



POLICY BRIEF

February 2025

Scaling up Drip Irrigation System in Eastern Bhutan

Executive Summary

Drip irrigation system is feasible climate smart agriculture technology in Bhutan that could enhance food security, improve yield and increase resilience to climate change. In the view of country's vulnerability to climate related issues such as unpredictable rainfall and water scarcity, scaling up drip irrigation system can promote sustainable food production and promote adaptive initiatives.

This policy brief highlights the advantages of drip irrigation, obstacles to its broad use and recommendations for incorporating this technology into Bhutan's farming sector.

1 Background

Bhutan is among the most vulnerable climate nations due to extreme weather events and shifting precipitation patterns, which make it difficult to sustain agriculture productivity. Traditional irrigation techniques such as flood method led to soil erosion, nutrient leaching and wastage of water. Drip irrigation on the other hand can solve these problems by supplying water to the plant root zones, reducing water waste and contributes to water conservation.

2 Advantages of drip system

Drip irrigation system delivers water directly into the root zones and reduces water wastage by minimizing evaporation contributing to water conservation. It improves crop productivity through consistent water supply and soil health through fertigation. Fertilizer loss is also minimized due to localized application and reduced leaching. It also avoids water logging and reduces over irrigation and water stagnation.

In addition, labor cost associated with manual watering, weed control and irrigation management are reduced by drip irrigation. Drip irrigation system helps farmers adapt to climate variability by providing consistent water supply and ensure crops receive sufficient water during dry spells and erratic rainfall.

3 Current Challenges

Drip irrigation system has a number of drawbacks despite its benefits such as high initial set up cost, technical limitations, and improper filtration and equipment maintenance that led to clogging. The initial installation cost is expensive for small holder farmers and many farmers are unable to pay the upfront cost. The issue is further aggravated due to their limited knowledge on the its multiple benefits. The need



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of regular maintenance is also a challenge due to limited technical knowhow.

4 Policy Recommendations

To address these issues, small holder farmers should continue to get financial support and subsidies. This financial support can be in form of direct grants, low interest loans or cost sharing arrangements which would ease the financial burden. More training and capacity

building programs should be conducted to educate farmers on the benefits and proper use of drip irrigation system. Technical support for the installation and maintenance of drip system should be ensured for long term sustainability and optimal use. Since the initial investment is high, it is more recommended towards commercial enterprises or farms or farmers cooperatives.



Figure 1: Drip Irrigation system at Lhuentse District



Figure 2: Drip Irrigation system at Mongar District