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This book makes the connection between European agricultural history and the experience of developing countries, and shows how fascinating, informative and revealing the linkage can be.

Dr Paul Brassley, *Centre for Rural Policy Research,
University of Exeter, UK*

Too few academics attempt to fill the gaps between disciplines. Jonathan Harwood sheds light on the potential for a second generation Green Revolution to improve the lives of small farmers in developing countries by appealing to the history of plant breeding in nineteenth and early twentieth century Europe.

Carrie A. Meyer, *Associate Professor of Economics,
George Mason University, USA*





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Europe's Green Revolution

How poverty and hunger in the developing world can be alleviated is an issue which has preoccupied development experts and politicians since 1945. Success, however, has been limited. The well-known post-war 'Green Revolution' programmes managed to increase grain production substantially in Latin America and South Asia, but by 1970 critics were arguing that they had made little impact upon rural poverty because the agricultural technology introduced was better suited to large commercial farms than to small subsistence ones. From the 1970s onward it seemed as though this criticism would bear fruit as experts developed a number of new approaches to cultivation which were tailored to the needs of peasant farmers. But levels of rural poverty and malnutrition remain very high, prompting major development agencies in recent years to urge that more attention be given to the plight of small farmers.

From a European perspective this persistent failure to develop a technology suitable for smallholders is puzzling. From the late nineteenth century, for example, various European countries also underwent 'green revolutions' designed to boost agricultural productivity, and several states established plant-breeding stations whose express purpose was to serve the needs of peasant farmers. Some of these stations were very successful, making a substantial impact upon the regional economies they served.

Remarkably, however, this European episode is virtually unknown among development experts today. Indeed, since 1945 the development industry, despite struggling to make an impact upon poverty, has displayed an astonishing lack of interest in the success or failure of past development projects. After telling the story of Europe's peasant-friendly approach to agriculture and tracing the history of Green Revolutions since 1945, this book argues that state-funded agricultural research has the potential to make a large impact upon poverty in the developing world but is unlikely to do so as long as the development industry continues to ignore its past.

Jonathan Harwood is Professor of the History of Science and Technology at the University of Manchester, UK.





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Edited by Lars Magnusson

Uppsala University, Sweden

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The rise and fall of peasant-friendly plant breeding
Jonathan Harwood





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Europe's Green Revolution

The rise and fall of peasant-friendly plant breeding

Jonathan Harwood

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Preface

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The path leading to this book has been rather long and winding. During the 1980s my work was focused mainly upon the history of genetics, but through a collaborative project with the sociologist R. D. Whitley, and my colleague, John V. Pickstone, I became interested as well in the general question of the relations between science and technology. Subsequently the agricultural economist Colin Thirtle and I secured funding for a study of the science–technology relation in British plant breeding. The series of papers by Paolo Palladino which emerged from that project stimulated my interest in breeding yet further so that during the 1990s my interests gradually shifted toward agriculture, and I began to explore archival sources for a history of plant breeding in Germany. The book that I then envisaged was a kind of historical sociology of applied science which would analyse the ways in which German academic plant breeding had been shaped by different kinds of institutional context.

While a book along those lines did eventually appear (Harwood 2005), it didn't have much to say about plant breeding. And that was largely because my ideas about the history of plant breeding had by then been radically revised as a result of my involvement in a 2003 conference initiated by my colleague in international relations, Inderjeet Parmar. The conference was entitled 'Foundations of Globalisation', and one of its sessions was devoted to the role of US foundations in the Green Revolution. In order to line up speakers for the session, I read through the existing secondary literature and was struck by the parallels between agricultural transformation in Western Europe *c.*1900 and that promoted by Green Revolution (GR) programmes in the developing world after 1945. Equally significant, however, were the differences. For whereas some German plant-breeding stations established around 1900 were quite successful in assisting smallholder agriculture, a recurring criticism of GR programmes was that they failed to do so. At that point I began to look at the history of plant breeding with very different eyes, and the book I decided to write had to be a comparative one.

In the nine chapters that follow I am trying to do three things. One of them is to contribute to the emerging literature on the history of plant breeding. Over the last 10 to 20 years a series of works has begun to appear which does much more than simply recount the history of this body of practices (e.g. Bonneuil and Thomas 2009; Fitzgerald 1990; Kloppenburg 1988 and 2004; Maat 2001; Moser





1 2003; Palladino 2002; Paul and Kimmelman 1988; Wieland 2004). Instead these
2 authors are connecting breeding in interesting ways to a range of more general
3 issues. Arguably this literature is also important because it provides us with a
4 perspective from which to better understand and assess current controversies
5 surrounding the genetic modification of organisms and the patenting of life
6 forms. Apart from just presenting new empirical material, however, what I have
7 tried to do below is to move beyond the existing histories in two respects: to
8 look more closely at the process by which breeders have come to serve particu-
9 lar constituencies and to analyse the changing relations between private- and
10 public-sector breeding.

11 My second aim is to present an enlarged and revised history of the Green
12 Revolution. ‘Enlarged’ because I locate the conventionally defined post-1945
13 Revolution on a longer trajectory which had already begun by the late nineteenth
14 century with ‘Europe’s Green Revolution’. Furthermore, in contrast with most of
15 the existing historiography, I devote more attention to later phases in the history
16 of the Revolution, namely from the 1970s into the present. The advantage in
17 stretching out the Revolution to cover this extended period is that the patterned
18 nature of its history becomes more evident. Drawing upon the work of others, I
19 argue that this long Revolution has gone through alternating phases in which its
20 central concern has shifted between boosting production and securing social
21 equity.

22 Third, I want to show how the history of Green Revolutions might usefully
23 inform development policy. While the more general idea that history can inform
24 policy has been around for decades, it is only quite recently that work arguing
25 the policy relevance of the history of development has begun to appear (e.g.
26 Chang 2002 and 2009; Bayly *et al.* 2011). The basic idea is that institutions have
27 something to gain from reflecting upon their experience. That point seems
28 obvious, but if the analysis that follows is correct, the development industry’s
29 lack of interest in its own past has been astonishing. Moreover, the need to ‘look
30 back’ before taking decisions that will shape the future has gained urgency since
31 the 1980s through the dominance in many countries of neo-liberal political
32 thought. That markets should routinely be given preference to state action,
33 however – not least in development policy – seems to me to be grounded far
34 more in ideology than in the analysis of past action and its consequences. There
35 is a great deal at stake here, and it is important that those of us who know some-
36 thing about the past should speak up.

37 Finally, in order to forestall a possible misunderstanding, I should make my
38 position clear at the outset. On reading a draft chapter (in which I criticized the
39 Green Revolution for failing to aid smallholders), one agricultural economist
40 wrote back annoyed, citing the big impact of the Revolution’s high-yielding
41 plant varieties upon production. ‘You people obviously prefer mass starvation’,
42 he complained, dismissing critics of the Revolution as ‘Luddites’. Although he
43 misunderstood my argument, one can perhaps understand why he did so. For
44 there are, indeed, some Luddites about: critics of quasi-romantic inclination who
45 attack the technology central to industrial agriculture for poisoning our food,





xvi Preface

contaminating the environment, and fatally undermining the family farm. For	1
them the solution is seen to lie, not in improved technology, but in indigenous	2
knowledge and 'traditional' cultivation practices. On the other hand there are	3
many, like my critic, who champion the 'modern' agricultural science underpin-	4
ning the Green Revolution as virtually the only practical way to stave off hunger	5
and poverty in the developing world. Taking my cue from the practitioners of	6
peasant-friendly technical innovation, however, it seems to me that both of these	7
camp are mistaken because their vision is exclusive. They throw the baby out	8
with the bathwater. The most promising solutions to rural hunger and poverty –	9
whether one looks at Europe around 1900 or at late twentieth century peasant-	10
friendly innovation for the global South – are instead those that are synthetic:	11
they combine the methods of science and technology with the best that indigen-	12
ous knowledge and practice have to offer. That is hardly a Luddite stance. It	13
is instead an argument in favour of an <i>appropriate</i> technology, one that takes	14
the diverse needs and circumstances of its users – above all, small farmers –	15
seriously rather than insisting that one size fits all.	16
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By far the most important location for my work over the last ten years or so, however, has been the Max-Planck Institute for the History of Science in Berlin. This remarkable institution has provided not only a physical base for my work, with access to the city's libraries and archives, but just as importantly an intellectual home. With its large number of resident scholars, steady stream of visitors from abroad, numerous seminars and workshops, and superb library, it offers an unparalleled resource. Several of the library staff were exceptionally helpful, in particular Ellen Garske, Matthias Schwerdt and Ruth Kessentini. That I enjoyed the privilege of working at the Institute at all, of course, was thanks to the support of Lorraine Daston, Veronika Lipphardt and especially Hans-Jörg Rheinberger in whose department I was a visiting scholar on many occasions.

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xviii *Acknowledgements*

was fortunate, therefore, to be able to correspond with Salvatore Ceccarelli, David Cleveland and Shawn McGuire.

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