Grass utilisation as a driver of efficiency on European dairy farms

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Introduction and Background

Agricultural policy reform in Europe has lead to a more market orientated outlook for livestock production systems in the European Union (EU). Some of these changes may serve to remove policy barriers to expansion and possibly also intensification in certain systems of production given varying degrees of comparative advantage. There are, however, other sets of objectives in European Union (EU) agricultural policy which may not encourage either intensification or expansion of production. These include the areas of environmental protection, animal welfare, and rural sustainability. This leads to interest in alternative production techniques and their effect on efficiency.

Research into effective and efficient management of grass swards suggests that improved grassland management practices may be a viable alternative to more intensive production strategies (Kennedy et. al., 2005). Grassland management practices are numerous and vary in terms of the level of technical detail, but they are always aimed at improving the efficiency of use of the grassland resource. This leads us to examine the question of whether or not grass input is associated with efficiency.

We analyse the effect of grass utilisation in dairy systems on enterprise level efficiency. We examine the hypothesis that choosing a higher level of grass input results in a greater level of efficiency.

Methodology

Our analysis is conducted using panel data from the Farm Accountancy Data Network for a selection of countries showing a good variety of input systems, biogeographic zones, and levels of intensity. We estimate panel frontier functions and predict the effect of increased grass utilisation on efficiency levels using the single step Battese and Coelli (1995) variant of the Stochastic Frontier (SF) model. These estimates are couched in terms of technical efficiency (TE) — success in converting inputs to outputs — and also in terms of cost efficiency (CE) — an adjustment to TE to reflect relative success in choosing a cost minimising mix of inputs.

We find that increased grass utilisation has a varying effect on efficiency across Member States. The type of efficiency measured, *i.e.* technical efficiency or cost efficiency, also has important implications for the magnitude of the grass measure's effect.

References

Coelli, T. J. (1995) "Recent developments in frontier modeling efficiency measurement", Australian Journal of Agricultural Economics, 39, 219–45.

Kennedy, E., O'Donovan, M., Murphy, J.P., Delaby, L., and O'Mara, F.P. (2005). "Effects of grass pasture and concentrate-based feeding systems for spring-calving dairy cows in early spring on performance during lactation.", Grass & Forage Science, 60(3), 310–318.