A. Introduction

After the adoption of the high-yielding varieties (HYV) of rice and other crops in the early 1970s, the switch from the traditional varieties (TV) to the HYV has been rapid. In the case of rice, the use of the HYV has in general resulted in higher yields of output, but this technological change has been accompanied by increasing use of fertilizers, chemicals, and implementation of government purchase and support prices of major crops. During the last two years, the cold weather conditions and blast diseases have severely affected yields in rice output, particularly those in the HYV. The fact that the HYV (Tongil) require heavier inputs, as compared with the TV, and that their yields were more susceptible to cold weather and blast disease is significant in determining the yearly relative profitability of the HYV over the TV and therefore the farmer incentive in crop selection. As a rule, the analysis of farm income accounts is essential to an understanding of the reason for the adoption of new technologies by farmers.

Profitability from crop production for a farm household depends on such factors as per hectare yield of output, per hectare use of inputs, consumer and government purchase prices of grains, and government subsidized prices of fertilizers and chemicals. The attached tables show calculations of the financial costs and returns for 1977 and 1980 from the production of the five crops funded by AID for agricultural research. The year 1977 recorded a highest yield per hectare in the production of the HYV of rice, and 1980 was a poor harvest year for the HYV because of the cold weather and diseases.

Figures in the tables are based on national sample surveys carried out by the Office of Rural Development. They refer to average farm household production costs and revenue. The term "economic profit" is defined as the residual of farm household income received from farming activities after subtracting all expenditures incurred for inputs including any unpaid return to family-owned resources (land, labor, or capital). "Operating profit" is calculated as the residual from the farm income after paying out all costs of inputs which exclude any unpaid return to family-provided resources. In several villages we visited, there were very few opportunities for farmers to engage in off-farm or alternative economic activities other than farming. Under these circumstances, the concept of "operating profit" provides a more appropriate measure of the incentive for production.

B. Summary: Salient Features of Farm Household Income

1. Profitability of HYV and TV

The high-yielding rice varieties used relatively more fertilizers, chemicals and labor input. They outyielded the TV by a greater margin. In 1977 economic profits from the HYV were 33 to 60 percent