The Economic Impact of Formal Agricultural Education

Research Qualitative Findings

Dr. Kevin Heanue & Prof. Cathal O’Donoghue
Teagasc Rural Economy and Development Programme

Teagasc College of Amenity Horticulture,

Thursday November 20th, 2014
Outline of presentation

- Preliminaries – links between two presentations on report
- Background
- Understanding the role of formal agricultural education at farm level
- Decision making and transmission mechanisms
  - Production
  - Innovation
- The empirical focus of the research report
- Take-home messages
Background

- Irish farmers face a future of challenges and opportunities
  - Achieving the expansion and development targets set out in Food Harvest 2020.
  - Producing efficiently and profitably in a volatile market environment.
  - Meeting sustainability requirements

- Imperfect information $\rightarrow$ uncertainty $\rightarrow$ decision making

- It is in such a rapidly changing technological and economic environment that agricultural education is most important.
Background (contd)

- Increase in proportion of farmers with agricultural education from 24% to 44%
- Greater increase in the proportion of farmers achieving an agricultural certificate, going to agriculture college or attending short courses compared to those achieving university level agricultural training.
- In dairy, tillage and mixed livestock > than average. In cattle rearing and cattle other, < average
The role of formal agricultural education

- Farm Management
- Absorptive Capacity (ability to value, assimilate and apply new knowledge)
- Decision Making (Production)
- Decision Making (Innovation)
- Farm level outcomes

Formal Agricultural Education
Decision making – production

- **Agricultural education improves a farmer’s:**
  - *Technical efficiency* (the more efficient use of a given amount of resources) and
  - *Allocative efficiency* (better choice of inputs and outputs, leading to a more efficient allocation of resources).
    - Education – enhances ability to receive, decode and understand information

- **There are 3 transmission mechanism through which formal agricultural education improves technical and allocative efficiency.**
  1. Education helps farmers make better use of information and to find solutions to problems
  2. Educated farmers not only use information better but they are also better able to acquire required information.
  3. Educated farmers are more likely to adopt new technologies early
Decision making - Innovation

**Innovation and diffusion**
- ‘Innovators’ or ‘early movers’ (Rogers, 1962; Grilliches, 1957), are those farmers who first take up a technology and, therefore, start the diffusion process.

**Education supports such farmers in several ways:**
- As education decreases risk aversion the probability of adoption and innovation is increased (Knight et al. 2003).
- Formal education is more likely to make farmers take the initiative in the adoption of innovations, either by introducing new ideas themselves or being the first to copy a successful innovation (Weir and Knight, 2004).
- Adoption decision-making among farmers is a human capital intensive activity and education and information reduce adoption costs and uncertainty, and thereby raise the probability of early adoption (Wozniak, 1987).
Decision making - Innovation (contd)

- **Technological change**
  - Schultz (1975) argued that the benefits of education to farmers are especially important in times of disequilibria, i.e. when there is pervasive and rapid technological change. In this case, education can help farmers respond more efficiently to disequilibria.

- There is some existing Irish evidence on returns to agricultural education in terms of technological/practice change and innovation. Farmers who have completed formal agricultural education are more likely to:
  - voluntarily test their soil (Kelly 2014);
  - reseed more than 12% of their land in the past 3 years (Heanue and Buckley, 2012)
  - consider growing bioenergy crops (Clancy et al 2011).
  - be prepared to grow GM crops (Keelan et al. 2009)
Empirical focus of research report

- Farm Management
- Absorptive Capacity (ability to value, assimilate and apply new knowledge)
- Decision Making (Production)
- Decision Making (Innovation)
- Formal Agricultural Education
- Farm level outcomes

- Participation Policy
- Spatial issues
- Farm income, yields and intensity

The Irish Agriculture and Food Development Authority
Take home messages

- Formal agricultural education
  - improves the *absorptive capacity of farmers* – their ability to value, assimilate and apply new knowledge to manage their farms
  - helps farmers become *better decision makers* in relation to production and innovation
  - is important for confronting the opportunities and challenges facing farmers

- Proportion of farmers with formal agricultural education almost doubled from 2000 - 2011

- Greater increase in proportion of farmers with agricultural certificate, going to agricultural college or attending short courses compared to those achieving university level agricultural training

- Different agricultural education participation rates for different farm systems
Thank You