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Promoting Use of Climate Services by Farmers

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Accurate climate and weather information is becoming increasingly important to attain food security under a changing climate. Farmers constantly make decisions which could benefit from weather and climate information; such as timing of operations, variety selection, planting date, and intensity of input use. In the past, they have relied on experience and observation to predict weather, however with climate change the reliability of traditional knowledge has deteriorated. Climate services, which generate, translate, and communicate information, can help farmers to:

- Improve decision making and risk management
- Take advantage of favourable climate conditions
- Adapt to climate change

A range of weather and climate information, covering varying timescales, is available through National Meteorological Services and Regional Climate Outlook fora. National Meteorological Service departments in most countries produce free daily, weekly, monthly and seasonal weather forecasts, as well as agro-meteorological bulletins.

These can be accessed through print media, television and radio broadcasts, and the internet. [Regional Climate Outlook Forums](#) (RCOFs) have been initiated to further improve climate information products.



Climate change makes decisions, such as when to plant, much more difficult than in the past.

There have been significant improvements in collecting climate data and forecasting weather in recent years, but utilization of these services in Africa is still minimal. The main limitations to

farmers making full use of such information include lack of access, inability of farmers to comprehend technical language, and lack of trust in the reliability of climate information.

IMPROVING ACCESS AND USE OF CLIMATE SERVICES BY FARMERS

Farmers need access, advice and support to help them properly use climate information to make informed decisions and manage risk. Below are some practical ways development partners can contribute to improving access and use of climate services.

Make climate information relevant through farmer participation. It is important to start by identifying farmer's climate service needs through a participatory process, taking care to include marginalized groups. Once these priorities are established, translating climate and weather information, as well as crop/livestock advisories, into local languages, in a format that farmers can understand, can address the most relevant information needs. This process may include:

- Working with focus groups to identify information needs in an on-going manner
- Bringing together climate, agricultural experts, farmers and project staff to translate climate information and produce crop/livestock advisories
- Training farmers to interpret climatic information, discuss seasonal forecasts, and implications
- Involving farmers in collecting and analysing simple weather/climate data, such as rainfall

PROVIDE TIMELY ACCESS OF WEATHER INFORMATION TO FARMERS

Timely access to weather and climate information can be enhanced at a relatively low cost through communication channels such as:

- Mass SMS messaging - [Such services](#) are more and more widely available in Africa

- Rural radio - [Programming feedback by farmers](#) in addition to information is most effective
- Agro-meteorological bulletins and crop/livestock advisories - Place in strategic places (e.g. market places, churches, mosques, etc.)

INTEGRATION OF CLIMATE INFORMATION WITH OTHER INTERVENTIONS

Climate information dissemination can be combined with other interventions so as to increase its effectiveness and efficiency. For example, climate information can be shared regularly in farmer field school or savings group meetings. Climate information, and seasonal outlooks should be integrated into farmer training sessions.

Practical examples of bridging the gap between climate information and farmer decision making are included in the resources below.

ADDITIONAL RESOURCES

1. FAO. 2019. [Handbook on climate information for farming communities – What farmers need and what is available.](#)
2. Tall A, Hansen J, Jay A, Campbell B, Kinyangi J, Aggarwal PK and Zougmore R. 2014. [Scaling up climate services for farmers: Mission Possible. Learning from good practice in Africa and South Asia.](#)
3. Van Huysen, Hansen J and Tall A. 2018. [Scaling up Climate services for small holder farmers: Learning from practice.](#)
4. Wilkson E, Budimir M, Ahmed, AK, Ouma G. 2015. [Climate information and services in BRACED countries.](#)

Using Pesticides Safely

Neil Rowe Miller, Agriculture & Livelihoods Technical Advisor, Eastern Africa

Effective control of crop pests is critical to the success of Conservation Agriculture. Many of our most effective cover crop species (e.g. cowpea, pigeon pea and lablab) are particularly vulnerable to insects which attack their flowers and developing pods. In addition, as mechanical tillage is reduced or eliminated, weed management becomes more challenging. In response to these

threats, many CA farmers use some form of chemical pesticides.

While pesticides can reduce the damage caused by pests, they also carry their own risks. The [World Health Organization](#) estimates that more than three million people are poisoned by pesticides every year, resulting in over 250,000 deaths. Children are particularly susceptible. Damage to the environment, including pollinators and other wildlife, adds an additional toll.

HIGHLY HAZARDOUS PESTICIDES

Some pesticides, including *Endosulfan*, *Methomyl*, *Cyfluthrin*, and *Methyl Parathion* are highly hazardous and should not be used!

The good news is that much of this risk can be reduced by using appropriate precautions when applying pesticides. Below are some key strategies which will protect your family and your environment.

TREAT ALL PESTICIDES AS HAZARDOUS

Synthetic pesticides vary in their hazard level, but in a village setting, with non-literate farm workers and children, it's best to treat them all as equally poisonous. Even natural pesticides, like *Tephrosia* and tobacco preparations, have significant environmental and human health effects and must be applied with appropriate precautions.

USE APPROPRIATE PROTECTIVE EQUIPMENT

Full-body, rubberized suits are impractical in tropical environments and unaffordable for most small-scale farmers. Practical, effective protection includes:

- Light fabric clothing with long sleeves, and trousers that leave no exposed skin
- Rubberized boots (*not* leather or canvas shoes which will adsorb pesticides)

- Heavy rubber gloves (not thin disposable gloves which tend to tear)
- A good quality dust mask (it must seal tight around the nose and mouth)
- Goggles or a face shield



Full-body, rubberized suits are generally impractical in tropical environments.

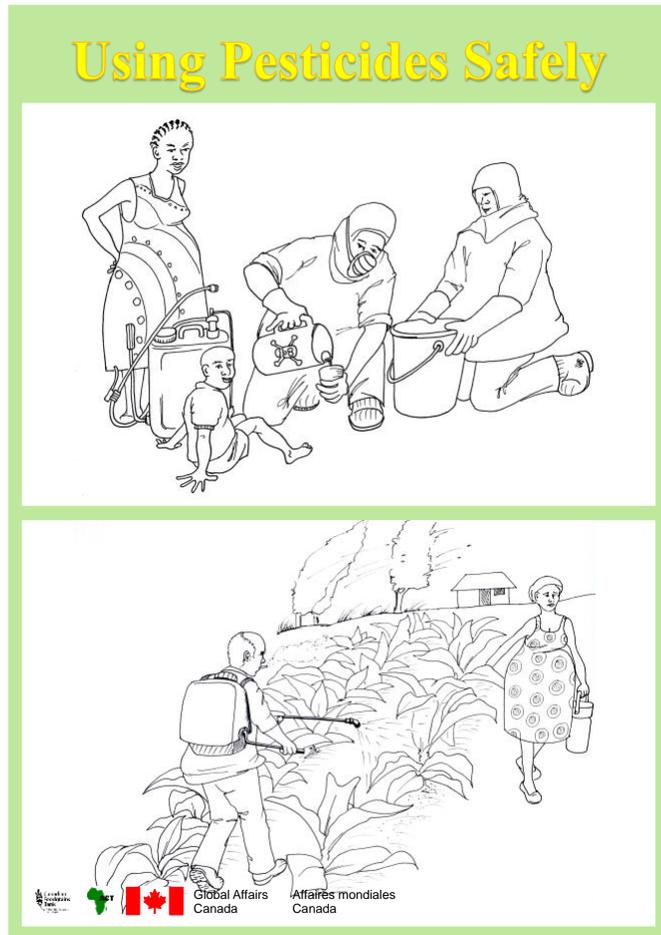
USE SAFETY PRECAUTIONS WHILE SPRAYING

- Spray in the morning or evening when insect pollinators are less active
- Test the sprayer using clean water before you fill it with pesticide
- Mix pesticides in the field to be sprayed, away from children and other family members
- Begin spraying from the down-wind side of the field (in the direction the wind is blowing) so that you don't walk into where the wind has blown the pesticide
- Spray to the side as you walk, not in front of you, so that you don't walk through the area which you have just sprayed
- Avoid eating and drinking while spraying
- Clean all equipment with soap, rinsing three times with clean water
- Wash protective gear immediately after spraying, using rubber gloves
- Keep all equipment and containers in a safe place out of reach of children

CHILDREN AND PREGNANT/NURSING WOMEN SHOULD NEVER BE INVOLVED IN PREPARATION, SPRAYING, OR CLEAN-UP OF PESTICIDES

This includes:

- Not carrying water to the field after spraying has started
- Not cleaning spray equipment or clothing worn during spraying



This poster, which helps farmer groups discuss the hazards of and precautions for pesticide use, can be downloaded [here](#).

The effects of pesticide poisoning add up over time. Even if you see no immediate effects, long-term damages to your health and the health of your family may build up and are potentially more serious. Local remedies and beliefs (e.g. that drinking milk will reduce the effects of pesticides) can create a false sense of safety. The above guidelines will provide better protection to you, your neighbors, and the environment.

ADDITIONAL RESOURCES

1. Crop Life Intl. 2004. [Guidelines for Personal Protection When Using Crop Protection Products in Hot Climates](#).
2. CFU. 2014. [Spraying and Herbicide Information Booklet](#). Conservation Farming Unit, Lusaka.
3. FAO and ILO. 2015. [Protect Children from Pesticides!](#) Food and Agriculture Organization and International Labor Organization.

Partner Profile: SOLDEV, Malawi

Lilian Zheke, Agriculture & Livelihoods Technical Advisor, Southern Africa

The Synod of Livingstonia Development Department (SOLDEV) is the development arm of the Church of Central Africa, Presbyterian (CCAP) of Livingstonia, Malawi. CCAP Malawi was started by Scottish Missionaries in 1875. Through their holistic approach to the Gospel, the church began a number of social services to cater for the social-economic needs of communities in addition to spreading the Gospel.

SOLDEV's mission is to facilitate socioeconomic development and spiritual empowerment. The organization has partnered with Tearfund UK and CFGB to implement food and nutrition security, water supply and sanitation, and humanitarian emergency response projects. They work predominantly in the Northern Region and some parts of the Central Region of Malawi.



A women's group in Rumphi extolling the virtues of CA!

SOLDEV started working with CFGB through Presbyterian World Service and Development in 2010 and with Tearfund UK in 2012. With support from Tearfund UK, SOLDEV has implemented a number of projects including the Karonga Climate Justice Project, the Mpherembe Conservation Farming and Livelihood project, Vinthukutu Cash transfer program and the Karonga Floods Response. Projects implemented with CFGB include; Luwerezhi Building Disaster Resilience Communities, Euthini Water and Sanitation, Wenya WASH project, Mpata Drought Mitigation Project and Nyungwe Conservation farming project. SOLDEV is currently implementing the 2nd phase of the Mpata Drought Mitigation Project aimed at reaching 500 farm families more food secure in Mpata Extension Planning Area, Karonga District. To improve food security the project is promoting conservation agriculture practices including minimum tillage, mulching, green manure cover crops and use of locally-made fertilizer. The project is also promoting economic empowerment through Self-Help Groups (SHG's), especially among women.



2020 Malawi country-workshop participants visit SOLDEV CA farmer

Conservation agriculture has improved productivity, and surveys indicate an increase in maize yields from a baseline of 0.5 tons to 2.3 tons per hectare. Use of “Mbeya fertilizer,” combining manure with purchased fertilizer, has also increased yields and has reduced the amount of inorganic fertilizers farmers are buying. The proceeds from SHGs are improving the welfare of

households and boosting small businesses, and as a result, participants have reported increased savings, incomes and livestock ownership.

SOLDEV envisions self-sufficient communities that are able to meet their socioeconomic affairs, and they will continue reaching out to the most vulnerable communities in marginal areas, building capacities of marginalized groups like women and youth, and bringing evidence-based interventions to improve food security and livelihoods.

Discussions from the Network

Neil Miller: CA with Trees has been promoted widely in Africa, including in [our December newsletter](#). In response to that article, one reader shared [this paper](#), which found that apparent root competition from trees significantly reduced maize yields under reduced tillage. We routinely trim branches of trees to reduce shading and above-ground competition. Do we also need to consider using limited tillage *around* trees to reduce root competition when we combine agroforestry and CA?



Tree species, such as this hedgerow of Calliandra, can compete with crops below ground even when their leaves and branches are pruned.

Sebastian Scott: In my experience, configuration of crops and timing/frequency of pruning all have big influences on crop performance. Of course, if the tree is allowed to grow vegetation when the maize or other crop is trying to do the same, competition will occur. Ideally, you manage towards a green manure situation for maximum utilization of the nitrogen from agroforestry crops (i.e. not just dry leaves that have fallen, but green leaves in the true sense of the term 'green manure.')

Neil Miller: In the paper I posted, the tree-crop competition is drastically reduced by tillage. So it appears the major competition occurred below ground, not above ground. I have two other papers showing similar results.

Sebastian Scott: Yes, also makes sense. I have nice mature old legume trees in my fields and they are very competitive during dry spells. I will remove all of them this dry season and plant *Gliricidia* in wide alleys. I will leave a few of the less competitive indigenous trees that are there.

John Twilingiyumukiza: Thanks Scott for your interest in our posts and valuable comments

Sebastian Scott: Over the years we have come up with a system that tries to take advantage of strip cropping, crop rotation with legumes and intercropping. We basically grow soya or groundnut in rotation with maize in strips of 4 or so rows through the field (strip cropping). A single row of pigeon pea is grown from seed or ratooned between each strip (alley cropping). Maize is intercropped with pumpkin and some sort of climbing bean, usually either climbing vulgaris, lablab or velvet bean. The soya or groundnut has clumps of sunflower growing every 2 meters in the center of the row (intercropping). All planted same day and pigeon pea is cut from all the alleys and applied only to the strips where maize will grow (this, in effect doubles the amount of green manure on the maize). Cattle are allowed into the fields after the pigeon pea harvest in July.

Wangui Gitau: A great way of promoting soil fertility while promoting agroforestry.



Pigeon pea alley cropping with sorghum in Tharaka Nithi, Kenya.

Neil Miller: Where did you get the idea for pigeon pea alleys? I work with communities NE of Mt. Kenya where a couple million people use an equally effective pigeon pea alley cropping in a bimodal rainfall environment. How commonly do you ratoon vs reseeding each year?

Sebastian Scott: That's good to hear, I would love to learn more about the farmers and how they manage the pigeon pea in their system. I used to grow pigeon pea with maize in row, but found that it was difficult to manage all the woody biomass at the beginning of the rains during seeding, especially where animal draft power is used. It is well suited to hand-hoe-based systems as practices in Malawi. I sometimes ratoon, but only once. I rely on the resprouting of the pigeon pea to produce some green manure which allows me to use 'double' the amount of green manure biomass on the maize.

The Agriculture and Livelihoods Technical Advisors manage a Facebook Discussion Group from which the above conversations were copied. If you'd like to join the discussion, sign up at www.facebook/groups/CAinAfrica