A Memoir of Kassala, Sudan <Part 5>

What damages sorghum fields

Sorghum fields are damaged by less rain, drought, disease and pests, and weeds. The sorghum growing area size in Sudan is vast, and the cultivation is rain-fed, extensive and low input. In terms of cost-effectiveness, there are limited measures to minimize damages. Still, farmers are devising a variety of coping methods including preventive measures.

In the drylands, because of drastic changes in rainfall patterns, less rain and drought cannot be avoided. Unlike irrigated farmlands where adjustments of water availability through water management, under the rain-fed agricultural regime that is totally dependent on natural rainfalls, once drought happens, there is really nothing one can do. When disaster strikes, the government and aid organizations provide emergency humanitarian support distributing seeds and other basic items. At the same time, as medium to long term measures, it is important to increase the overall resilience of the farming society. One of the techniques to stabilize sorghum production, compensating for low rainfalls is a water harvesting technique using construction of terraces which was introduced in this series part 3 in AAINews No. 87. However it takes time to establish a fundamental and comprehensive system, and requires a major shift in mind-set. As a result, countries tend to rely on practical material distribution support by outside organizations such as the United Nations and NGOs, when disasters such as severe storms and drought hit.

Disease and pests, like less rains and drought, are difficult for people to control. There are chronic disease and pests problems and some prevail in particular years. Once widespread, they will cause substantial damage. In order to protect crops, it is fundamental to find symptoms as early as possible, and take measures such as thoroughly eliminating plants that carry diseases and spraying pesticide. However while these methods are effective in intensive horticultural crops, for vast sorghum fields, they require huge cost and labor, and these text book principles do not apply in traditional sorghum fields. The government therefore has to ask external organizations for emergency help in order to stop expansion of damage, rather than watching and doing nothing. In particular what causes wide spread damage is the locust damage on crops, and large scale air spraying of chemicals is conducted by FAO.

So what about weeds. The three major weeds in sorghum fields are Sudangrass (*Sorghum Drummondii*), Mesquite (*Prosopis Juliflora*) and Striga (*Striga.spp*.). Farmers do not like them as each of them have troublesome characters. In particular, Sudangrass is a close relative of sorghum belonging to the same *poaceae* family. Until they grow to produce panicles, it is very difficult to tell if they are sorghum or Sudangrass. This makes it difficult to develop effective weeding methods. Mesquite was originally introduced for afforestation for desertification prevention. Because of its strong ability for reproduction and seed dispersal, today it is regarded as an alien weed. Use of heavy machinery and “human-wave tactics” for mass weeding with a large number of farmers are used for countering spread of Mesquite. However these are very expensive and labor intensive operations. In addition, because of price hikes after the separation of South Sudan in July 2011 as well as an efflux of laborers to gold mines, securing cheap labor for agricultural work has become increasingly difficult.

As we have seen so far, because of the fact sorghum fields are very big, one cannot avoid saying that it is difficult for farmers to proactively and effectively develop counter measures for threats such as less rain, drought, disease and pests, and weeds. However, there is a little different development as far as the Striga weed is concerned.

Striga is a weed belonging to the *orobanchaceae* family and is parasitic to *poaceae*. It kills the host sorghum by sucking up nutrients which makes farmers very weary of the plant. As is the case for other weeds, for a long time there has been no effective counter measure devised. However one farmer devised a method and it has been spreading to other farmers. The method actually is well known locally and is called Sarwala farming. Sarwala farming involves destruction of plant communities with farming machinery when sorghum grows to a certain height and after Striga lodge themselves to the host and germinate. In other words, using a wide level disc harrow pulled by a tractor, Striga are mowed down along with their host sorghum. With this apparently rough yet simple work, Striga that are touched by machinery become largely exterminated. At the same time sorghum plants go down too. However after a while they can come up and regenerate to form the original community. It is a revolutionary method which takes advantage of the differences in regeneration ability between *poaceae* sorghum and *orobanchaceae* Striga. This Sarwala farming has spread rapidly among farmers as an appropriate technology. This is attracting a lot of attention as a good example of a farmer’s innovation based on traditional knowledge of farmers working on the land in a severe natural environment as opposed to a top-down extension effort launched by government research institutions.

Wide level disc harrow
(disc plowing / seeding)

Parasitic Striga