

Many rural people in Tajikistan cannot afford to regularly buy products like fuel and agrochemical inputs. Instead, they rely on locally available yet increasingly scarce natural resources. One result is that large amounts of animal dung are used as fuel for cooking and heating. Simple modifications of local cookstoves are supporting rural communities to use local resources more efficiently, in the process improving soil rehabilitation and



Photo: Author

## Soil rehabilitation starts with more efficient cookstoves

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The population living in the district of Baljuvon, in southern Tajikistan, is considered to be among the poorest in the country. This is an agricultural region, but yields are low. Most farmers rely on the rains which fall between autumn and spring, while summers are hot and dry. Local agricultural practices have resulted in poor levels of soil fertility and organic matter. Most of the soils in the region are severely degraded and nutrient balances have been negative for many years.

Efficient use of local resources was never considered to be an important issue during the period under Soviet rule (1924 to 1991). Instead, the population became used to having access to large amounts of highly subsidised agricultural inputs and fuel sources such as gas and coal. This situation changed dramatically after the country's independence. Because of financial constraints, farmers are now unable to purchase agricultural inputs or fuel on a regular basis. Instead, most rural families rely on the locally available natural resource base, largely contributing to its depletion.

### Breaking the vicious cycle

In February 2007, the German development NGO *Welthungerhilfe* began implementing an Integrated Rural Development Project in the Kyzylsu Watershed Area in Baljuvon. To break the vicious cycle between decreasing soil fertility and deteriorating agricultural yields, the project is following an integrated approach, linking activities to raise resource use efficiency at house- and farm level. To improve agricultural production, special emphasis is given to reducing soil erosion, diversifying crops and improving the soil humus content. Larger quantities of organic fertilizer are available in the region in the form of animal dung from horses, donkeys, goats, sheep and cows. However, as most families cannot afford to buy coal or gas for cooking and heating, they are currently using most of the available animal dung as fuel. A study conducted on behalf of *Welthungerhilfe* showed that an average farm household in the region burns over 2 tonnes of dried cow dung per year. This is higher in the case of extremely poor households, as they rely completely on cow dung for cooking and heating.

Traditional cooking and heating systems are highly inefficient. In order to enable the local population to use larger amounts of animal dung as organic fertilizer, our project has introduced

simple but efficient modifications to improve the efficiency of cookstoves and heating systems. These low-cost modifications have helped reduce fuel requirements by at least 50 percent. Donkeys or other means of transport are then used to bring the remaining animal dung to the agricultural plots. The animal dung is first spread on the soil and is later incorporated when the soil is ploughed.

Since soil deterioration is a very complex process, rehabilitating the soil normally takes years. On top of this, the prolonged hot and dry weather conditions of 2007 were particularly difficult for agricultural activities. Nevertheless, the farmers who applied recommended organic fertilizer and erosion control measures on their plots were able to notice positive changes in the first year in terms of plant development, drought resistance and yields.

Learning how to modify local cookstoves is simple, and once you have some experience, it is an easy skill to pass on. In trainings offered by the project, interested women's groups learn about the importance of animal dung for soil rehabilitation and how to modify the traditional cookstoves into more efficient ones. Additionally, the project provides the metal sheets which are used to cover the front part of the stove. Some of the most skillful and enthusiastic rural women who are now using the improved cookstoves have been asked by the project to co-facilitate training events with new groups. Widespread interest has also been observed in nearby communities which are not (yet) directly supported by the project.

By aiming to use local resources more efficiently, positive effects from the project can be expected long after it has come to an end. This is ultimately preferable to spending large amounts of money on agricultural inputs, which, once the project intervention has ended, will again become unaffordable for large parts of the rural population. In this way, such activities are helping the project itself use its own resources in a more efficient and sustainable way. More importantly, the improved efficiency of cookstoves and heating systems offers even resource-poor farmers a viable option to return more organic material to their plots, and to improve agricultural production in a sustainable way.

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