



**Food and Agriculture
Organization of the
United Nations**



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FULL REPORT

www.fao.org/3/ca4429en/ca4429en.pdf

Study at a glance

Between 2015 and 2018, the performance of 36 different DRR good practices was monitored on 924 individual farms in ten countries (the Plurinational State of Bolivia, Cambodia, Colombia, Guyana, Haiti, Jamaica, the Lao People's Democratic Republic, Pakistan, the Philippines, and Uganda).

A range of hazards was studied, including droughts and dry spells, flood, storms, frost, and pests and diseases. Using "control" and "good practice" plots, the performance of previous agricultural practices was compared against the performance of new DRR good practices. Monitoring was conducted under both hazard and non-hazard conditions.

Disaster risk reduction at farm level:

Multiple benefits, no regrets

Violent storms, extended droughts, crop pests, animal diseases – these are just a few of the multiple types of hazards that are increasingly undermining the livelihoods of the world's 2.5 billion agriculture-reliant people – and causing billions of dollars in economic losses every year.

As the planet's weather patterns become more erratic and extreme, the need to boost the resilience of agriculture to the impacts of such shocks – to protect the wellbeing of billions of the planet's poorest people and safeguard global food supplies – is clear.

But expanding humanitarian needs, competing priorities and limited financial resources mean that new tools and approaches are needed urgently. More must be done to curtail the impacts of crises before they devolve into costly humanitarian crises.

Preventing instead of reacting

As an alternative to over-reliance on reactive responses that see large amounts of money spent on post-disaster agriculture recovery, implementing preventative disaster risk reduction (DRR) measures before shocks occur has significant potential to enhance rural resilience in the face of hazards.

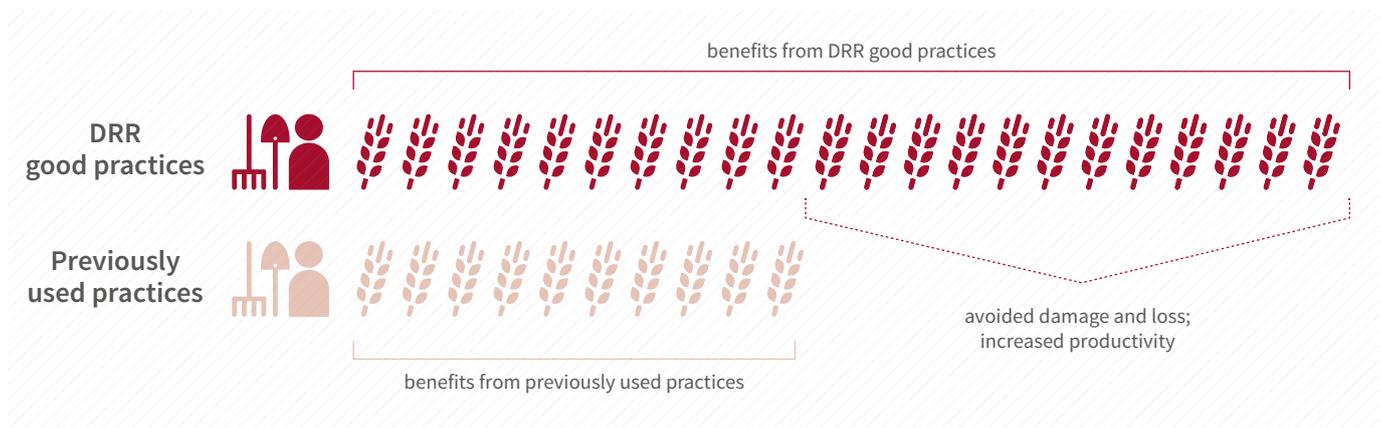
A number of known, affordable, and easily implemented DRR practices exist that can, if scaled-up and widely implemented, avoid billions of dollars in lost agricultural production and reduce the price-tag of post-disaster interventions.

Using farm-level data acquired at over 900 different sites and spanning all world regions, this unique study by the Food and Agriculture Organization of the United Nations (FAO) quantifies the economic and production gains made possible through DRR in agriculture – even under hazard conditions – highlighting its value as a disaster management strategy.

Key findings

The DRR good practices analysed by this study generated benefits under hazard conditions that were 2.2 times higher on average than those generated by the practices previously used by farmers under the same conditions.

Net benefits of DRR good practices vs. previously used practices (under hazard conditions)



The average benefit–cost ratio (BCR) for the DRR good practices was 3.7 under hazard scenarios. This means that for every dollar invested, the farmer achieved 3.7 dollars in avoided loss/return. Under non-hazard conditions, gains rose even further, to a BCR of 4.5.

Increases in overall monetary benefits (expressed in terms of net present value, or NPV) versus previously adopted practices ran from as little as two percent gains in some cases to as much as 886 percent. This casts a bright spotlight on the scale of absolute benefits that farmers can achieve by investing in tested DRR good practices.

Benefits included increases in agricultural production, reduced animal mortality, higher yields, better-quality produce with higher sales value, and avoided damages and losses. These gains consistently outweighed the costs involved in implementing DRR practices.

Benefit–cost ratios of DRR good practices



Examples of assessed DRR good practices

Country	Hazard(s) addressed	DRR good practice	Gain vs. previous practice*
Uganda	 Drought and dry spells	Farmers were introduced to improved maize varieties and trained in farming methods designed to protect crops from dry conditions.	+140% increase in net benefits under hazard scenarios
The Lao People's Democratic Republic	 Animal diseases	Farmers were taught to vaccinate animals and rear them in well-maintained enclosures with shelters, as opposed to the previous practice of not vaccinating them and allowing them to free range.	+45% increase in net benefits during the wet season under non-hazard scenarios +21% increase in net benefits during the dry season under non-hazard scenarios
Plurinational State of Bolivia	 Drought	Introduction of silvo-pastoral foraging systems to safeguard animals.	+109% increase in net benefits under hazard scenarios
Haiti	 Storms	Pea cultivation with live barriers, conservation agriculture and agroforestry.	+52% increase in net benefits under hazard scenarios
The Philippines	 Strong winds  Typhoons	Use of passive fish pots as opposed to bottom set longlines.	+405% increase in net benefits under hazard scenarios +222% increase in net benefits under non-hazard scenarios

* cumulative benefits over 11 years/seasons

The case for upscaling

DRR measures in agriculture hold vast potential for improving damage prevention and impact mitigation at the household level, with immediate and tangible benefits for farmers. The economic benefits also extend to the national and regional levels.

Most farm-level DRR measures are easily within financial reach of even highly vulnerable, resource-strapped farmers. And all the measures analysed in FAO's study bring benefits regardless of hazard occurrence, meaning they offer a way for farming families to improve their nutrition, food security and income streams as stand-alone agronomic practices, even without DRR value-added. Most practices analysed also bring considerable environmental and social co-benefits.

Finally, this study highlights that farm-level DRR interventions are particularly effective as a way to withstand the low to middle-impact hazards that most frequently affect smallholders, making them an ideal way to protect this large and vulnerable population.

These findings make it clear: DRR in agriculture yields multiple dividends. Yet today, farm-level DRR initiatives still tend to be limited in scope. It is time to shift beyond the current focus on pilot-level DRR interventions to more ambitious and systematic transformations that aim at seeing ground level DRR measures not simply replicated locally, but rather deployed far more widely and at significantly larger scales.

Implications for policy

Authorities responsible for disaster risk management as well those in charge of agricultural development and planning should mainstream farm-level DRR across their programmes of work in a deliberate manner.

A range of farm-level DRR good practices exists which farmers can implement themselves, without major investments or dependency on upstream support services. The comparatively low intervention costs of such farmer-to-farmer upscaling – plus the potential for bottom up implementation – makes it a particularly promising strategy for improved DRR at large scales.

Farmer-to-farmer upscaling requires first and foremost raising the awareness of farmers regarding the existence and feasibility of DRR good practices and encouraging peer-to-peer learning. External actors have an important

role to play, however, in terms of communicating knowledge to and across farming communities and in providing effective training and extension services.

At the same time, other types of farm-level DRR solutions will require external support from the government or the private sector if upscaling is to be achieved, particularly for capital-intensive interventions. This includes establishing an enabling policy framework to facilitate farmers' access to credit and markets, as well as to input services (seed multiplication, storage, fertilizers, etc.) or public investments to reduce the burden of upfront capital costs on farmers.

Under both upscaling pathways, DRR practices in agriculture are highly context- and location-specific, so interventions must be firmly grounded in local agro-ecological, market, and cultural dynamics.

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