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## Supplemental Spreadsheets, PowerPoint Files and Other Class Materials

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***Agricultural Production Economics (Second Edition);  
Applied Microeconomics: Consumption, Production and Markets;  
and Economics of Food and Agriculture, (Third Edition)***  
**Supplemental Spreadsheets, PowerPoint Files and Other Class Materials**

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***Staff Paper 490***

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Staff Papers are published without formal departmental review. Opinions expressed are those of the authors and may not represent those of the Kentucky Agricultural Experiment Station. David L. Debertin is an emeritus professor of agricultural economics at the University of Kentucky. Contact Dr. Debertin at [ddeberty@uky.edu](mailto:ddeberti@uky.edu)

## ***Abstract***

*This publication contains a series of links containing spreadsheets, PowerPoints and other materials that should be useful for students and instructors using the books “Agricultural Production Economics (Second Edition)”;* *Applied Microeconomics: Consumption Production and Markets;* *and Economics of Food and Agriculture (third Edition).* *Links for free pdf downloads of the books as well as sources for print copies are also included.*

Key words: microeconomics, applied microeconomics; production economics, agricultural production economics, production agriculture, agricultural production, consumption economics, undergraduate teaching, graduate teaching.

JEL codes: A22, A23, A31, Q12, Q11, Q18, D11, D21, D24, L11

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***Agricultural Production Economics (Second Edition);  
Applied Microeconomics: Consumption, Production and Markets;  
and Economics of Food and Agriculture, (Third Edition)  
Supplemental Spreadsheets, Power Points and Other Class Materials***

***Agricultural Production Economics (Second Edition, 2012)***

**David L. Debertain**

Agricultural Production Economics (Second Edition, Amazon Createspace 2012) is a revised edition of the Textbook Agricultural Production Economics published by Macmillan in 1986 (ISBN 0-02-328060-3). This is intended primarily for adoption at the beginning graduate level although a few institutions are using this also at the upper-division undergraduate level.

The beauty of the linkage at the three levels is that Agricultural Production Economics uses a lot of the same or closely-related numerical examples that students who have used my Applied Economics book (see page 7) will have already seen at the upper-division undergraduate level. There is a real advantage to having the same author writing the materials at all different levels. Agricultural Production Economics is a **FREE** e-download at <http://purl.umn.edu/158319>

Amazon (**createspace**) also prints bound paper copies of the book at a nominal price (about \$18) for classroom use. Again, students can download the file, but I recommend a paper copy for serious study.

[http://www.amazon.com/Agricultural-Production-Economics-Second-Edition/dp/1469960648/ref=sr\\_1\\_1?ie=UTF8&qid=1390834585&sr=8-1&keywords=debertain](http://www.amazon.com/Agricultural-Production-Economics-Second-Edition/dp/1469960648/ref=sr_1_1?ie=UTF8&qid=1390834585&sr=8-1&keywords=debertain)

The 428 page book can also be ordered through college bookstores using the following ISBN numbers: ISBN-13 978-1469960647, or ISBN-10 1469960648

A companion 100-page color book Agricultural Production Economics (The Art of Production Theory) is also a free pdf download at <http://purl.umn.edu/158320>

For instructors who want a color PowerPoint file version of all of these figures from Agricultural Production Economics for display in the classroom, this link provides a free electronic download to all of them in ppt format

<http://www.uky.edu/~deberti/colorbookppt.ppt>

A bound 100-pp. printed **createspace** copy is also available at a nominal cost (about \$25).

[http://www.amazon.com/Agricultural-Production-Economics-The-Theory/dp/1470129264/ref=sr\\_1\\_2?ie=UTF8&qid=1390834585&sr=8-2&keywords=debertin](http://www.amazon.com/Agricultural-Production-Economics-The-Theory/dp/1470129264/ref=sr_1_2?ie=UTF8&qid=1390834585&sr=8-2&keywords=debertin)

The companion book can also be ordered through bookstores under the following ISBN numbers: ISBN- 13: 978-1470129262, or ISBN- 10: 1470129264

**Journal articles, spreadsheets, SAS and other files connected to *Agricultural Production Economics Second Edition* suitable for classroom and student use:**

The article that started it all:

“Developing Realistic Production Functions for Use in Undergraduate Classes.” *S. Journ. Agr. Econ* 17:2, 1985, 207-214.

free download at <http://purl.umn.edu/29983>

This article was written prior to the 1986 Macmillan edition of the book. The SAS code in this article still works with only minor changes. If you want to do the same thing using a spreadsheet, download

<http://www.uky.edu/~deberti/ap/SJAE.xlsx>

Matrix multiplication and inversion in spreadsheets (used in 1985 article)

<http://www.uky.edu/~deberti/ap/mat.xlsx>

Simple MPP and APP using basic model from 1985 article

<http://www.uky.edu/~deberti/ap/mppapp.xlsx>

Basic single input production spreadsheet (Chapter 2)

<http://www.uky.edu/~deberti/ap/single.xlsx>

Complete single input production spreadsheet (Chapter 2, 3)

<http://www.uky.edu/~deberti/ap/main.xlsx>

Deriving AC and MC curves (Chapter 4)

<http://www.uky.edu/~deberti/ap/acmccurves.xlsx>

Single-input profit from the input and output side (Chapter 3, 4)

<http://www.uky.edu/~deberti/ap/profitinputoutput.xls>

Production and cost—a simple power-production function (Chapters 3, 4, 10)

<http://www.uky.edu/~deberti/ap/prodcostpower.xlsx>

Basic production and cost (Chapters 3, 4)

<http://www.uky.edu/~deberti/ap/prodcost.xlsx>

Figure 5.1 from the book (Chapter 5)

<http://www.uky.edu/~deberti/ap/fig51.xlsx>

General program for doing unconstrained max, min and saddles (Chapter 6)

<http://www.uky.edu/~deberti/ap/unconstrainedg.xlsx>

Minimum (Chapter 6)

<http://www.uky.edu/~deberti/ap/min.xlsx>

Maximum (Chapter 6)

<http://www.uky.edu/~deberti/ap/max.xlsx>

Saddle without cross term (Chapter 6)

<http://www.uky.edu/~deberti/ap/saddle.xlsx>

Saddle point with cross term (Chapter 6)

<http://www.uky.edu/~deberti/ap/saddle1.xlsx>

“Bradfordian” polynomial (Figure 6.2, Chapter 6)

<http://www.uky.edu/~deberti/ap/poly.xlsx>

Polynomial production function from “journ” (Chapter 7, see below)

<http://www.uky.edu/~deberti/ap/journ3d.xlsx>

Polynomial production function from “journ” version 2 (Chapter 7, see below)

<http://www.uky.edu/~deberti/ap/journ3D2.xlsx>

Basic 3D profit (Chapters 7, 8)

<http://www.uky.edu/~deberti/ap/basic3Dprofit.xlsx>

Pseudo scale line drawing in XLSX file (Chapters 5, 7, 8)

<http://www.uky.edu/~deberti/ap/pslinesa.xlsx>

Cobb Douglas with pseudo scale lines (Chapter 10)

<http://www.uky.edu/~deberti/ap/cdpseudo.xlsx>

Small LP from book solved on spreadsheet (Chapter 22)

<http://www.uky.edu/~deberti/ap/lpsimple.xlsx>

Harvard Graphics (now PowerPoint) software (journ) featured in “An Animated Instructional Model for Teaching Production Economics with computer Graphics. Am. Jour. Agr. Econ. 1993, May, 1993. 485-491 (Chapters 5, 7, 8)

<http://www.uky.edu/~deberti/ap/journ.ppt>

A basic 3D graphics program in SAS. Copy and paste each program into PC SAS editor, then run (Chapters 6, 7, 8)

<http://www.uky.edu/~deberti/ap/graph10.txt>

1985 SJAЕ article SAS code edited

<http://www.uky.edu/~deberti/ap/SJAESAS.txt>

## **Applied Microeconomics: Consumption, Production and Markets**

**David L. Debertin**

This is a 2012 microeconomic theory book designed for upper-division undergraduate students in economics and agricultural economics. A free pdf download of the entire book is at <http://purl.umn.edu/158321>

Bound **createspace** paper copies of the book are available at a nominal price (about \$25) for classroom use.

[http://www.amazon.com/Applied-Microeconomics-Consumption-Production-Markets/dp/1475244347/ref=sr\\_1\\_5?ie=UTF8&qid=1390834118&sr=8-5&keywords=debertin](http://www.amazon.com/Applied-Microeconomics-Consumption-Production-Markets/dp/1475244347/ref=sr_1_5?ie=UTF8&qid=1390834118&sr=8-5&keywords=debertin)

Printed, bound paper copies book can also be ordered through college bookstores using the following ISBN numbers:

ISBN-13: 978-1475244342, or ISBN-10: 1475244347

Basic introductory college courses in microeconomics and differential calculus are the assumed prerequisites. The last, tenth, chapter of the book reviews some mathematical principles basic to the other chapters. All of the chapters contain many numerical examples and graphs developed from the numerical examples. The ambitious student could recreate any of the charts and tables contained in the book using a computer and Excel spreadsheets. There are many numerical examples of the key elements of marginal analysis. In addition, many practical examples are taken from the real world to illustrate key points.

Most of the examples used in the book come from the food and agricultural industries, broadly defined. Examples in consumer choice and utility focus on consumer decisions to purchase hamburgers and French fries. Production

examples involve choices farmers make in order to apply fertilizer to crops. Market models are employed that illustrate consumer choice between beef, pork and chicken at the grocery meat counter, and so on. A few of the examples do not employ agriculturally related goods, such as the examples dealing with the fate of the Polaroid corporation and its instant cameras, monopoly power of cable television providers and competition between the big three auto makers in the 1950s.

Each chapter begins with material that will be familiar to nearly any student who has passed an introductory microeconomics course. However, as each chapter progresses, both the problems and the math required to complete the problems get tougher. Critical points throughout the text are highlighted in text boxes. The instructor need not use all of the sections of each chapter for a course as each section of each chapter is self-contained.

Each chapter concludes with a basic summary of key points and a comprehensive list of terms and definitions. Students might choose to begin by reading the key summary points and definitions at the end of each chapter. Each chapter also contains a spreadsheet exercise for students to create examples similar to the tables and charts in the text.

The book is designed for use in a one-semester course, covering the parts of microeconomics that nearly every instructor believes should be covered at the intermediate level, but also recognizing that most instructors will want to devote a few weeks of the semester to material specific to their own interests.

You may print the book to from the free e-download, but if I were an instructor, I would simply order the bound paper copies. I have experimented with using this as a pdf e-book. The problem that I get into is that would like to be able to flip pages around to compare graphs directly with table numbers, and also look at math steps that occurred a few pages ago, and I really believe that the print copy is still extremely important here in the learning process.

## Links for Downloads of Supplemental Spreadsheets and Computer Exercises

### Chapter 1 Introduction

(None)

### Chapter 2 Demand and Supply

Constructing linear demand and supply functions

<http://www.uky.edu/~deberti/am/chapter2linear.xlsx>

Constructing nonlinear demand and supply functions

<http://www.uky.edu/~deberti/am/chapter2nonlinear.xlsx>

Exercise: Linear demand function with a shifter

<http://www.uky.edu/~deberti/am/exerchap2a.xlsx>

### Chapter 3 Elasticities

Elasticities, linear and nonlinear functions

<http://www.uky.edu/~deberti/am/chapter3elasticities.xlsx>

Exercise: calculating elasticities

<http://www.uky.edu/~deberti/am/exerchapter3.xlsx>

### Chapter 4 Consumer Choice

Constructing budget lines

<http://www.uky.edu/~deberti/am/chapter4budget.xlsx>

Constructing indifference curves

<http://www.uky.edu/~deberti/am/chapter4indifference.xlsx>

Lagrangean optimization

<http://www.uky.edu/~deberti/am/chapter4lagrange.xlsx>

Exercise: basic utility functions

<http://www.uky.edu/~deberti/am/exerchapter4a.xlsx>

Exercise: 3D indifference curves

<http://www.uky.edu/~deberti/am/exerchapter4b.xlsx>

## **Chapter 5 Production with One Variable Input**

Basic Production, MPP and APP curves

<http://www.uky.edu/~deberti/am/chapter5prod1.xlsx>

Revenue, cost and profit

<http://www.uky.edu/~deberti/am/chapter5prod3.xls>

Exercise: basic revenue, cost and profit

<http://www.uky.edu/~deberti/am/exerchapter5a.xlsx>

Exercise: graphics for basic revenue, cost and profit

<http://www.uky.edu/~deberti/am/exerchapter5b.xlsx>

## **Chapter 6 Costs of Production from the Output Side**

Cost functions from polynomial production functions

<http://www.uky.edu/~deberti/am/chapter6cost.xlsx>

Exercise: polynomial cost functions

<http://www.uky.edu/~deberti/am/exerchapter6.xlsx>

Exercise: More cost from production

<http://www.uky.edu/~deberti/am/exerchapter6b.xlsx>

## **Chapter 7 Production with two Variable Inputs**

Drawing 3D Production surfaces

<http://www.uky.edu/~deberti/am/chapter7twoinput.xlsx>

Budget lines

<http://www.uky.edu/~deberti/am/chapter7twoinput3.xlsx>

## **Chapter 8 Production with Two Outputs**

A product transformation curve from two production functions

<http://www.uky.edu/~deberti/am/chapter8twooutput.xlsx>

A two-output 3D production surface

<http://www.uky.edu/~deberti/am/chapter8twooutput2.xlsx>

Exercise: Building product transformation curves

<http://www.uky.edu/~deberti/am/exerchapter8.xlsx>

## **Chapter 9 Market Models of Competition**

Pure competition

<http://www.uky.edu/~deberti/am/chapter9comp.xlsx>

Monopoly

<http://www.uky.edu/~deberti/am/chapter9monop.xlsx>

Monopolistic competition

<http://www.uky.edu/~deberti/am/chapter9monopcomp.xlsx>

## Economics of Food and Agriculture (Third edition, 2014)

### David L. Debertin

This is a heavily-edited version of an introductory agricultural economics text book “Economics of Food and Agriculture” that was originally published by Kendall Hunt in 1990 but has long been out of print. The current version consists of 620 color pdf slide set constituting material for a complete introductory (100-level course) in agricultural economics. All the color slides are contained in an 11 MB pdf file (similar in size to a tablet or iPad application).

The file is ideally suited for downloading by tech-savvy beginning undergraduate agricultural economics student to a variety of devices. I have been experimenting with 7- and 8-inch Android tablets, but the file should work equally well on an iPad or perhaps even a smart phone. Obviously the file can also be downloaded to a laptop or desktop computer or any other device that has a pdf reader on it. By downloading the file students suddenly have a complete 620-slide beginning agricultural economics course on whatever device they prefer to use.

The material can also be use by instructors for classroom presentations employing a computer projector. I envision a modern agricultural economics classroom of students with devices of various types in the class having already downloaded same material on the device as what appears on-screen. The slides contain much of the detailed core material, but there is still plenty of space for instructors to do their own things in conjunction with the slides.

There are two files, one containing 620 color pdf slides in 17 chapters. A second file handout file contains the same slides set up for printing on a black-and-white printer, two-to-a-page.

Both of the files are free downloads at <http://ageconsearch.umn.edu>

The “handle” to get directly to the files is <http://purl.umn.edu/162696> All of this is **FREE**, and **EVERY** beginning student in agricultural economics no matter where they are should download the files to the device of their choice!

These materials are not (yet) available in bound, printed form.

### **Background on the revision and updates to the material**

The 1990 versions of this book relied heavily on graphs that constructed by the author using secondary data. Now there are many other sources, most notably the graphs contained in the USDA ERS chart gallery. In updating this version to the present, I retained a few of the graphs that were in the original version, but then located graphs created by the USDA ERS in their chart gallery in order to add to and supplement the original information. These slides were originally constructed employing Harvard Graphics routines. At that point in computing history, clip art as opposed to photographs was being used extensively. By retaining some of the quirky clip art from the original version, I have also retained some of the look and feel of the original edition. It turns out that these slides, with big fonts and quirky clip-art, look particularly neat on a small hand-held device.

Color is important on these slides, which were originally used for GEN 101 taught using these slides by me and several others in the University of Kentucky agricultural economics department. Students will want to download the color file to their laptops or tablet devices. For the most part, the black-and-white handout looks fine when printed, but for a few of the graphs, the color causes lines or other information to be washed out or a graph or map becomes hard to read. Students should refer back to the color version on their computing devices.

## **Links for PowerPoint slides for individual chapters for instructors and other PowerPoint users**

All of the 600+ slides contained in the book are available to instructors as free downloads. The general Web address for downloading these is

[http://www.uky.edu/~deberti/efa/ch"X".ppt](http://www.uky.edu/~deberti/efa/ch) where "X" is the specific one- or two-digit chapter number. Hence, the Powerpoint for chapter 10 can be downloaded at the Web Address <http://www.uky.edu/~deberti/efa/ch10.ppt>

Hot Links for all the chapters as individual PowerPoints are below

Chapter 1: Introduction <http://www.uky.edu/~deberti/efa/ch1.ppt>

Chapter 2: The Structure of Agriculture <http://www.uky.edu/~deberti/efa/ch2.ppt>

Chapter 3: Demand and Supply <http://www.uky.edu/~deberti/efa/ch3.ppt>

Chapter 4: Introduction to Elasticities <http://www.uky.edu/~deberti/efa/ch4.ppt>

Chapter 5: Utility Analysis <http://www.uky.edu/~deberti/efa/ch5.ppt>

Chapter 6: Agricultural Production Economics

<http://www.uky.edu/~deberti/efa/ch6.ppt>

Chapter 7: Producer Cost <http://www.uky.edu/~deberti/efa/ch7.ppt>

Chapter 8: Production with Two Inputs or Outputs

<http://www.uky.edu/~deberti/efa/ch8.ppt>

Chapter 9: Alternative models of Competition

<http://www.uky.edu/~deberti/efa/ch9.ppt>

Chapter 10: Agricultural Marketing <http://www.uky.edu/~deberti/efa/ch10.ppt>

Chapter 11: Credit in Agriculture <http://www.uky.edu/~deberti/efa/ch11.ppt>

Chapter 12: Public Policy <http://www.uky.edu/~deberti/efa/ch12.ppt>

Chapter 13: Economics of Resources <http://www.uky.edu/~deberti/efa/ch13.ppt>

Chapter 14: Trade in Agricultural Goods

<http://www.uky.edu/~deberti/efa/ch14.ppt>

Chapter 15: Economic Systems in Other Countries

<http://www.uky.edu/~deberti/efa/ch15.ppt>

Chapter 16: World Food <http://www.uky.edu/~deberti/efa/ch16.ppt>

Chapter 17: Rural Economic Development

<http://www.uky.edu/~deberti/efa/ch17.ppt>

These PowerPoint figures are backward compatible and should work on early Windows based machines at least as far back as those running Office 97.

### **Concluding Comment**

Taken together, these materials cover the core of applied microeconomics that every student should know at the beginning, intermediate and graduate level. They are the fundamental materials that could form the basis for a number on on-line courses in applied microeconomics.