Darwinian Agriculture: How Understanding Evolution Can Improve Agriculture

R. Ford Denison
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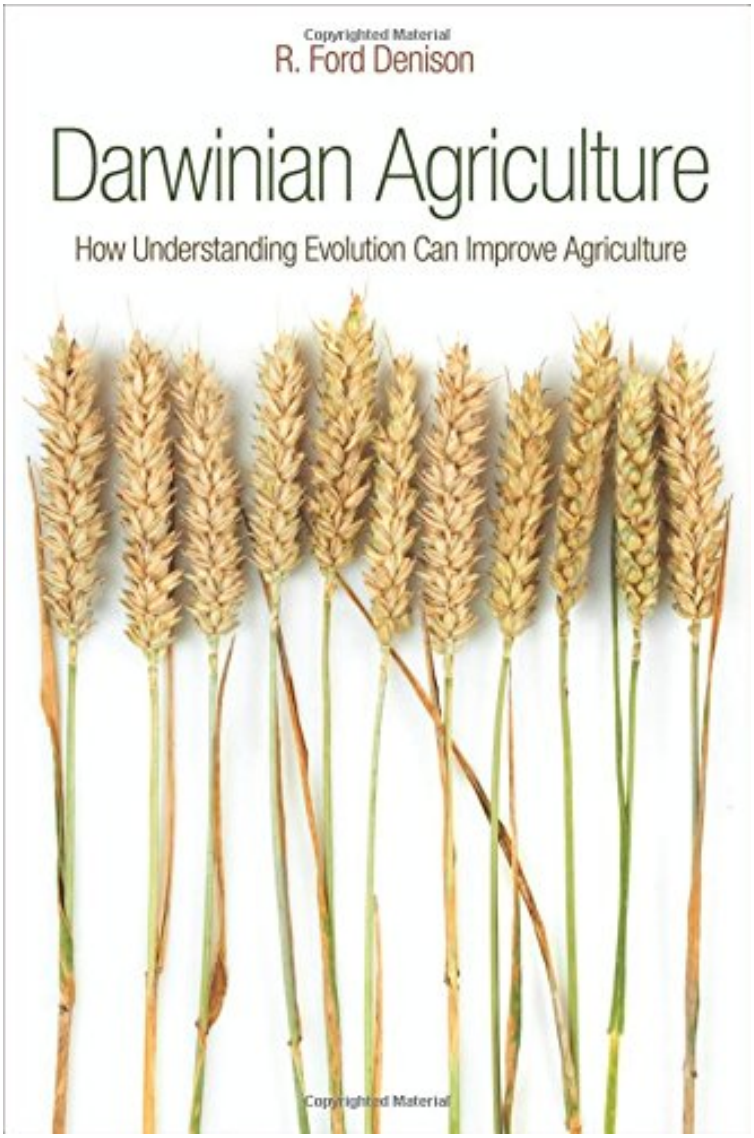

#1317585 in Books Denison R Ford 2016-08-16 2016-08-16Original language:EnglishPDF # 1 9.20 x .68 x 6.10l, .0 #File Name: 0691173761272 pagesDarwinian Agriculture How Understanding Evolution Can Improve Agriculture | File size: 41.Mb

R. Ford Denison : Darwinian Agriculture: How Understanding Evolution Can Improve Agriculture before purchasing it in order to gage whether or not it would be worth my time, and all praised Darwinian Agriculture: How Understanding Evolution Can Improve Agriculture:

2 of 2 people found the following review helpful. very good readingBy Anthony MorrisI enjoyed this book. I have an interest in agriculture and in how we can improve it. This book gives a great overview of some of the problems in agriculture and explains how nature and man are sometimes at cross-purposes.Unfortunately the book can be a little repetitive.2 of 2 people found the following review helpful. A useful book for a studentBy MayThis book was very interesting. It's especially useful if you're looking for sources since this author has many. Personally I was not very fond of his writing style, but he provides the reader with a lot of useful examples and he certainly gets his message across.2 of 2 people found the following review helpful. Thoughtful and expert presentation on evolutionary theory helping with agricultural solutionsBy Algernop KriegerThis book is one very much worth reading for anyone interested in the future of feeding people. It might not please anyone mindlessly dedicated to one easy solution or thinking that certain approaches are foolish or evil (both biotechnology approaches and total imitation of nature get strongly criticized, but neither is dismissed entirely, either), but the book convincingly presents an argument that evolutionary theory has a lot to contribute in how we look at agricultural solutions, no matter the political angles taken or the pet cause wanting to be promoted.Denisons explanations are clear and thoughtful, and he keeps the content fairly approachable for anyone interested in the topic, not just academics (although if one is an academic, there are plenty of references to read for greater detail). He also has just the right amounts of confidence and humilityhe gives his hypothesis of three principles (or two and an opinion) and his evidence, but he honestly presents objections and possible counter-examples and admits he could be wrong, even if he thinks hes right. In other words, he comes across like a scientist, which is not common enough in the genre of food, agriculture, and environmental writing.I particularly appreciated what Denison had to say about the benefits of diversity in the system (the principle that was more his opinion rather than a hypothesis forming a principle), even if that means backing off of maximizing yield all the time. I come from a different academic direction from Denison, but arrive at much the same conclusion on this topic (diversity is a strong concept when modeling resilience in economics as well as ecology). Whatever solutions one is proposing, some room should be left for bet-hedgingnot mindlessly done, of course, but still encouraging a vibrant mix in how things are done and what models we embrace, as a way of creating wide-ranging pools of knowledge and a hedge for a number of contingencies.I did find some of the analysis slightly off on rare occasion, once moving away from Denisons main knowledge-base. He clearly knows a great deal about developing crops and the related evolution and ecology, but was less thorough and reliable on other food system topics that fall more into the realm of economics than yields. However, any objection I might have is minor and he wasnt focused on those areas, but on exactly where his expertise lies. Thus, its not quite perfect, and its not exactly an entertaining read all the way through, but it is a worthwhile one that will make the reader think and probably teach him or her a few things about our crops. Highly recommended.

As human populations grow and resources are depleted, agriculture will need to use land, water, and other resources more efficiently and without sacrificing long-term sustainability. Darwinian Agriculture presents an entirely new approach to these challenges, one that draws on the principles of evolution and natural selection. R. Ford Denison shows how both biotechnology and traditional plant breeding can use Darwinian insights to identify promising routes for crop genetic improvement and avoid costly dead ends. Denison explains why plant traits that have been genetically optimized by individual selection--such as photosynthesis and drought tolerance--are bad candidates for genetic improvement. Traits like plant height and leaf angle, which determine the collective performance of plant communities, offer more room for improvement. Agriculturalists can also benefit from more sophisticated comparisons among natural communities and from the study of wild species in the landscapes where they evolved. Darwinian Agriculture reveals why it is sometimes better to slow or even reverse evolutionary trends when they are inconsistent with our present goals, and how we can glean new ideas from natural selection's marvelous innovations in wild species.

"Darwinian Agriculture offers an engaging and bold explanation of why agricultural research must take better advantage of insights from evolutionary biology."--Allison A. Snow, Science"Darwinian Agriculture shows just how much plant breeding and biotechnology can learn from evolutionary biology, and takes an honest look at agricultural techniques from genetic engineering to organic farming."--Biologist"Denison's book begins with a broadly accessible introduction to key concepts of evolution and sustainable agriculture, drawing the reader in with a blend of good storytelling, sound science, and fascinating examples of natural parallels to the agricultural system. . . . Even readers who begin the book with little understanding of evolution can finish it with an appreciation of how current research applies evolutionary theory to advance agriculture."--Choice"This book is a rich source of information for evolutionary biologists, biotechnologists and agriculturalists. It illustrates important evolutionary principles in an accessible way, using the farm of brother Tom as a recurrent tangible example. Evolutionary concepts, such as kin selection and relatedness are explained clearly, and illustrated with many examples that can be used for teaching. I can recommend this book to all students of evolutionary biology and ecology who are not afraid of applications. In fact, I may want to recommend it even more strongly to all those researchers, institutes and companies whose research aim it

is to face the challenge of a growing world population that needs to be fed on a planet on which the climate is rapidly changing. Denison's arguments are convincing and we as humans may be missing out on a bright future if we ignore this book."--Duur K. Aanen, Evolution"Darwinian Agriculture provides an interesting and passionate but rather personal perspective that certainly challenges us to think a lot harder about what eco-evolutionary principles might have to offer agriculture (and vice versa), and it will hopefully stimulate a lot more scientists to conduct research across the agroecological interface."--Peter H. Thrall, Evolutionary Applications"This is an extremely interesting and provocative book and written in a very engaging way. . . . It is clear what Denison thinks about the topics he raises but he also brings in the opinion and experiments of others to provide breadth of examples and case studies. It is an ideal book for a graduate seminar or undergraduate capstone course. . . . If you're only going to buy one hard cover book this year, this should be it. By the time you're finished, the page margins will be filled with annotations!"--Marshall D. Sundberg, Plant Science Bulletin"This volume is yet another winner from Princeton. . . . Although I have known the author for several years, I had no idea of the depth of his knowledge and amount of thought he has given to the topics covered in this book . . . The fact that reading this book kept me fully occupied on a 13 hour flight is a testimony to its interesting contents."--Janet Sprent, Bulletin of the British Ecological Society"Above all, Denison's book makes farming seem like the greatest show on earth and the most exciting game in town. Everyone reading it will want to become a farmer!"--Stanley Shostak, European Legacy"Although 768 pages long, Hodges' Alan Turing: The Enigma is extremely readable."--Andrew Holleran, Gay Lesbian "Darwinian Agriculture seems to provide important contributions for researchers as well as other experts and stakeholders in fields like agronomy, animal husbandry, breeding, pest control and nutrition. Moreover, this book also provides valuable insights for economists who have an interest in agriculture, ecology, and last but not least economic theory."--Alfons Balmann, Journal of BioeconomicsFrom the Back Cover"Darwinian Agriculture is a very important contribution to our understanding of the links between nature and agriculture, and to the future of our human race. Denison underpins his arguments with an incredible wealth of insight and knowledge about plants, animals, physics, chemistry, biology, and ecology. The depth and breadth of scholarship embodied in this book is stunning. I know of nothing else like it."--Kenneth G. Cassman, University of Nebraska"I found this book to be tremendously interesting and thought-provoking. Darwinian Agriculture should be read by everyone interested in increasing agricultural production in a sustainable way--from biotechnologists to agronomists, and everyone in between."--Jay A. Rosenheim, University of California, DavisAbout the AuthorR. Ford Denison is adjunct professor of ecology, evolution, and behavior at the University of Minnesota and taught crop ecology at the University of California, Davis.