Crowdsourcing app fights food loss in Africa

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Each year Africa sustains post-harvest losses of fruit and vegetables worth US$48 billion, while half of the world's undernourished people live on that continent. A majority of the post-harvest losses occur during crop transport, due to issues such as (unforeseen) delays and poor road conditions. Researchers from the Faculty of Geo-Information Science and Earth Observation (ITC) at the University of Twente have developed the smartphone app Cheetah in collaboration with the IT company Decos. This app helps reduce crop loss by providing food transporters,

growers and traders with relevant (satellite) information. "If we are able to reduce post-harvest loss by just one percent in Africa by using the app, we will already have saved US$480 million annually." Cheetah recently won the App Challenge of the European Space Agency (ESA).

Various studies have shown that between 20 to 50 percent of the vegetables and fruit losses in West Africa occur post harvest. Therefore, in some cases, half of the harvest is unfit for human consumption by the time it reaches the market. Moreover, the greatest post-harvest losses are incurred in countries facing food shortages.

Many of these losses take place during crop transport. Valentine Venus, who helped develop the Cheetah app, hinted at the different causes for this loss in a research work published earlier this year. There are considerable delays during crop transport, and these cause a portion of the harvest to rot in the truck. For example, drivers experience many time consuming stops on the road during which they often have to pay bribes to police or people posing as police. Venus: "Over a five day journey, it is not unusual for traders to spend ten percent of their margin on bribes." A large part of the harvest is also lost due to vibrations caused by the often poor road infrastructure.

Cheetah

Cheetah has been designed to reduce food waste. The app provides transporters, growers and traders with information that, among other things, can help them to find the right route: the fastest route or the route for which they will incur the least possible "additional costs." The system contains information on the quality of the roads, the expected costs they will have to pay en route, information about weather conditions on the road and the expected delays.

The app uses GPS and motion sensors in modern telephones. This

method was chosen because the mobile network is developing extremely fast in Africa: more and more people have smartphones and the 3G network is available along most of the trans-African Highway network.

Drivers receive a signal in those places where previous drivers have had delays, encountered holes in the road or were forced to pay bribes. The drivers are asked whether the information provided is (still) correct and they can also indicate whether they have experienced any delays on the road. With this approach, the quality of information increases as more and more people use the app and provide updated information.

The power of the app, according to Venus, lies in the fact that it is simple for many people to use and that it is a way to expose abuses by giving ordinary people a (digital) voice.

Venus: "If the app was able to help reduce post-harvest loss by only one percent, we would already save US$480 million in post-harvest losses in Africa every year. Such savings far outweigh the investment costs of the app."

Provided by University of Twente