

## **Wheat Stem Rust and Drought Effects on Bale Agricultural Production and Future Prospects**

*Report on February 17-28 assessment*

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### **Summary**

The following information and conclusions are made from a recent trip to Bale area of Region 4 including Goba/Robe, Ginir/Harawa, Raitu/Adelle, Sof Omar/Megalo, Goro, and Dollo Mena/Beberi. The trip was in response to Relief and Rehabilitation Commission (RRC) reports of 300,000 people in need of food distributions and seeds for the next planting season. The RRC-Robe office and Region 4 Ministry of Agriculture (MoA) accompanied the author throughout.

Wheat stem rust on the variety 'Einkoy' reduced yields by 65-100% in the highlands, making this widely planted variety obsolete. Options for replacement are discussed. Second, the Belg rains of April-May 1993 were insufficient in amount and length in the mid- and lowlands, severely limiting crop and pasture production. Consequently, food, fodder and seed supplies have been exhausted and merchants are bringing grains from the higher agro-ecologies (wheat growing areas) at inflated prices. Farmers, many of whom cannot sell their already lean cattle, have resorted to cutting and selling of fuel-wood and charcoal.

### **Highland Wheat Crop Losses**

Although Bale, and to a lesser extent Arsi, are thought of as the surplus producing 'breadbasket of Ethiopia', unusual climatic conditions in 1993 produced the unexpected combination of a wheat stem rust epidemic in the highlands and drought-related crop failure in the mid- to lowlands. Rainfall in the highlands was 'good to heavy through November giving an expectation of a bumper crop of wheat' according to Sasakawa Global 2000 country director Dr. Marcos Quinones. Also the FAO Crop Assessment reported expectations of good yields as usual in Arsi-Bale except some stem rust developing in parts of Bale.

Throughout December the severity of stem rust developed into an epidemic. The disease breaks open the vascular system of the wheat stem which supplies the water and sugar nutrients to apical developing grains. Seeds shriveled to nothing more than an empty seed coat that did not even thresh out of the head with oxen treading or blew out the back of the combine harvester with the chaff. The variety 'Einkoy' which is grown on 70% of the mid-altitude and 90% of the highland wheat fields of Arsi and Bale contributed disappointingly to the final recorded 63% of MOA planned production even with an 8% increase in hectareage planted. Alarming yield reductions of 65-100% were not just the occasional report but were rather the general case in the Bale highlands. Much of the harvested grain in the stem rust infested area is light-weight and poor in bread baking quality.

The following breakdown of yield reductions were reported by Region 4 Ministry of Agriculture:

Sub-zone	% Yield Reduction
Agarfa	95%
Dodola	50%
Gasera	70%
Ginnir	85%

Farmers from the mid-altitude wheat areas such as Ginnir and Goro are already buying wheat supplies from merchants sending the price from 130 birr/quintal to 160 during Feb 18-29. Better filled grain is coming from the State Farms which used fertilizer and less heavily infected areas of Arsi/Bale where rainfall was not so heavy.

In two areas visited, problems were encountered at former state farms called Dinik and Hadawa, located on opposite sides of Ginnir. At the Dinik site, the soil is of the Vertisol type which is very impervious and subject to waterlogging. Wheat had to be planted after the Belg rains (in July instead of mid-late May) and the 1-2 Qt/HA harvest was just in progress in late February. The author suggested broadbed tillage and changing to Vertisol tolerant teff varieties. At Hadawa the Derg had settled Wollo farmers but they were not successful at establishment due to peculiar low rainfall patterns in that local. It was suggested that shorter season maize varieties such as Katumani or Longe and drought tolerant sorghums be tried. Although wheat is not adapted to the low, hot altitudes, the more drought tolerant wheat/rye derived crop called triticale may thrive.

### **Lowland Maize and Sorghum drought effects**

The rolling red clay hills in the arc of the Wabe Shebelle river below the Bale scarpments is widely settled by agro-pastoralists who use the Belg rains to establish mid-season maize and sorghum crops. The area is not expected to get much rainfall from the Meher rains which come from the Southwest, losing their moisture at the higher altitudes before reaching these Eastern slopes. Insufficient rainfall can be expected in three out of five years, with crop failure in one of five. Rainfall data for Dollo Mena area Belg and Meher ('Arfaasa' and 'Gana' in the Oromo language) is given below.

av. rainfall (mm)	1994 rainfall (mm)
Belg 500	not given
Meher 450	Sept 45
	Oct 224
	Nov 5
	Dec 34
	Total 308

Unfortunately, this happened to many returnees/drought-affected farmers who had just one or no previous crop reserves to fall back on. To quote one farmer who must have learned his English in Somalia, 'We knew that where there are trees there is rainfall for cropping, sadly since we came here we have no other source of income than cutting firewood for charcoal which will reduce future rainfall prospects'. The non-market day supplies available for sale in Dollo Mena included a little beriberi, lentils and coffee; but piles of firewood. Seeds of local varieties are almost nonexistent since farmers are buying their food for several months already.

### **% Yield reduction by crop in the Dollo Mena area (1994, MoA)**

Crop	% Reduction
Maize	100%
Sorghum	75%
Teff	75%
Wheat	45%
Barley	45%

Many farmers depend on livestock derived food products to carry them through whatever deficit may occur from cropping. There are large areas of mixed broad-leaf and thornbush, ravine forest between the flatter crop fields. However without substantial rainfall since October, even the dried grass and forbs under thickets have been browsed. Herders are moving their cattle to higher areas and ravines as sales lower the prices of already lean carcasses. Streams and washes have dried up leaving only stagnant pools and a few vulnerable mechanical wells.

No confirmed cases of human starvation are recorded though 300,000 people are reported by RRC to be in need of food aid assistance. Malnutrition rate at the Raitu clinic between Ginnir and Imi is running at 5% with severe malnutrition at 2%. The health assistant requested CSB (a blended supplementary food) for 2800 people to supply treatment needs until next harvest. The clinic is staffed by 2 health assistants and is responsive to the needs of 82,000 people in a 30 km radius. The common illnesses are tuberculosis, malaria and malnutrition. Many cases of 'bloody diarrhoea' in Ginnir, Raitu, and Mena are thought to result from drinking stagnant, microbiologically active water in streambeds and ponds. An outbreak of meningitis is suspected in Sawena where a radio report described 15 cases with hallucinatory symptoms.

### **Road Conditions and Security Status**

The roads through Arsi to Goba, Ginnir, Sof Omar and Dollo Mena are rough and stony, but mechanical grading is in progress at several places. Although we were advised that banditry sometimes occurs between Ginnir and Sof Omar, the road was heavy with pedestrians headed for market.

The road from Ginnir to Imi is in good condition and reported to be safe until near Imi. The Region 4/5 boundary committee was in Raitu at the same time as our arrival and Oromo farmers were adamantly claiming that the boundary should stay where it is near Imi even though a large number of camel caravans and nomads use the area, it is inhabited mostly by Oromo farmers. The road south of Sof Omar soon became impassable due to stony washes but RRC asked the first few villages to repair as food-for-work.

### **Rehabilitation and Development Planning and Implementation Needs**

According to RRC-Robe, the disposition and distribution of drought affected persons are as listed below.

Previous history of drought affected persons	Number of Drought Affected persons by sub-zone		
Returnees	96,426	Ginnir	36,667
Displaced	41,559	Raitu	26,600
Drought affected	225,508	Sawena	34,161

Ex soldiers	5,163	Beltu	20,250
Total aprox	350,000	Dollo Mena	15,455
		Meda Welabu	24,000
		Berberi	20,875
		Goro/Gurad	21,695
		Amole	9,000

#### 1. Food-for-work programs and possible work projects until next harvest include:

a) RRC-Robe is supporting fully FFW programs submitted by Woreda administrators and is adamantly refraining from free food distributions. Roads and bridges are being repaired north of Ginnir, south of Sof Omar, and outside Dollo Mena. Catchment ponds 5 meters deep are being dug by hand with sharpened sticks and hollowed wooden dirt bowls. Twenty two villages want FFW to construct two ponds each in the Raitu area alone, each with a FFW rate of 900 Qt of wheat. Other communities are expected to request similar pond construction programs, an especially pertinent project in light of scarce water points and increasing pressure on the limited boreholes.

b) Mekane Yesus and Norwegian Church Aid have plans for rehabilitation of a former irrigation scheme near Dollo Mena. Seeds, fertilizer, and tools are to be distributed but no action was reported at last contact.

c) The Ethiopian Red Cross has demonstrated that with supplemental irrigation, coffee equivalent in quality to that from Harar can be grown around Dollo Mena. The MOA has plans to establish a 300,000 seedling nursery through FFW. Areas below Ginir should have the same potential although it is evident that irrigated cropping in both areas has reduced river flow for cattle watering.

d) Other potential FFW projects that would benefit the respective communities include improving the almost impassable road to Beltu and Sawena, and repair of the Ginnir air strip.

e) Another possible future intervention that should be considered by the MOA is that of communal hay fields and harvest for drought reserve storage.

#### 2. Seeds-for-Work in the lowlands

Since the maize and sorghum crop in the lowlands did not bear seed there is an urgent need for planting seed. Residual stems and bare fields were evidence of crop failure. Local varieties grown at higher altitudes and available in the market would be too long season for the lowlands. 'A511' maize and 'G-1107' or 'Sereno/Seredo' sorghum are the adapted commercial varieties and would be more suitable for this area.

#### 3. Distributions of new wheat varieties to seed growers in the Highlands

The situation presents a good opportunity for an NGO project with broad assurances of success and returns on expenditures. Options for replacing the rust-susceptible variety Einkoy with resistant ones are limited and incomplete. At best, distribution of the familiar, good-yielding but hard-threshing variety, 'Ethiopia 13', could be made available to the mechanized farms. Increasing the threshing cylinder speed and reducing the concave clearance of the combine harvesters would make this variety acceptable to mechanized threshing. Two new varieties, 'K 6290' and 'K 6295' were available from Ethiopia Seed Corp in large quantities when last contacted. At seeding rates in excess of 100 kgs/hectare, the coverage of these new varieties is severely limited. For this reason, a few quintals should be allocated to each village for acknowledged good farmer-seed growers for subsequent

distribution to neighbors as in-kind exchange the next year. This seed is valuable and scarce so it should not be distributed to marginal areas where crop failure is likely. It is the future economic lifeblood of this area and the food security of the wider Ethiopian population.

#### 4. Armyworm Scouting and Control

This area has been renowned for outbreaks of devastating attacks of armyworms which was the case this past year. The Crop Protection Institute is responsible for and financed for monitoring and control of this migratory insect. It is not known whether designated personnel will be scouting the area this year with contingency plans for fast action should spraying be required.

Note 1: The RRC Dec/Jan assessment report is available in Amharic and a summary in English is being prepared.

Note 2: The original of this report includes two tables, one giving seed requirements by type and quantity for Bale, and the other providing similar information for Arsi. Also included is a map of the Bale area showing the old administrative boundaries. Copies of the table and map are available from the Emergencies Unit at the address below.

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