According to Kenya Demographic Health Survey, 7% of children under five years were wasted with 16% of them being underweight probably an indication of poor and inappropriate feeding practices. The children suffer from protein energy malnutrition (PEM) and micro-nutrient deficiencies which may lead to physical, mental and motor development retardation. Children are most at risk of PEM during the introduction of complementary foods usually thin porridge prepared predominantly from cereals and starchy tubers. Such porridge is low in energy and nutrient density, and may be high in anti-nutrients, despite the fact that infants at this stage of rapid development have high requirements of energy and nutrients per unit body weight. There is need therefore to develop appropriate nutrient-dense complementary foods that could be used by low income families. Amaranth grain has high biological value proteins and a better amino acid profile than nearly all cereals. It is also rich in essential fatty acids. However it is not commonly used as a complementary food in Kenya. The main objective was to determine the optimum steeping and germination time for amaranth grain. The grains were steeped and germinated for various time periods. The dry matter loss, proximate composition and some antinutrient levels were determined. Dry matter loss was least in amaranth grain steeped for 5 hours and germinated for 24 hours. At p<0.05, there were no significant differences in ash, fat and protein contents with respect to steeping and germination time. The crude fiber content and the invitro protein digestibility varied with different steeping and germination time. The tannin and phytate contents could not be detected after steeping and germination. Based on dry matter loss and reduction in antinutrient levels, steeping amaranth grain for 5 hours and germinating for 24 hours were the optimum processing times.