Title: **Pesticide residues in some vegetables rotated with tobacco using hplc, and farmers' awareness of pesticide health effects in Kuria- Migori, Kenya**

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Abstract: Pesticides bring a promise of higher yields of more food for the hungry and freedom from diseases spread by pests. However, pesticides are poisons and their residues do harm to human beings when the concentration is higher than the recommended maximum residue limits (MRLs). If a pesticide is left on vegetables, which are considered a cheaper source of natural nutrients, somebody could get sick or even get killed due to the poisoning. Therefore pesticide residues have become a high concern issue in the field of food safety. Tobacco being a pesticide dependent crop requires different types of pesticides in the control of pests; these include methomyl (N-metltylcarbamate) and acephate (organophosphate). These pesticides are known to be very toxic. They act directly on -the nervous system by inhibiting the neurotransmitter acetylcholine in addition to many other effects. Due to limited land resource and high levels of poverty, the same pieces of land used for planting tobacco are also used for planting other food crops like vegetables. There is a possibility that these pesticides may also be used to control pests in the vegetables or may get into the vegetables during spraying of tobacco. However very few reports are available on the levels of these pesticides in vegetables in Kenya. Thus, there is need to determine the levels of the pesticide residues in the vegetables, and assess the farmers' awareness of the health effects of these pesticides. Therefore this study assessed farmers' awareness of the health effects of pesticides and the use of protective measures. The levels of methomyl and acephate pesticide residues were determined in selected vegetables that were planted on the same soil where tobacco had been harvested without further application of the pesticides in Kuria West district, Migori County of Kenya. Vegetables were also sprayed directly with methomyl and acephate pesticides after planting and analyzed for the same. Questionnaires were pretested and thereafter distributed and then analyzed. Samples were collected from both the farms and seedbeds used for tobacco during wet and dry seasons. A total of 273 samples were collected during the months of Jan to May 2010 and analyzed. The pesticide residues were extracted with ethyl acetate and analyzed by high performance liquid chromatography (HPLC). The data was analyzed using t-test, and ANOV A. The study established that 74.6% of those interviewed were aware of the effects of the pesticides; however 81.4% did not wear protective clothing when using the pesticides. The levels for acephate ranged between 0.0030±0.0000mglKg to 0.1570±0.0430 mg/Kg with kales having the highest followed by amaranthus. Some samples had values that exceeded the minimum residue limit (MRL) (0.03mglKg)recommended by European Food Safety Authority (EFSA), World Health Organization (WHO) and Food and Agriculture Organization (FAO). The levels for methomyl ranged between 0.00I0±0.0003 mg/Kg and 0.0001±0.0000 mg/Kg with all the samples having values below the minimum residue limit MRL (0. OSmg/Kg) recommended by World Health Organization (WHO) and Food and Agriculture Organization (FAO). Pesticide levels were found to be

significantly higher than the recommended levels for acephate during the dry season as compared to the wet season. The results obtained by this study will be availed to relevant authorities. for .appropriate action and could .also be used to sensitize farmers.