to represent the views or scientific works of EFSA.

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Marco Pautasso

Animal & Plant Health Unit, European Food Safety Authority, Parma, Italy; E-Mail: [marpauta@gmail.com](mailto:marpauta@gmail.com)

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