Ghana's pineapple farmers need more intensive training

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Simple technologies can be learned effectively through imitation, while complex methods require professional training. If Ghanaian pineapple farmers are to achieve higher yields through more sustainable agriculture, they will need to be trained in exactly these types of complex applications. This was the conclusion reached by a team from the Technical University of Munich (TUM) and the Kiel Institute for the World Economy (ifW), who provide evidence for this assertion in the form of a new study with recommendations.

For two months, the agricultural economist Dr. David Wüpper from the Chair Group Agricultural Production and Resource Economics at TUM worked with around 400 Ghanaian pineapple farmers in a hot and humid tropical region south of the Ghanaian metropolis of Kumasi. He and Dr. Linda Kleemann from the ifW—with the support of several other interviewers and translators—examined the learning effects of training and imitation. A number of the farmers had already been interviewed several years ago.

A Much-Too-Short Success Story

For a long time, the yields of the pineapple fields, most of which are smaller than two hectares, were only intended for subsistence farming. In the 1990s, productivity increased along with exports, primarily to the European Union. There was a great sense of excitement, both among farmers as well as scientists, according to Wüpper: "A true success story

for African agriculture."

But then came MD-2. What sounds like a robot from a popular science fiction series is actually a variety of pineapple from an American company that was bred for Costa Rica's monoculture farming. It contains more vitamin C, is sweeter, more symmetrical, and has a longer shelf life. It replaced the traditional Ghanaian varieties in European supermarkets. "MD-2 was a real setback for Ghana," the TUM scientist explained. "This is because this variety has high pest control, fertilization, and irrigation requirements. In these areas, the Ghanaian small-scale farmers are clearly at a disadvantage when compared to the more industrialized agriculture in Costa Rica."

Although it is closer to the countries of the EU than Costa Rica is, Ghana has been near the bottom of the list for several years in terms of pineapple export statistics. Despite this, researchers, the UN, and the World Bank continued to remain interested in the pineapple farmers. They all wanted to help the farmers achieve economically successful harvests again—despite their widely scattered fields, despite their still mostly inefficient extensive agriculture, and despite MD-2.

Their common goal: to establish sustainable agriculture. This reduces irreversible damage to the soil (soil degradation), increases its fertility, and ultimately also its yield and income. Many stakeholders—governmental organizations, NGOs and private companies—are on the ground in the West African country in order to help small enterprises with training. Mainly, this involves two techniques: mulching and the use of organic fertilizer, but also the cultivation of catch crops.

In mulching, the soil around the plants is covered using organic material, fabric, or plastic. This protects the ground, because it does not dry out as much, and also prevents weeds. Mulching is not complicated. It can

easily be imitated and the effect is reliably identical in all types of soil.

Limits of Imitation

Using organic fertilizer and cultivating catch crops, on the other hand, is significantly more complex. Methods that work or plants that grow in a neighbor's field are not necessarily suitable for one's own field. Many factors play a role: the amount of rainfall, soil composition, and the location of the field. Training sessions using example fields are ideal, said Wüpper. "This allows farmers to directly see the effects of various practices in the growth of the plants." However, there are too few of these fields and distances are great in Ghana.

A greater focus must be placed on training in these complicated techniques, the expert summarized. They need to become more intensive and sustainable. "As a farmer, I don't anticipate many of challenges at first. So when problems occur, I need to be able to ask follow-up questions." However, because the training sessions are often limited to half a day and no follow-up support is provided, the training does not have the desired effect.

The interest of the organizations conducting the training such as the GIZ is great according to David Wüpper, "Because the development aid organizations want to learn." The financial means available will not change significantly, that much is clear to the scientist. But he hopes that the focus and intensity of the agricultural training sessions will change. More effective training will in turn result in higher yields and income for the pineapple farmers of Ghana.

More information: David Wuepper et al, Sustainable intensification amongst Ghana's pineapple farmers: the complexity of an innovation determines the effectiveness of its training, *Environment and Development Economics* (2017). DOI: 10.1017/S1355770X1700033X