



**IFAR 2008 Professional Development Program  
Completion Report  
[800 words]**

**Instructions:**

Please submit the completion report by email, using this form, through the sponsoring CGIAR Center to [ifar@ifar4dev.org](mailto:ifar@ifar4dev.org) within three months after the completion of the fellowship.

*Please check if Thalwitz Scholarship*

Yes

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Name of Applicant    Mengistu Alemayehu-----

Sponsoring CGIAR Center    International Livestock Research Institute (ILRI)

### **I. Work Program goals achieved (maximum length: 200 words)**

Four local cattle breeds namely Sheko, Horro, Gurage and Abigar were used in a comparative study to test their traction ability in trypanosomosis challenge area of the Ghibe valley in Ethiopia. Three pairs of steers of each of the breeds were used. Each pair of the steers belonging to the same breed was subjected to a range of pulling loads fixed at a) 10%, b) 15%, and c) 20% of their live weight proportions.

Except for Sheko, steers were consistently better than their contemporaries in draft performance. Sheko steers were able to pull a sledge at a greater speed (0.7 m/s) than Abigar and Gurage breeds. The average power generated by Sheko and Horro was 0.4 Kwatt, which was nearly sufficient for primary cultivation. The ability of Sheko to expend metabolizable energy for pulling a sledge was  $51.7\text{KJ}/\text{kg}^{0.75}\text{ LW}$ , surpassing by 20% that expended by Abigar and Gurage steers. However, increasing pulling load beyond 15% of the body weight proportion was difficult to sustain for a longer period.

The change in physiological responses to work stress was found to be similar ( $P>0.05$ ) between the breeds except for respiration rate. Nevertheless, Sheko and Horro breeds seemed to have physiological resilience and managed well levels of escalated respiration and pulse rates.

Sheko and Horro breeds were further evaluated for draft performance under two feeding regimes: i) low level representing the conventional farmers practice; and ii) high level meeting the daily nutritional requirement of a working steer. Plane of nutrition did not significantly affect ( $P>0.05$ ) draft performance of Sheko and Horro steers in the short run. But, greater weight loss of 200g/day was observed on steers that worked under low plane of nutrition.

### **II. Plans for follow-up (maximum length: 200 words)**

Results of the present study revealed that a sustainably optimum draft performance of Sheko and other steers was attained at a work load equivalent to 15% of their body weight in the hot and trypan incidence area of Ghibe Valley. To improve draft ability of the relatively trypanotolerant Sheko steers, possible alternative options of breeding for a larger size animal and improving the feeding system need to be addressed. Achievements that have practical significances will be drawn and compiled as a working report in the local language, to help mainly for extension uses. A peer reviewed journal article will be published so as to reach the broad scientific community.

### **III. Report budget utilization including whether budget was spent as planned (maximum length: 100 words)**

The grant has been solely used to fund activities related to this project as stipulated in the original proposal. The Project Financial Report has been attached.

### **IV. Assessment of the fellowship experience and general comments. (Maximum length: 300 words)**

The fund grant for undertaking this particular study created a good opportunity for the research fellow to link up with a CGIAR center and also to work with experienced scientists. A good piece of research was conducted and empirical evidence provided as to comparatively good Sheko's draft-power capability, besides it already confirmed trypanotolerance superiority. A more comprehensive and multi dimensional research undertaking is recommended, and to do this additional fund will be needed because the fund available for this research phase was relatively small. The research fellow is grateful to IFAR for supporting this study, while ILRI's role in hosting the fellow and offering unreserved supervisory support is duly acknowledged.