Push–pull technology

Push–pull technology is a central component and a driving force in cereal-based production systems in sub-Saharan Africa. It has been developed for over 30 years in collaboration with Rothamsted Research (United Kingdom) and partners in eastern Africa. This simple integrating strategy simultaneously addresses the conflicting constraints of cereal-based mixed production systems in sub-Saharan Africa, insect pests (stemborers), the parasitic Striga weed (and other weeds), poor soil fertility, insufficient soil moisture, and need for high quality animal feed. In Ethiopia, push–pull was launched in regions infested with stemborer and striga (Oromia, Amhara, Tigray, Benishangul-Gumuz), and by end of 2015, there were 4025 farmers using the push–pull technology in Tolay, Oromia Region alone.

Push–pull farmers have reported improved soil fertility, increased maize yields (of as much as 35%), and better animal production because push–pull intercrops provide excellent fodder. Push–pull technology in Tolay has opened up opportunities for expanding the critical mass of farmers and other stakeholders skilled in sustainable farming has been built. This has resulted in enhanced household incomes and nutrition, as well as empowerment of women farmers using the technology. Due to training provided through the programme, a critical mass of farmers and other stakeholders skilled in sustainable farming has been built. The success of the push-pull technology in Tolay has opened up opportunities for expanding the benefits of the technology across Ethiopia.

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Looking Forward

In addition to the ongoing activities, icipe now intends to commence fruit (that is) integrated pest management (IPM) activities in partnership with relevant institutions in Ethiopia. Push–pull technology

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Background

In 1992, after the Ethiopian Transitional Government’s Ministry of Foreign Affairs had subscribed to the ICPbio charter, the International Centre of Insect Physiology and Ecology (icipe) started its operations in Ethiopia. The Centre signed subsequent agreements with various implementing partners in Ethiopia, including the ministries of agriculture, health, education and capacity building, the Science and Technology Commission (now Ministry of Science and Technology), and Addis Ababa University.

A new president was elected to contribute to Ethiopia’s development by introducing its portfolio of technologies under the 4-H (health) research themes—Animal, Human, Environmental and Plant Health.

An entry point,合一，with the support of the regional government and the Science and Technology Commission, established a tsetse fly and trypanosomiasis control programme in Wolayita Zone, Southern Nations, Nationalities and Peoples Regional State (SNNPRS), in Wolayita Zone, Technology Commission, established a tsetse fly and trypanosomiasis control programme in Wolayita Zone, Southern Nations, Nationalities and Peoples Regional State (SNNPRS), in Wolayita Zone. The Centre received requests to initiate interventions for malaria, a major public health problem and impediment to socio-economic development in the country. As a result, the Science and Technology Commission requested ICPbio to scale-up the activities to the entire middle Burre Basin, including the Awash River basin, to implement a comprehensive tsetse and trypanosomiasis control programme.

In 1999, the Centre initiated its initial activities in Ethiopia. The Centre has expanded its activities in Ethiopia to include integrated vector management for the sustainable control of malaria, beneficial and commercial insects, and push-pull technology.

Tsetse and trypanosomiasis control

Icipe’s initial activities in tsetse and trypanosomiasis control in Wolayita Zone involved the deployment of 1020 NGU traps made of several pieces of coloured cloth, designed to visually attract and kill tsetse, which led to reduced infection and trypanosomiasis prevalence. As a result, the Science and Technology Commission requested ICPbio to scale-out the activities to the entire middle Burre Basin, including the Awash River basin, to implement a comprehensive tsetse and trypanosomiasis control programme.

Icipe continues to expand its pilot and fly and trypanosomiasis control activities in Ethiopia. The Centre is assisting the government’s national control efforts in Anissa District, Benishangul Gumuz Region, where it is implementing a tsetse control program for the integrated control of tsetse, which includes introducing the Centre’s innovative tsetse repellent collar. The technology contains a blend of chemicals identified from waterbuck, an animal that tsetse do not bite in areas where breeding sites are present. This blend has been used to create a push–pull technology.

Top: Because tsetse deploy thousands of miles, NGU traps are a valuable tool in Ethiopia at the start of its operations. Bottom: Healthy cattle grazing in an area that has been made safer for biting using insect repellent collars.

Integrated vector management for the sustainable control of malaria

Icipe’s success in the control of tsetse flies and trypanosomiasis in Ethiopia, the Centre received requests to initiate interventions for malaria, a major public health problem and impediment to socio-economic development in the country. As a result, the Science and Technology Commission requested ICPbio to scale-up the activities to the entire middle Burre Basin, including the Awash River basin, to implement a comprehensive tsetse and trypanosomiasis control programme.

Following ICPbio’s success in the control of tsetse flies and trypanosomiasis in Ethiopia, the Centre received requests to initiate interventions for malaria, a major public health problem and impediment to socio-economic development in the country. As a result, in 2008, ICPbio commenced integrated vector management (IVM) sustainable control of malaria. IVM seeks to improve health and equity by using multiple tools that provide beneficial effects that are additive and also to integrate innovative technologies to control malaria vectors.

Ivm activities in Ethiopia were initiated in Tidaj, Oromia Region. Key components included research and demonstration of the effectiveness and impact of the interventions, and capacity building and advocacy of IVM at community and policy levels. As a result, between 2012 and 2015, Anopheles arabiensis, the primary malaria vector in Ethiopia, was introduced into bee health and pollinator activities in Oromia Region, Southern Nations, Nationalities and Peoples Region, and Tigray Region, and the Honey Bee Research Centre was established as one of four regional satellite stations for bee health in Africa. In early 2016, ICPbio was awarded grants from the International Fund for Agricultural Development (IFAD). The Centre continues to distribute organic honey, royal jelly and wax to communities, and to provide training and capacity building, to support farmers and collect honey and royal jelly. Close to 1200 participants are involved in these Ivm-led modern beekeeping activities in Ethiopia. In addition to honey, about 2,000,000 birr (USD 95,000) realized in earnings. Two honey marketplaces have been established for the processing, packaging and sale of honey. Organic certification of honey and wax has been completed, which has enhanced the marketability and earnings from the products.

Furthermore, in 2015, with funding from the European Union, ICPbio started bee health and pollinator activities in Oromia Region, Southern Nations, Nationalities and Peoples Region, and Tigray Region, and the Honey Bee Research Centre was established as one of four regional satellite stations for bee health in Africa. In early 2016, ICPbio was awarded grants from the International Fund for Agricultural Development (IFAD). The Centre continues to distribute organic honey, royal jelly and wax to communities, and to provide training and capacity building, to support farmers and collect honey and royal jelly. Close to 1200 participants are involved in these Ivm-led modern beekeeping activities in Ethiopia. In addition to honey, about 2,000,000 birr (USD 95,000) realized in earnings. Two honey marketplaces have been established for the processing, packaging and sale of honey. Certified honey and wax has been completed, which has enhanced the marketability and earnings from the products.