

Influences of Seed Maturity and Lipid Composition on Seed Deterioration in Large-seeded and Medium-seeded Peanut

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An indeterminate growth habit of peanut causes non-uniform in maturity of peanut seeds. Consequently, affect seed quality and the quality of peanut products. Seed physiological characteristics, lipid content and fatty acid composition are related to seed maturation. Lipid is the major chemical composition in peanut seed and therefore is the cause of rapid seed deterioration during storage by hydrolysis of storage lipid and lipid peroxidation.

The study was conducted in two different types of local recommended peanut varieties. Kaset1 was classified as large-seeded peanut and Tinan9 was medium-seeded peanut. Shelled out dried peanut seeds were divided into three different maturity groups based on internal pericarp color namely; mature, intermediate and immature and stored under local ambient condition for nine months. Another portion of the three different maturity groups of both varieties were also artificially aged by accelerated aging at 42 °C and 100 % RH for 4, 8, 12, 16 days. Seed quality including moisture content, germination, vigor and membrane degradation were investigated. Oil content, free fatty acid, peroxide value and fatty acid composition were also detected.

Result revealed that artificial and natural aging of immature peanut seed deteriorated faster than intermediate and mature seeds. Seed deterioration of Tinan9 was more rapidly than Kaset1. Deteriorated seeds were low in both germination and vigor and in contrast, high electrical conductivity, high free fatty acid and peroxide value as those reported by Perez and Arguello (1995) and Sung and Jeng (1994). However, oil content, fatty acid composition and O/L ratio did not change during seed deterioration as those reported by Perez and Arguello (1995). Although the immature seeds deteriorated faster than the intermediate and mature seeds, their germination of 85% and field emergence of 90% could be maintained up to 9 months storage at local ambient condition. It was also found that accelerated aging at 42 °C and 100 % RH for 8 days was the best aging technique for peanut seed vigor determination.

References

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