ICTs transforming agricultural science, research and technology generation

Think piece 4

How are innovations adopted -
a case study of ICT (Internet) for Agriculture
Ehud Gelb <gelb@agri.huji.ac.il>

Think piece goal – to provide a model to evaluate the question – can adoption of future and/or innovative ICT for Agriculture be expected to follow past (1997 – 2007) Trends – for example re the future of Precision Farming (crop production)?

Introduction
There are several models used to describe a generalized adoption of innovation. Rogers (1962) provides a model suitable for innovation adoption in agricultural production and is presented below in Fig. 1. The following figures identify ICT Adoption trends in the US and in turn how Precision Farming state of the art progressed till today. This background presentation will enable work discussions to address the evaluation of expectations: will future adoption of agricultural science results and innovative technologies follow the past or a different innovation adoption pattern.

Fig. 1: Innovation (ICT) Adoption model
Fig. 2: ICT (Computer Use) adoption Survey details
Fig. 3: Initial Plant Production ICT conceptualization
Fig. 4: Current (Interim) Plant Production State of the art ICT

Diffusion and Adoption of Technology
Is ICT (Internet for farmers) Adoption Unique?

Fig. 1: Innovation (ICT) Adoption model.
This model of Innovation Adoption (Source Rogers, E., 1962 Diffusion of Innovations. Free Press ISBN 0-7432-2209-1) is imposed on the recent NASS Computer Use Survey – details are related to Fig. 2.
Fig. 2: ICT (Computer Use) adoption Survey
Fig. 2: ICT (Computer Use) adoption Survey details the adoption of computers and Internet in the US – based on the bi annual Computer use survey conducted by the USDA;

Fig. 3: Initial Plant Production ICT conceptualization (Source: Prof H. Aumehammer – 1997 - personal communication)
This figure illustrates a 1997 Initial Plant Production ICT conceptualization. It provides a broad overview of ICT for agricultural production with a traditional sequence of planning, production and end season evaluation of results – all eventually collated into a central information system. It envisions what was called at the time site specific farming.

Fig. 4: Current (Interim) Plant Production State of the art ICT
(Source: Phytek integrated crop management system). A current state of the art integrated plant production model and framework. Technically it can be developed for Wide scale applications in controlled environments and environmentally.