3.5 Interpretation of Methodological Results for Regional Extrapolation

The use of the geographic equivalence was demonstrated in these analyses as a method of making first order approximations of where technology developed and evaluated in Kenya might be applied to Uganda and Tanzania. The utility was shown to be improved by including in the assessment other relevant variables that are not modeled in the first level extrapolation from Kenya, which was based only on temperature, soil, and precipitation patterns. The more relevant layers of the descriptive GIS that can be provided, the more useful the extrapolation.

The importance of relative site specificity of both natural resource and economic factors affecting the adoption of new technology was demonstrated in these studies. The extrapolation of use of new technology was limited to relatively general interpretations with specific assessments based on local conditions. Nonetheless, the general principles of geographic equivalence were demonstrated and the correspondence to the “real world” was encouraging. These methods should be useful in ex ante planning of research investments, in evaluation of ongoing and completed research, and in evaluating the impact of alternative policy scenarios affecting agriculture and the use of natural resources.

While no specific environmental analyses were conducted in Uganda and Tanzania, the general methods developed and demonstrated in the Kenya Sondu river basin analysis and the use of the EPIC model to assess run off and erosion will be equally applicable to these countries.

National policies on critical issues such as land tenure and market policies and regulations obviously can have as large or larger effects on the success of agricultural enterprises as the use of new technology.

These studies highlight the potential inherent conflict between the emergence of larger commercial dairies and the health of small holder dairy enterprises. It draws attention to the difference in benefits between consumers and producers. It notes that farm households represent both producer and consumer interests as home consumption by farmers of dairy products is considered.

The studies in Uganda and Tanzania do not deal with the impact of projected population growth on future demand for dairy products. These studies do not clearly address the possibility that small local markets will continue to provide sustainable income for smallholder dairies in these marketsheds, even in the face of commercialization of the industry to serve larger population centers.

The development of agricultural sector models for Kenya and Uganda and the demonstration of the use of farm level models in all three East African countries studied, along with the databases that were acquired, provide a resource for further use in these countries. These models and methods are usable for assessment of technology and policy options that apply to the major agricultural commodities of these countries. The smallholder dairy technology assessment was chosen as a test platform to develop these general models.

In section 6.2 of this report, we discuss the application of new technology using the terms adaptation and adoption. We have used geographic equivalence as the first order approximation of extrapolation of technology from one location to another. With further more site-specific analysis, we have suggested that
prediction of actual adoption of the technology or policy option can be undertaken. For the East Africa scenario, we believe the potential utility of this method has been demonstrated and that the ancillary factors that must be considered have been identified.

We recognize that a pacing factor in the utility of the IMPACT suite in East Africa will be the development of capacity to use the models. We have proposed joint efforts with FAO to continue to this work by developing more “user-friendly” renditions of the models in a networked system that will be easily accessible by national users. We have included in this proposal the further building of national capacity through long term training and ongoing workshops.