Some Biophysical and Chemical Properties of Selected Persian Sunflower Seeds

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Biophysical and chemical properties of oilseeds particularly sunflower seed plays an important role in the proper design of equipment for handling, drying, separation, dehulling, conveying, storage and mechanical expression of seed oil.In this research some biophysical and chemical properties of three hybrid sunflower varieties, Hysun33, Progress and Euroflore from four location, Aliabad, Golidagh, Kalale and Kalpush in Golestan province located at north of Iran were studied for variations in linear dimensions, arithmetic mean diameter, geometric mean diameter, sphericity, surface area, true and bulk density, porosity, one thousand seed weight, volume, moisture content, hull and kernel percent, dimensional parameters such as major,minor and intermediate diameters, oil percent in seed, kernel and hull which determined by using of standard methods. The results showed that the length, width, thickness, geometric mean diameter, volume and moisture content of sunflower seeds varied from 8.800 to 10.987 mm, 4.346 to 5.628 mm, 2.685 to 3.508 mm, 4.651 to 5.979 mm, 183.14 to 364.59 mm^3,5.355to 6.184% , respectively. Within these data minimum and maximum values related to Golidagh Euroflore variety and Kalale Progress variety, respectively. The results of ANOVA shows that all of gravimetric properties of seeds such as one thousand seed weight, bulk and true densities, porosity are significant at the 0.01probability level. Percentage of large seeds and hull varied 3.580 (Aliabad Hysun33) to 28.487 (Kalaleh Progress) and 25.792 (Aliabad Hysun33) to 28.825(Kalaleh Hysun33), respectively. At the end, with attention to interaction effect of variety and locations on physical and chemical characteristics of sunflower seed, the proper operations of oil extraction plant were designed.

Keywords:
Sunflower seed, Chemical properties, Biophysical properties, Grading,Size distribution