



Modern techniques in wheat cultivation for better yield and biodiversity conservation

The challenge

According to the Ministry of Agriculture, Georgia increasingly depends on wheat imports. 2010 around 85% of the wheat consumption in Georgia has been imported from Ukraine, Kazakhstan and Turkey. In recent years, more and more farmers have given up the cultivation of cereals. In comparison to 2009 the cultivated areas with cereals (mainly wheat) decreased by 18% in 2010. Due to the strong dependency on wheat imports, the domestic price development depends very much on the world price trends. Reflecting the world price trends the wheat price in Georgia increased by 69% between August (\$ 256/t) and December 2010 (\$ 433/t). This sharp increase of the wheat grain price correlates with the bread and wheat flour prices, which rose up to 14% in August 2010. This development is seriously destabilizing the basic food supply and is forcing the poverty situation in the country as mainly the poorest parts of the population are affected by sharp rises in food prices. The Georgian Government is aware of the situation and has therefore ini-

tiated the implementation of measures aimed at boosting the wheat production in the future. According to the Ministry of Agriculture, the dependency on wheat imports should be reduced by 50% until 2012.

The current wheat production in the project's main pilot region Dedoplistskaro is mainly characterized by inappropriate cultivation techniques which do not take into account the existing ecological site conditions. Negative ecological side effects like dehydration and erosion of the soil as well as a severe and irreversible loss of nutrients could be observed. In fact the natural soil conditions in Dedoplistskaro generally allow high annual yields. The soil is extremely fertile while the main limiting factor for the wheat cultivation is the lack of rain during late spring and early summer. Therefore a significant increase of the wheat production can be expected by just modifying the traditional cultivation techniques on the basis of new scientifically based knowledge and practical experience. Taking better into account the local soil, climate and weather conditions, applying site adapted seeding and tillage techniques as well as

the more targeted use of fertilizers and pesticides will help to keep or improve the agricultural basic conditions in the area. In the long run improved knowledge and management capacities of farmers will lead to a more sustainable wheat production which also fulfils biodiversity conservation targets.

Optimized wheat cultivation in Dedoplistskaro

The German-Georgian Technical Cooperation Programme "Sustainable Management of Biodiversity" promotes a productive and sustainable cultivation of wheat in the district of Dedoplistskaro. Since 2010 a joint cooperation with several local farmers and land owners aims at the improvement of knowledge and management capacities of the farmers in optimizing their wheat production. Beside the expected increase of harvest, new cultivation techniques that take into account ecological aspects will finally contribute to biodiversity conservation in that pilot area.



Some of the aspects of optimized wheat production have been identified already:

- Before sowing, farmers are shallowly harrowing the soil. This technology conserves the water balance of the soil and provides perfect soil conditions for a successful germination and early growing of the seeds. In the past, the soil was deeply ploughed. This technique leads to a deep dehydration of the soil and is reducing soil fertility as nutrients are getting lost by soil erosion;
- As the water supply, especially during late spring and early summer, is limiting the success of the cultivations, it is advised to use early ripening wheat varieties and to seed them already in October;
- The amount of seeded grains/m² can be reduced by at least 25-30 %. The reduction of seeded grains improves the germination and the quality of each individual wheat plant and – moreover reduces the seeding costs considerably;
- Optimizing and targeting the application of pesticides and fertilizers. Several currently used products are highly poi-

soning but ineffective in controlling insects and unwanted herbs. A new modular system of pest control could be developed in order to reduce environmental damages and the amount of obsolete pesticides.

- Harvested fields should not be burned, as this process is setting free large quantities of soil nutrients (in the ash), which will get lost through wind erosion;
- Establishment of windbreaks consisting of various local shrub and tree species are of vital importance for the land cultivation in Dedoplistskaro. Windbreaks are preserving the soil fertility in the long-run as they are preventing from dehydration and soil erosion;
- The storage of the harvest is currently not complying with hygienic minimum standards and causes severe losses in quantity and quality due to mice, birds and mould fungi.

Wheat cultivation under aspects of biodiversity conservation

In the frame of this technical cooperation project, an integrated agri-

cultural concept is followed to increase farmer's income through higher wheat yields per hectare. The ecologically and technically optimized wheat cultivation prevents from environmental damages and loss of biodiversity. The establishment of windbreaks reduces erosion and improves the local micro climate. Windbreaks also provide the opportunity of additional income through wild collection of fruits (e.g. berries, nuts, mushrooms) or - under certain conditions – the sustainable production of fire wood. In addition, windbreaks are green corridors with the nesting places for various animal species. Mainly birds are fulfilling an important function in biological pest control, as they feed on insects and mice which can cause serious damages to the wheat cultivations.

The German International Cooperation (GIZ) supports the policy of the Ministry of Agriculture to increase the wheat production in Georgia through the introduction of productive and ecologically optimized cultivation techniques. This is done in line with the guiding principles and objectives of biodiversity protection laid down in the National Biodiversity Strategy and Action Plan (NBSAP) of Georgia under the guidance of the Ministry of Environment Protection of Georgia.

Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ) GmbH

Sustainable Management of Biodiversity South Caucasus

6, Gulua St, 6th fl.
0114 Tbilisi, Georgia
T +995-32-201828

Ministry of Environment Protection

Biodiversity Protection Service

6, Gulua St.
0114 Tbilisi, Georgia
T +995-32-727231

Text: Christine Straub

Photos: © Hans Kellner