


➔ **1.1.16**  **Lubasi Sinyinda. (2010). Characterisation of micronutrient (zinc and boron), dense tropical maize (*Zea mays* L.) hybrids grown in different environments in Zambia (Supervisor: Dr M. S. Mwala)**

Iron and zinc deficiencies prevalent in most sub-Saharan African countries, have been attributed to the low grain micronutrient levels in local varieties. This study was aimed at characterising micronutrient (iron and zinc) dense maize germplasm so as to identify promising inbred lines to introduce to maize breeding in Zambia. Ten high zinc and iron maize inbred lines and two local varieties were grown during the 2008/09 growing season in two locations, National Irrigation Research Station (NIRS) and Golden Valley Agricultural Research Trust (GART), using the Randomised Complete Block Design. Locations were different for kernel zinc levels with NIRS at 19.2 mg/kg and GART at 18.7 mg/kg. No differences were observed among locations and entries, and neither was there any significant interactions with regards to kernel iron levels, though the levels were within acceptable range of 13.6 mg/kg for 07C04592B and 17.9 mg/kg for 07C04602B. Plants were taller at NIRS (207.6 cm) than at GART (186.5 cm). Entries 07C04602B and 07C04578B had the highest ear heights of 132.3 cm and 129.2 cm, respectively, compared to entries 07C04592B and 07C04590B, whose ear heights were the lowest, at 90.9 cm and 96.4 cm respectively. Prolificacy was more pronounced among the entries at NIRS (1.2 EPP) compared to those at GART that had 1 EPP. Most of the entries flowered early (65 DAP); the earliest to flower was Obatampa at 62 DAP while the latest was entry 07C04568B at 67 DAP. Higher grain yields were obtained at NIRS (6.6 t/ha) than at GART (2.9 t/ha). Differential responses for grain yield were observed among genotypes from one location to another. Differences in plant growth and development parameters observed among entries were due to the growing conditions and the soils found at the two locations; hence, they are useful in characterising and selecting high yielding entries: 07C04602B, 07C04568B and 07C04578B. These also contained high kernel iron and zinc levels.