



Introduction to Bio-Economic Modelling

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Agricultural Economics Research Institute (LEI)

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Wageningen University and Research

Organised by:

- **Mansholt Graduate School of Social Sciences (MG3S)**
- **LEI-Wageningen UR**

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Introduction

There is a growing need for training at graduate level in bio-economic modelling in order to adequately combine quantitative economic and bio-physical methodologies. The interest follows work related to sustainable land management, especially related to work of the lecturer in Mali, Ethiopia, Costa Rica, China, and Kenya in the late 1990s and first years of the 21st century.

Bio-economic household modeling is also of relevance for rural development in industrialized countries, especially where positive and negative environmental externalities play a role, such as in the switch from regular to biological production technologies. In recent years developments in modeling non-point source pollution from agriculture and its effects on the environment, in terms of for instance water and bio-diversity) have become important in the European context.

General Algebraic Modelling System (GAMS) is a programming environment for building such models.

Objectives

The main objective of this course is to provide basic insight into bio-economic modelling with GAMS.

The focus will be on structured modelling and applying good modelling practices.

The course will consist partly of lectures and partly of hands-on practical exercises using bio-economic models in GAMS software.

The main emphasis of the course will be on the application of mathematical programming techniques to combine economic and biophysical information in order to assess the effects of policy change on land use decisions and its interactions with the environment.

At the end of the course, the participants should have a basic understanding of the structure and functioning of bio economic models for policy analysis. They should be able to start constructing their own not too complex bio economic models and successfully adapt and use existing bio-economic models.

The examples in the course will be directed mainly at issues related to soil degradation in developing countries. Other examples may be used, where relevant and useful.

Contents

The course (1.5 ECTS) covers a week of coursework consisting of lectures in the morning and computer assisted practicals in the afternoons. In these sessions the theoretical underpinnings and practical application of bio-economic modelling are dealt with. We start with a standard agricultural household model formulated as a mathematical programming problem. This model is then extended to include biophysical processes, making it a bio-economic model. We look at some extensions of the basic bio-economic model and discuss in some detail, how to solve this type of model. Finally the simulations results are analysed.

- 1) Presence and active participation;
- 2) Completion of the exercises during the practical;

Teaching methods

Lectures, working on modelling assignments and exercises in small groups,

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Program

Monday November 16, 2009: Introduction.

Introduction into the GAMS modelling language

Introduction into GTREE the modelling environment we will use to build models.

Tuesday November 17, 2009: Good modelling practice

The dos and don'ts of GMP: (1) modelling process, (2) separation of model code and data, (3) comments and documentation,

Introduction to micro-simulation modelling: A Basic model we will use during the rest of the week.

Wednesday November 18: Separation of data and model code

What is data? Control variables, classifications and numerical data.

Thursday November 19: Compile time and execute time

Friday November 20: Managing input and output

New Tools: Data explorer, GDXconvert

Lecturer: Gideon Kruseman, PhD
Wietse Dol, PhD

Location

Wageningen University, Building "De Leeuwenborch", Hollandseweg 1, Wageningen.
Exact venues will be announced later.

Participants

The target group is Mansholt PhD candidates, but also other PhD students and interested third parties who have at least an MSc degree.

Prerequisites

The participants should have basic computer skills. MSc level knowledge of general quantitative methods.

Additional information is available with Gideon Kruseman (Gideon.Kruseman@wur.nl) and Wietse Dol (Wietse.Dol@wur.nl).

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Course fees:

For PhD-students of Mansholt Graduate School with an approved training and supervision plan there is a fee of 300 euros; for other participants and staff members, there is a fee of 600 euros for the whole course (including drinks, lunches, course material and a course dinner).



Registration

Registration is possible electronically via the Mansholt Graduate School courses page:

http://www.mansholt.wur.nl/UK/education/courses/upcoming_ongoing/

The maximum number of participants is set at 20, the minimum at 12. PhD candidates of Mansholt Graduate School have preference if they register before 14th September.

Please make sure that you provide the most recent contact details so that in case of any changes you will be notified promptly. After your internet registration you will receive a short notification that your name has been registered. At least two weeks before the course you will receive a confirmation about the location and the schedule. MG3S will also send an invoice to the address indicated in the registration form.

Please e-mail to Marcella.Haan@wur.nl in case you have not received the second confirmation two weeks before the course.

Cancellations

Cancellations may be made free of charge until 1 month before the start of the course. Cancellation fee of 100 % applies if participants cancel the course less than 1 month prior to the course.

The organisers have a right to cancel the course not later than 1 month before the course starts.

The participants will be notified of any changes at their e-mail addresses.

Further information on

On course content:

Gideon.Kruseman@wur.nl or Wietse.Dol@wur.nl.

On MG3S:

www.Mansholt.wur.nl

For details about the logistics, accommodation, registration, fees, study materials, etc. please contact

Marcella Haan

Tel +31 317 484126

Marcella.haan@wur.nl

Contact addresses:

Mansholt Graduate School

Wageningen University

Hollandseweg 1

6706 KN WAGENINGEN

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Useful information for participants from outside Wageningen

Hotels:

Wageningen International Centre (Hof van Wageningen): 75 euro for 1 persons room, 98.50 euros for 2 persons room, both prices are including breakfast. Details:

<http://www.hofvanwageningen.nl/>

Hotel de Wageningseberg: 62.50 euro 1 person room, 97.50 euro for 2 persons room, also including breakfast; www.wageningseberg.com

Hotel Nol in 't Bosch: 83,50 euro for 1 person room, 110 euro for 2 persons room, also including breakfast; <http://www.nolintbosch.nl/>

Hotel de Nieuwe Wereld (Hotel School): 50-60 euro for a 1 person room.

<http://www.denieuwewereld.nl> (only in Dutch)

Bed&Breakfast:

B& B De Heksenspeeltuin: 25 euro for a 1 person room

Address: Einthovenstraat 15, 6706JA Wageningen

Phone: +31 317-418161

E-mail: callyd@zonnet.nl

Website: www.heksenspeeltuin.nl (only in Dutch)

Villaria Bed en Breakfast: 32-38 euro for a 1 person room

Address: Nassauweg 21, 6703CG Wageningen

Phone: +31 317-419636

Emai: villaria@hari.demon.nl

Ons Bakhuus Bed & Breakfast: 25 euro for a 1 person room

Address: Dolderstraat 64, 6706 JG Wageningen

Phone.:+31 317-411994

E-mail: janny.wijbo@chello.nl

Knollywood Bed & Breakfast: 35 euro for a 1 person room

Address: L. Roggeveenstraat 39, 6708 SL Wageningen

Phone: +31 317-420970

E-mail: Knollywood@hetnet.nl

De Herbergh Bed & Breakfast: 45 euro for a 1 person room

Address: Generaal Foulkesweg 8, 6703 BR Wageningen

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Phone: +31 317-410747

E-mail: glindenbergh@wanadoo.nl

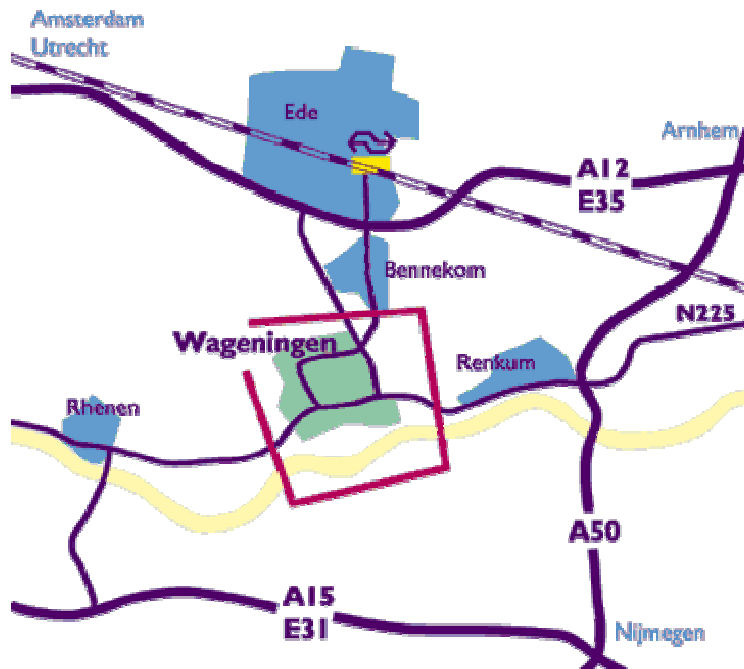
From Schiphol Airport Amsterdam to Wageningen

At the Airport you can buy a train ticket in the 'arrivals' area. You will see the sign "Train tickets" near the exit. Then follow the signs 'Nederlandse Spoorwegen' (www.ns.nl) or 'Trains and busses' to the railway station.

Purchase a one-way ticket to the Ede-Wageningen train station, this will cost € 13,40 (plus € 0,50 service charge if you buy the ticket at the ticket counter). It is also possible to buy the ticket from the ticket vending machines in the station.

There will be a train leaving every 15 minutes from Schiphol. Every there are direct connections to Ede-Wageningen, usually leaving from platform 3 (twice an hour). Also, twice an hour there is a connection via Utrecht (where you have to change trains). At Schiphol, the train usually departs from platform 1-2. At Utrecht, you have to change trains from platform 15 to 14. On the platform, you will see signs hanging from the ceiling with all names of the different stations where the train will stop. Check for the names Ede Wageningen or Utrecht and board the train. The trip from Schiphol to Ede-Wageningen takes you a bit more than one hour.

For Dutch train connections use www.ns.nl, www.thalys.com, www.db.de



Wageningen has no railway station. This lack is fully compensated by accurate means of buses and taxis, as described next.

For information about tickets to some 1400 European destinations and to order them, call Teleservice NS Internationaal: +31 (0)900 92 96 (0.35 euro per minute). You can pay by credit card (EuroCard, MasterCard, VISA or American Express), or by remittance. [On-line booking](#) for NS trains (choose station Ede-Wageningen): pre-registration with NS electronic system is required. Prices are mentioned there as well.

From railway station Ede-Wageningen you can take a taxi (approx. 15 min.) Taxis leave at the north side of the station. You can also come by bus (bus 86 (direction Arnhem) or bus 88 (Valleilijn, direction Wageningen). Bus 86 leaves at the north side of the station, bus 88 leaves at the South side of the station. You have to purchase a bus "strippenkaart" at the Kiosk (in the bus itself the "strippenkaart" is more expensive). Those coming to the Wageningen International Centre have to get off the bus at the bus stop "Busstation". The WIR hotel is situated next to the bus terminal and the WICC hotel approximately 250 meters to the west.