Pesticides are widely used to improve the agricultural output. They however pose as a threat to the users since their mode of action is through interference with biological systems that may be common to pests, non-target organisms and animals. Pesticides are harmful and so farmers are cautioned on how to use them and to protect themselves from exposure when spraying. After application of the pesticides on crops a specified time must be allowed to elapse before the crops can be consumed as contained in good agricultural practise (GAP). Due to the demand for produce or financial constrains amongst other factors, some farmers do not adhere to GAP. This results in pesticide residues being found in food. These residues in most cases are above the levels recommended by FAO and WHO which are known as maximum residue levels (MRLs). These levels may have deleterious effects on humans. There is need therefore to regularly analyse vegetables in the market for pesticide residues and evaluate their effects on biological systems. Questionnaires were given to farmers and agrovets to determine the main pesticides used in the market. A total of 112 samples (Kales 94, French beans 18) were collected from the study area and analysed using gas chromatography to determine the presence of pesticide residues in vegetables. This was done during the hot/dry season (January to March) and the cold/wet season (May to November). The highest residue levels obtained (0.5ppm and 1.0ppm) were given orally on a daily basis to rabbits and levels of cholinesterase, cholesterol, bilirubin, hemoglobin and proteins of these rabbits were monitored weekly for 16 weeks to determine the physiological effects of the residues. More analysis was done to determine the effect of cooking, washing and pre-harvest intervals on residue levels. Samples of French beans for export were analysed to determine the level of compliance for MRLs on exported produce. Pesticide residues were found in locally consumed vegetables especially during the hot and dry season. This however was not significant statistically (French beans p = 0.31; Kales p = 0.29). The residue levels, mainly organophosphates, ranged between 0.017ppm and 0.66ppm. Washing and cooking reduced the residue levels by 17% and 40% respectively. Adherence to the recommended pre-harvest intervals (PHI) resulted in 99% reduction of the pesticide residues in the vegetables. French beans for export had 100% compliance while French beans for local consumption had 66% compliance. Analysis of the effect of these residues on animals showed that some analytes were significantly affected, and the levels had some effects on physiological systems. The results underscore the importance of implementing GAP on vegetables for local consumption since failure to do so could have far reaching repercussions.