ADP/N Economic Analysis Summary

Comparison of Net Returns to Opium Poppy and ADP/N Supported Vegetables in Badakhshan Province in 2007

This summary presents results from the ADP/N "Economic Analysis of Net Returns to Opium Poppy, Wheat and Vegetables, Badakhshan, 2007" research report. The goals for this research were to support ADP/N by:

- Developing data that estimates and permits comparison of net returns for selected vegetable crops and wheat with opium poppy production on a per hectare basis;
- Estimating the net returns per hectare from the adoption of improved seed and technology packages, and;
- Estimating the Badakhshan regional economic effects for adoption of improved seed and technology packages supported by ADP/N.

Data Sources

Vegetable data sources include: the ADP/N Fall 2007 vegetable survey for yields, prices, and farmer estimates of yield improvements over the previous year; ADP/N market town vegetable prices in Badakhshan; ADP/N seed and fertilizer costs and area planted and ADP/N staff estimates of hired and family labor. The net income estimates for vegetables are presented below. Opium poppy data sources included United Nations Office on Drugs and Crime (UNODC) and ADP/N staff estimates. Depending upon price and yield assumptions net returns to opium poppy ranged between $2,183/ha. and $982/ha. with $1,358/ha. estimated for average yields.

Mohammad Kareem, a farmer in Jata village outside Faizabad, shows off potatoes grown using seed supplied by ADP/N. Kareem happily noted that the potatoes were prized by local merchants and produced twice as well as domestic varieties.

Vegetables: Estimates of Net Income, Badakhshan, 2007

Vegetable	Yields	Prices	Gross Income	Cost: Seed/ Fertilizer	Cost: Hired Labor	Cost: Total	Net Income
	kg/ha	*US$/kg*	*US$/ha*	*US$/ha*	*US$/ha*	*US$/ha*	*US$/ha*
Tomato	23,333	$0.12	$2,800	$270	$120	$390	**$2,410**
Pepper	2,000	$0.34	$680	$295	$60	$355	**$325**
Eggplant	25,000	$0.12	$3,000	$215	$60	$275	**$2,725**
Potato	17,500	$0.14	$2,450	$1,155	$160	$1,315	**$1,135**
Onion	28,000	$0.16	$4,480	$255	$160	$415	**$4,065**
Cucumber	10,000	$0.20	$2,000	$340	$80	$420	**$1,580**
Carrot	17,500	$0.12	$2,100	$255	$120	$375	**$1,725**
Turnip	25,100	$0.10	$2,510	$235	$120	$355	**$2,155**
Cabbage	9,771	$0.20	$1,954	$255	$80	$335	**$1,619**
Cauliflower	10,000	$0.50	$5,000	$285	$80	$365	**$4,635**
Okra	10,500	$0.30	$3,150	$215	$60	$275	**$2,875**

Sources: ADP/N Vegetable Survey (Fall 2007), ADP/N Staff Estimates

Primary Findings

- **Using the moderate vegetable yield and price estimates, nine types of vegetables supported by the ADP/N Vegetable Enterprise Development Program – tomato, eggplant, onion, cucumber, carrot, turnip, cabbage, cauliflower and okra – provided greater net returns per hectare than did opium poppy production.**

  Six types of vegetables exceed the higher UNODC opium poppy production and price estimates. The vegetable yield and income calculations used here are based on a single year survey so lack the reliability of a longer time series as was available in part for opium poppy estimates. Nevertheless, the net income and incremental income per hectare results suggest substantial potential for even greater productivity and profitability.

- **The ADP/N 2007 Vegetable Enterprise Development Program added an estimated US$ 3,428,000 to the Badakhshan regional economy in the form of the gross value of the incremental increase in vegetable production attributable to the program.**

  This estimate does not include the nutritional benefits and economic value of vegetables home consumed by local farmers involved in this production. The total gross value of the vegetables produced by the program in the region was US$17,252,040. While the benefit stream for vegetable crops is estimated by multiplying the total area planted by the yield, it can hide crucial information about effects on farmers and markets and obscure underlying assumptions. Such

estimates will provide, however, benchmarks for comparisons of improvements in productivity and profitability of vegetables.

- **Growing vegetables increases the returns to family labor and is potentially competitive in terms of labor demand with opium poppy production. Increasing the returns to families' scarce resources (labor and capital) can drain away those resources from opium poppy production.**

  Estimates indicate that the use of family labor in Badakhshan is similar for some types of vegetables, e.g. potato and onion, to the labor demand for opium poppy.

Constraints and Solutions

- **Vegetable production has substantial potential for use of hired labor and intensive use of family labor.**

  Given the costs in hired labor associated with achieving good opium poppy yields, there is a sizeable reduction in net revenue compared to vegetables, which uses mostly family labor. Family income is crucial and not, necessarily, yield and income per hectare. Family labor is often the limiting factor. By addressing and increasing the returns to families' scarce resources [labor and capital] are drained away from opium and dedicated to intensive crops like vegetables. This will result in a closer focus by ADP/N on the family in vegetable program activities, for example, increased specialization of labor and greater use of intensive (e.g. greenhouse) cultivation techniques.

- **Growing vegetables is not only a food security decision but also represents an income diversification opportunity for the farmer.**

  When opium poppy prices decline to the low levels reported recently in Badakhshan, other crops become more competitive, especially intensive crops such as vegetables. But there are constraints. Some vegetables, compared to opium poppy, are more vulnerable to crop failure; are often a more perishable product; are an uncertain income source; have a limited market because of transportation infrastructure problems, distance to markets and limited local purchasing power; and have limited credit potential. Cultivation of wheat and vegetables, however, can directly provide food security and do not need to compete financially with opium poppy. As ADP/N addresses issues of market access through market road improvement, crop failure through irrigation repair and regional economic development through support for market information, the market potential for vegetables can begin to be realized.