PoS2-33

A Simple Software Tool for Enhancing Economic Viability in Crop Production

Stavros A. Charitoudis, Spyridon D. Koutroubas, Christos A. Damalas, Konstantinos N. Galanopoulos

Department of Agricultural Development, Democritus University of Thrace, Greece

Abstract: Successful farming in the 21st century requires knowledge not only of the latest techniques for raising crops and farm animals, but also of how to efficiently operate a successful business. The current research describes a development tool for calculation of several financial indicators that helps us to compare the financial efficiency of various crop production branches and take decisions before the implementation of any production business plan. A simple calculation tool was developed in Office Excel 2007, named "CULTIVATION FINANCES.XLS", which is based on spreadsheets and can directly calculate with accepted reliability: the gross profit, the gross revenue (product worth + subsidies), and the variable costs (material + external work) simultaneously for 16 different branches of crop production that could be included in a production business plan. In the underlying calculation tool, static and parameterized values (depending on each case) are used as input data, which are then processed for producing the desired information. Moreover, an easy-to-use and understandable user interface has been developed to facilitate access to this information.

The tool gives parameterizing options and, therefore, scenarios can be created with the parameters: a) usage of external machinery and b) family work to determine the production conditions as accurately as possible. To this end, we created value tables concerning 60 branches of crop production separately for each scenario, using regional data defined by the ministry of agriculture. Among those values, the Variable Cost Index (VCI), i.e., the ratio between the variable costs and the gross revenue, is of special interest. As VCI values tend to zero, the more favorable the cultivation is, while as VCI values tend to one, the gross revenue and variable costs come to a balance and so the gross profit shrinks. In other words, when a crop expresses small VCI value, this means that it is a 'cheap' cultivation option according to the cost, but with adequate return of gross profit. For example, lettuce had the smallest VCI (0.147) in our analysis, since with only 34.73 €/ha for variable costs it gave back 236.8 €/ha for gross revenue and 202.06 €/ha for gross profit.

The results obtained from the tool are generally close to those of other researchers. However, to enhance reliability, a validation process that the software tool satisfies or fits the intended use should be completed and, further, the statistical data should be updated by collection of primary data after appropriate sampling methodology.

Keywords: Variable Cost Index, Gross Revenue, Financial Efficiency

PoS2-34

Tailoring Agroecological Intensification to the Context of Southern Mali: Co-Learning Through Agronomic Experiments with Farmers

Eva Huet[1], Myriam Adam[2], Ousmane Dembele[3], Ken Giller[4], Katrien Descheemaeker[4]

[1]Wageningen University, Plant Production Systems, [2]CIRAD, [3]AMEDD, [4]Wageningen University, Netherlands

Abstract: Yields are stagnating in the cotton zone of southern Mali, and the system is expected to be further pressured by population growth, urbanisation, institutional and market trends and climate change. Farmers rely on millet, sorghum and maize production for their food self-sufficiency, and on cotton and livestock for income. Agroecological intensification can contribute to increase productivity and nutritious food production, while maintaining healthy ecosystems and equitably improving livelihoods. Uptake of promising options by farmers is not guided by profitability alone but also by perceived risks, embedding in value chains or labour shortages. An existing co-learning process is expanded to better understand these factors.

Participatory trials are set up as part of annual DEED cycles (Describe, Explain, Explore, Design), aiming to offer a basket of options from which farmers can choose the technologies that fit their farm context. Both design and results of trials are discussed together with a farmer research network (FRN). A first series of consecutive DEED cycles (2012-2015) was based on small plot trials, which resulted in the demarcation of niches (e.g. based on soil type or crop rotation) wherein certain options are promising for certain farm types. At farm level, replacing sorghum by soybean or cowpea increased gross margin without compromising food self-sufficiency for low and middle-resource endowed farms. For higher-resource endowed farmers, it was achieved through intercropping maize-cowpea combined with stall feeding of dairy cows.

Building on this experience, the methodology is now enriched by combining three types of trials in a second phase of DEED cycles: small plot trials, field-level demonstrations and farmer field follow-up. For the latter, crop management practices of farmers that participated in the first phase, are monitored to assess the adaptation of options. In neighbouring villages, a new FRN was set up. A first aim is to demonstrate and co-evaluate the promising options at field level. Additionally, farmers are trying several new options at plot level: groundnut (variety x density; 16 farmers), soybean (fertiliser rate x density; 9), cowpea (variety x insect treatment; 12), maize-cowpea (spacing x cowpea variety; 11), sorghum (14) and millet (16) (variety x (organic) fertiliser rate). All options are compared with farmers' practice, and design of treatments is inspired by agroecological principles. For example, options aim at increasing on-farm crop diversity with an emphasis on leguminous crops. Sustainability is evaluated through various criteria (e.g. grain and fodder production, access to inputs, labour requirements, cost-benefit). Multi-year, adaptive DEED cycles with trials at different scales (field and plot) contribute to better tailoring of options to farmers' reality. Monitoring adaptation by farmers and participatory multi-criteria analysis untangle farmers' decision making and may enhance uptake of the options.

Keywords: Mali, Agroecological Intensification, Co-Learning Cycle, Trials

ESA2018

XV[e] European Society for Agronomy Congress

August 27-31, 2018 - Geneva, Switzerland

www.esa-congress-2018.ch

ABSTRACT BOOK

INNOVATIVE CROPPING AND FARMING SYSTEMS FOR HIGH QUALITY FOOD PRODUCTION SYSTEMS

CICG, GENEVA SWITZERLAND
27 - 31 AUGUST 2018

Schweizerische Eidgenossenschaft
Confédération suisse
Confederazione Svizzera
Confederaziun svizra

Département fédéral de l'économie,
de la formation et de la recherche DEFR
Agroscope

Schweizerische Eidgenossenschaft
Confédération suisse
Confederazione Svizzera
Confederaziun svizra

Swiss Confederation

Federal Department of Economic Affairs
Education and Research EAER
Federal Office for Agriculture FOAG

ETH
Eidgenössische Technische Hochschule Zürich
Ecole polytechnique fédérale de Zurich
Politecnico federale di Zurigo

FiBL

SGPW SSA

COMMITEES

ORGANIZING COMMITTEE

- Christoph Carlen (president), Agroscope, Conthey, Switzerland
- Alice Baux, Agroscope, Nyon, Switzerland
- Raphaël Charles, FiBL, Lausanne, Switzerland
- Emmanuel Frossard, ETH, Zürich, Switzerland
- Bernard Jeangros, Agroscope, Nyon, Switzerland
- Fabio Mascher, SSA/SGPW and Agroscope, Nyon, Switzerland
- Monique Schwartz-Seale, Agroscope, Nyon, Switzerland
- Sokrat Sinaj, Agroscope, Nyon, Switzerland

SCIENTIFIC COMMITTEE

CORE SCIENTIFIC COMMITTEE

- Emmanuel Frossard (president), ETH, Zürich, Switzerland
- Alice Baux, Agroscope, Nyon, Switzerland
- Christoph Carlen, Agroscope, Conthey, Switzerland
- Raphaël Charles, FiBL, Lausanne, Switzerland
- Bernard Jeangros, Agroscope, Nyon, Switzerland
- Fabio Mascher, Agroscope and SSA/SGPW, Nyon, Switzerland
- Sokrat Sinaj, Agroscope, Nyon, Switzerland

EXTENDED SCIENTIFIC COMMITTEE

- Bernard Belk, Federal Office of Agriculture, Switzerland
- Jan Bengtsson, University of Agric. Sciences, Sweden
- Else Bünemann, FiBL, Switzerland
- Nathalie Colbach, INRA Dijon, France
- Branco Cupina, University of Novi Sad, Serbia
- Philippe Debeake, INRA Castanet-Tolosan, France
- Antonio Delgado, University of Sevilla, Spain
- Maria Finckh, University of Kassel, Germany
- Felix Herzog, Agroscope, Switzerland
- Jürg Hiltbrunner, Agroscope, Switzerland
- Eric Justes, CIRAD, France
- Andreas Keiser, HAFL, Switzerland
- Samuel Knapp, Techn. University of München, Germany
- François Lefort, Hepia, Switzerland
- Frank Liebisch, ETH, Switzerland
- Thomas Nesme, Bordeaux Sciences Agro, France
- Astrid Oberson, ETH, Switzerland
- Elisa Pellegrino, Sant'Anna University of Pisa, Italy
- Didier Pellet, Agroscope, Switzerland
- Pirjo Peltonen-Sainio, MTT Agrifoof Research, Finland
- Caroline Rémond, University of Reims Champagne-Ardenne, France
- Evan Rrocco, University of Tirana, Albania
- Mariana C. Rufino, Lancaster University, United Kingdom
- Meagan Schipanski, Colorado State University, United States of America
- Urs Schmidhalter, Techn. University of München, Germany
- Fred Stoddard, University of Helsinki, Finland
- Roberto Tuberosa, University of Bologna, Italy
- Marcel van der Heijden, Agroscope, Switzerland
- Christine Watson, SRUC, United Kingdom
- Jacques Wery, Montpellier Supagro, France
- Philip White, James Hutton Institute, United Kingdom
- Judith Wirth, Agroscope, Switzerland
- Noura Ziadi, Quebec Research and Development Centre, Canada