



Promotion of drought tolerant and early maturing pearl millet variety in Abergele district; Wag-Himera Zone (2017)

PROMOTION OF ECONOMIC DIVERSIFICATION AND IMPROVED FARMING PRACTICES TO ADAPT TO CLIMATE VARIABILITY AND EXTREME WEATHER EVENTS

Considering the high rainfall variability and the fact that 95% of the agricultural production in Ethiopia is rain-fed and characterized by small-scale production, food security has been and will remain a major challenge in the coming decades. Hence, measures to adapt to the expected effects of climate change in the agricultural sector are vital and crucial.

Linking improved agriculture solutions through diversification of **drought-tolerant and high-value crops** combined with **alternative livelihood options** such as **beekeeping** and **poultry production** are a direct response to the three main hazards occurring in Tigray and Wag-Himera Zone, namely the shortening of the rainy season, a variability of rainfall, and drought, as reported by the visited communities in the Tigray Region and the Wag-Himera Zone.

The promotion of high-value and drought-tolerant crops has reached large numbers of beneficiaries (about 18,084 farm households; of whom 5,425 are women) and has significantly contributed to increasing agricultural production and household income. Improved farming practices to diversify and intensify the farming system were associated with necessary agronomic skills capacity development and farmer-to-farmer experience sharing measures. Thanks to these interventions, the adverse impacts during the 2015–16 drought were significantly reduced.

HIGH-VALUE CROPS

Beneficiaries are particularly interested in quick-return activities; therefore, the promotion of high-value crops are highly appreciated by the farmers. Often they do not have access to such seeds as nearby markets are far and qualified seeds are only available in bigger centres. HELVETAS especially promotes drought-tolerant, high-value and nutritious crops (e.g. lentil, sesame, wheat, bean, ground nut, pigeon pea, Madagascar bean, garlic, gesho, fruit seedling, forage seedling, cactus/bele) including vegetables and local spices (e.g. chena adam, fenugreek, gesho).

These crops were selected as they have higher capacity to resist to moisture stress caused by the erratic rainfall in the Tigray and Wag-Himera, Amhara Region. These crops also fetch high prices at the local market and thus can significantly contribute to the income of smallholder farmers. For instance, a kilo of chena adam seed is sold for ETB 70 (2.5 USD/kg), while gesho leaves fetch ETB 75 (2.6 USD/kg). Even during the heavy drought in 2015–16, most of the harvest remained satisfactory. However, the situation of severe water scarcity has also proved that certain crops reach their limits, such as garlic. Farmers reported that garlic production is lower during dry periods, as it was also the case during the 2015–16 drought when the harvest was very low or even failed.

ALTERNATIVE LIVELIHOOD OPTIONS

Obviously, high-value crops generate significant income at the household level and allow farmers to earn cash and convert it into other assets. Converting resources into cash is an important strategy in a disaster-prone area.

In these first 18 months, he earned about 46,750 ETB (1,700 USD) from the sale of various cash crops. The biggest portion came from chena adam, which has the highest local market price, followed by garlic, gesho, vegetables, and eggs. Currently, he has expanded his income-generating activities to fattening sheep and goats. He gave his son 10,000 ETB (363 USD) to start a small business. He also holds a deposit of 20,000 ETB (727 USD) at the local savings and credit institution and has escaped a state of destitution due to insufficient food in the household.

He holds 0.7 ha of farmland. He tells us that he has learned three key improved agricultural practices in the past years because of the project: soil fertility management and moisture conservation have significant impact on the land's productivity. Earnings are higher from garlic production and from the diversification of cash crops such as chena adam, gesho, and vegetables. He was able to increase his production due to two harvests of crops per year thanks to the water harvesting ponds.



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Farmer Araya Hadush is 67 years old and lives in a village named Beleso in Tigray.

Activities such as poultry production and beekeeping development are interventions that communities are particularly interested in as they can still achieve an income during periods of water stress at least under current climate conditions. These interventions are less sensitive to extreme weather events and changes in the climate; hence, they serve as risk pooling by giving households some additional income when agriculture production is low(er) or even if it fails. As beneficiaries gain new skills, they can further improve their resilience to climate variability and change.

Poultry production

Poultry production is a crucial activity for generating additional income and also enhancing household nutrition. Having non-agricultural activities helps farmers reduce risks while still ensuring income when most of the agriculture production fails. With regard to the occurrence of other climate-related hazards such as hailstorm, wind or frost, no major adverse effects have been recorded to date.

On average, a household can get a weekly income of around 40 ETB (1.75 USD; one egg is worth 2.5 ETB).

However, poultry production reaches its limits at roughly two and a half years if the chickens are not replaced by young ones; therefore, some savings need to be reserved for buying new hens.



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W/ro Zafu Kidanemariam, poultry beneficiary in Negash, Tigray (2015)

Beekeeping

Beekeeping can make a substantial contribution to the household economy. However, in years of heavy drought, the production of honey can be weak. It has also been recorded that many bee colonies absconded during the drought in 2015–2016. Yet, management is considered as a key factor even under changing climate conditions. It has been concluded that beekeeping contributes to household resilience only to a certain extent and fails as an absorptive measure during a heavy drought. It is therefore recommended to analyse in greater detail how the changing climate affects beekeeping and what management measures farmers can realistically take to prevent losses in very dry years.

In sum, the ability of communities to convert resources such as a harvested crop into cash or other assets is an important strategy in a disaster-prone region. This improves the flexibility of households to deal with periods of stress. Income diversification is an important strategy for increasing adaptive capacity at the household level and to a certain extent at the community level. Accumulating savings from income-generating activities is a vital preparedness/



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Bee keeping cooperative in Tigray (2014).

response measure in the context of disaster risk management. At the same, diversifying options also contributes to spreading risks in the sense that if certain options fail, others might work; in other words, a combination of different options makes households more resilient.

Last but not least, the support of facilitating access to markets for farmers so they can sell their harvest at a better price can have a strong transformative dimension both for individual households and entire communities.

CONTRIBUTION OF ECONOMIC DIVERSIFICATION TO CLIMATE RESILIENCE

	Sustainable Land Management	Access to Water	Benefit at Household Level	Climate Resilience	Disaster Risk Management
High value crops	<input type="checkbox"/> Recharge of ground water <input type="checkbox"/> Retention of water <input type="checkbox"/> Soil fertility <input type="checkbox"/> Increase in biodiversity	<input type="checkbox"/> Drinking <input type="checkbox"/> Irrigation	<input checked="" type="checkbox"/> Increase in income <input checked="" type="checkbox"/> Diversification in production	<input checked="" type="checkbox"/> Absorptive <input checked="" type="checkbox"/> Adaptive <input checked="" type="checkbox"/> Transformative	<input type="checkbox"/> Prevent <input checked="" type="checkbox"/> Reduce <input checked="" type="checkbox"/> Prepare / Respond
Poultry production	<input type="checkbox"/> Recharge of ground water <input type="checkbox"/> Retention of water <input type="checkbox"/> Soil fertility <input type="checkbox"/> Increase in biodiversity	<input type="checkbox"/> Drinking <input type="checkbox"/> Irrigation	<input checked="" type="checkbox"/> Increase in income <input checked="" type="checkbox"/> Diversification in production	<input checked="" type="checkbox"/> Absorptive <input checked="" type="checkbox"/> Adaptive <input checked="" type="checkbox"/> Transformative	<input type="checkbox"/> Prevent <input checked="" type="checkbox"/> Reduce <input checked="" type="checkbox"/> Prepare / Respond
Beekeeping Development	<input type="checkbox"/> Recharge of ground water <input type="checkbox"/> Retention of water <input type="checkbox"/> Soil fertility <input type="checkbox"/> Increase in biodiversity	<input type="checkbox"/> Drinking <input type="checkbox"/> Irrigation	<input checked="" type="checkbox"/> Increase in income <input checked="" type="checkbox"/> Diversification in production	<input checked="" type="checkbox"/> Absorptive <input checked="" type="checkbox"/> Adaptive <input checked="" type="checkbox"/> Transformative	<input type="checkbox"/> Prevent <input checked="" type="checkbox"/> Reduce <input type="checkbox"/> Prepare / Respond