This study involved the development of analytical separation methods using high performance thin layer chromatography (HPTLC) for the determination of six pesticides namely, ametryne, benthiocarb, carbofuran, methyl parathion, monocrotophos, and mevinphos. Various solvent systems were investigated as mobile phase. The system of 2-butanone : cyclohexane with a volume ratio of 1:4 was found to be the most suitable mobile phase. Consequently, experiments using different sample size were applied on 10x10 cm. silica gel 60 GF254 HPTLC plates, aiming to determine an optimal sample size and the limit of quantitation (LOQ) for the detection of each above mentioned pesticides. The absorbance of each components after the separation and the development was measured at 254 nm. The LOQ of ametryne, methyl parathion, monocrotophos, benthiocarb, carbofuran, and mevinphos obtained were 0.004, 0.02, 0.03, 0.06, 0.24 and 0.25 micrograms respectively. Precision and accuracy were determined by using the internal standardization and the external standardization methods in a mixture of sample. Results were satisfactory with percent errors being in the range of 2.23-9.58 for the external standardization method, and 2.22-5.24 for the internal standardization method. Prior of using this technique for analysing pesticides in the real samples, the percent recoveries of each pesticides without cleaning up and with cleaning up by passing through the florisil column. The percent recoveries for non cleaning up in white rice seed, corn seed and cabbages were in the range of 36-101, 22-89 and 25-91 and 64-83, 15-43 and 48-112 respectively. Finally this study revealed that no pesticide residues were found in the white rice seed, corn seed and cabbages.