ECONOMICS AND MANAGEMENT

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ANNOTATION

In western Europe the typical family farmer has less land than is economical with modern machinery, equipment, and levels of education and training, and so must select from the products of an emerging stream of technology the elements that promise improved crop and livestock yields at low cost; adjust his choice of products as relative prices and costs change; and acquire more land as farm labour is attracted by nonfarm employment opportunities and farm numbers decline. The marketplace for agricultural commodities is exceptionally risky for three important reasons. First, no single farm producer can place or withhold enough of a single item on the market to affect the market price; second, the quantity of a commodity taken off the market does not increase in proportion to price declines; third, the farm manager cannot respond to falling prices by quickly switching production from an unprofitable item to a profitable one. To reduce his risks and safeguard profits, the farm manager may specialize or diversify depending on conditions; he may also use the futures market.

Key words: Agricultural economics, substantial contributions to research in economics, Farm management.

INTRODUCTION

Agricultural economics is an applied field of economics concerned with the application of economic theory in optimizing the production and distribution of food and fiber. Agricultural economics began as a branch of economics that specifically dealt with land usage, it focused on maximizing the crop yield while maintaining a good soil ecosystem. Throughout the discipline expanded and the current scope of the discipline is much broader. Agricultural economics today includes a variety of applied areas, having considerable overlap with conventional economics. Agricultural economists have made substantial contributions to research in economics, econometrics, development economics, and environmental economics. Agricultural economics influences food policy, agricultural policy, and environmental policy.

Production economics and farm management Edit

Agricultural economics research has addressed diminishing returns in agricultural production, as well as farmers' costs and supply responses. Much research has applied economic theory to farm-level decisions. Studies of risk and decision-making under uncertainty have real-world applications to crop insurance policies and to understanding how farmers in developing countries make choices about technology adoption. These topics are important for understanding prospects for producing sufficient food for a growing world population, subject to new resource and environmental challenges such as water scarcity and global climate change.

Farm management, making and implementing of the decisions involved in organizing and operating a farm for maximum production and profit. Farm management draws on agricultural economics for information on prices, markets, agricultural policy, and economic institutions such as leasing and credit. It also draws on plant and animal sciences for information on soils, seed, and fertilizer, on control of weeds, insects, and disease, and on rations and breeding; on agricultural engineering for information on farm buildings, machinery, irrigation, crop drying, drainage, and erosion control systems; and on psychology and sociology for information on human behaviour. In making his decisions, a farm manager thus integrates information from the biological, physical, and social sciences.

Because farms differ widely, the significant concern in farm management is the specific individual farm; the plan most satisfactory for one farm may be most unsatisfactory for another. Farm management problems range from those of the small, near-subsistence and family-operated farms to those of large-scale commercial farms where trained managers use the latest technological advances, and from farms administered by single proprietors to farms managed by the state.

In Southeast Asia the manager of the typical small farm with ample labour, limited capital, and only four to eight acres (1.6–3.2 hectares) of land, often fragmented and dispersed, faces an acute capital–land management problem. Use of early maturing crop varieties; efficient scheduling of the sequence of land preparation, planting, and harvesting; use of seedbeds and transplanting operations for intensive land use through multiple cropping; efficient use of irrigation and commercial fertilizer; and selection of chemicals to control insects, diseases, and weeds—all of these are possible measures for increasing production and income from each unit of land.

MATERIALS AND METHODS

In western Europe the typical family farmer has less land than is economical with modern machinery, equipment, and levels of education and training, and so must select from the products of an emerging stream of technology the elements that promise improved crop and livestock yields at low cost; adjust his choice of products as relative prices and costs change; and acquire more land as farm labour is attracted by nonfarm employment opportunities and farm numbers decline. The marketplace for agricultural commodities is exceptionally risky for three important reasons. First, no single farm producer can place or withhold enough of a single item on the market to affect the market price; second, the quantity of a commodity taken off the market does not increase in proportion to price declines; third, the farm manager cannot respond to falling prices by quickly switching production from an unprofitable item to a profitable one. To reduce his risks and safeguard profits, the farm manager may specialize or diversify depending on conditions; he may also use the futures market (see below).

A specialized farm manager concentrates his effort on the production of one item such as wheat, cotton, milk, eggs, or fruit. By such specialization he can realize the benefits of large-scale production and can make the most money from an enterprise in which he is highly skilled. On the other hand, the specialist is vulnerable to sudden changes in the market, to plant and animal diseases, and to soil exhaustion resulting from cultivation of a single crop.

Economics or economic analysis is the science of making choices so as to best achieve desired objectives given that only limited (physical and other) resources and opportunities are available and that the future is uncertain. There are no choices to which the science of economics cannot be applied. It is just as pertinent, e.g., to the choice of a spouse as to the choice of which crops to grow or to the choice between using an insecticide or using environmentally friendly integrated pest management. In contrast to this wide applicability of economic analysis, financial analysis is restricted to matters that are naturally of a financial or monetary nature. Financial analysis is thus a subset of economic analysis and, in circumstances where everything is valued in money terms, may be the natural way in which to conduct economic analysis. In other cases, it may be feasible to facilitate economic analysis of possible choices by imputing money values to possible gains and losses. And in yet other cases, such as assessing the resource sustainability and environmental compatibility of alternative farm systems, it may often be infeasible to impute money values to the gains and losses of alternative choices. Decisions must then be made using economic analysis based on non-money values, intuition and judgement.

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Farm management economics (i.e., economic analysis applied to the choices confronting farmers) provides the general disciplinary basis for farm-level systems analysis. Obviously other farm and family-related disciplines will be involved in systems' construction: agronomy, animal husbandry, soil and water conservation/management, human nutrition etc. However, except in the case of special-purpose technical systems (e.g., when the farm-household unit is analysed in terms of nutritional or energy flows among components as discussed below), these other disciplines should play subordinate contributing roles coordinated by farm management economics as the lead discipline. That in fact this often does not happen and the lead is taken instead by workers in other disciplines is really not important. It might just reflect the fact that many agriculturists are aware of the necessity for a systems approach if application of their expertise is to be effective; or that many agricultural economists are content in the more modest role of economics apparach.

Nevertheless, the disciplinary basis of farm management remains economics - but economics of a special wide-ranging kind, the core of which is production economics supported by other branches of economics of which marketing, resource economics, agricultural credit and data analysis (including operations research, econometrics and risk analysis) are probably the most important. When working with the household component, especially of small traditional farms, the most important supporting disciplines are sociology and social anthropology.

The farm technology model, presented by Torkamani, has a goal of increasing crop yield, without increasing land availability, through the implementation of new technologies. This is a discrete stochastic programming model and it applies yield data collected on existing and new farm technologies. The model is valuable in determining the "suitability and acceptability of technologies to farmers". This allows farmers to see the prospective gain in crop yield from employing new technology as opposed to the traditional farming technology.

The agricultural supply chain network model developed by Apaiah and Hendrix, is a mixed integer program that aims to minimize the total production and transportation cost for pea-based novel protein foods. The total production of peas is demand driven, much like the farm management model presented in this paper. This model, however, goes beyond just production and considers transportation of the product. Also, the total production is not from a single location but from a mix of four different locations. The model constrains the amount of production from each location so that the total supply is not dependent on one source. This model is beneficial in that it estimates the cost of operating a new product line.

Modeling to generate alternative planning first follows the approach of a linear programming model with an objective of maximizing a farm's gross margin. Then alternative solutions are produced by allowing the optimal gross margin to be reduced by a certain percentage. These alternatives are important to farmers because the production goal may not be to just maximize profit, but also optimize other aspects such as minimizing risk. Finding alternative solutions allows for the farm to choose a solution that meets multiple objectives for the farm while still maintaining nearly optimal profit.

Production process planning is presented by Vitoriano et al. as a linear programming model and is designed to allow "crop production planning to be decided at the beginning of the agricultural year." The objective of the model is to minimize total cost related to agricultural production. There are two modeling approaches considered by Vitoriano et al. (2019), discrete and continuous time. The discrete time planning model was found to be best in shorter term planning horizons and the continuous time planning model was best for medium to long term planning horizons. Farmers can benefit from this model because it provides them with the solution of how and when to perform the tasks required for agriculture production.

Reference

1. Abdulkadri, A. & Ajibefun, I. (2018). Developing Alternative Farm Plans for Cropping System Decision Making. Agricultural Systems, 56(4), 431-442. Retrieved March 30, 2019, from Web of Science database.
2. Ahumada, O., & Villalobos, J.R. (2019). Application of planning models in the agri-food supply chain: A review. European Journal of Operational Research, 195, 1 20. Retrieved March 24, 2019, from Web of Science database.
3. Apaiah, R. & Hendrix, E.M.T. Design of a supply chain network for pea-based novel protein foods. Journal of Food Engineering, 70, 383-391. Retrieved March 30,, from Web of Science database.

4. Popp, M.P., Dillon, C.R., & Keisling, T.C. (2003). Economic and weather influences on soybean planting strategies on heavy soils. Agricultural Systems, 76, 969–984. Retrieved March 26, 2009, from Web of Science database.
5. Sheehy, J.E., Mitchell, P.L., & Ferrer, A.B. Decline in rice grain yields with temperature: Models and correlations can give different estimates. Field Crops Research, 98, 151–156. Retrieved March 25, 2020, from Web of Science database.