

6-Abstracts of

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EFFECT OF MOISTURE CONTENT ON SOME PHYSICAL AND MECHANICAL PROPERTIES OF SESBANIA SEEDS

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ABSTRACT

This study was carried out to determine the effect of moisture content on some physical and engineering properties for *Sesbania*. Four levels of moisture content ranging from 12.4 to 25.03% d.b. (dry basis) were used. The average length, width, thickness, and geometric main diameter ranged from 3.342 ± 0.016 mm to 3.50 ± 0.020 mm, 1.898 ± 0.013 mm to 1.953 ± 0.018 mm, 1.847 ± 0.015 mm to 1.916 ± 0.017 mm and 2.269 ± 0.012 mm to 2.373 ± 0.016 mm, respectively. The average sphericity and roundness ranged from $68.0\pm 0.4\%$ to $66.4\pm 0.4\%$ and $18.1\pm 0.2\%$ to $17.5\pm 0.2\%$ respectively. The average surface area ranged from 16.212 ± 0.169 mm² to 17.746 ± 0.232 mm². The average bulk density, true density, porosity and repose angle ranged from 781.227 ± 0.875 kg/m³ to 737.355 ± 1.511 kg/m³, 1232.065 ± 2.384 kg/m³ to 1206.255 ± 7.594 kg/m³, $36.592\pm 0.052\%$ to $38.866\pm 0.264\%$, and $26\pm 0.447^\circ$ to $36\pm 0.707^\circ$ respectively. The average static coefficient of friction against wood, stainless steel, galvanized iron, iron, rubber and lather surfaces and ranged from 0.450 ± 0.008 to 0.596 ± 0.009 , 0.325 ± 0.006 to 0.36 ± 0.007 , 0.380 ± 0.013 to 0.501 ± 0.005 , 0.582 ± 0.014 to 0.675 ± 0.008 and 0.606 ± 0.009 to 0.690 ± 0.010 , respectively. The average terminal velocity ranged from 7.823 ± 0.095 m/s to 11.176 ± 0.475 m/s. The average hardness was determined as engineering property, and generally decreased in magnitude with an increase in moisture content and ranged from 10.035 ± 0.057 kg to 3.578 ± 0.036 kg.

Keywords: Sesbania; Physical and Mechanical Properties.

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INCREASING OF WATER USE EFFICIENCY FOR MAIZE CROP (*ZEA-MAIZE*) UNDER LAND LEVELLING AND WATER APPLIED METHODS

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ABSTRACT

Field experiments were conducted at the farm of El-Karada Agricultural Research Station, Kafer El-Sheikh. Governorate. Water management and Irrigation System Research Institute National Water Research Center Egypt during 2007 and 2008 seasons. The experiment was arranged in strip-plot design with four replicates. The main – plot represented land levelling method use LASER leveling : 1) slope of zero cm /100m length (L1) and 2) 10 cm /100m length (L2) – while, the sub-plot treatments represented water applied methods. e.g.) Continuous flow irrigation, (I1); 2) Alternative irrigation (I2) and 3) surge irrigation with different cycle ratios, as follows : surge irrigation cycle at 10/10(I3) ; 10/6(I4) and 10/3(I5)). Results indicated that under zero % slope method received more amount of water, water consumptive use efficiency, field water efficiency, crop water use efficiency than the 0.1% slope method. While, grain yield (kg/fed) and water distribution efficiency % was opposite. Also, data revealed that, alternative irrigation gave the highest values of water consumptive use (cu). Crop water use efficiency (CWUE), field water use efficiency (FWUE) and grain yield (kg/fed). While, water distribution efficiency was opposite. Where, its values were 33.90 (cm/fed), 0.995 kg/m³, 1.85 kg/m³, and 3342 kg/fed and 92.49% respectively. On the other side, the surge cycle ration received more amount of water and increase water consumptive use water distribution efficiency, while, the lowest values of grain yield. Where the best treatment with surge cycle ratio at 10/10 and at 10/3 was opposite. It can be summarized that alternative irrigation decreased amount of water irrigation applied 35% and 30% than continuous flow and surge irrigation. Slope zero, produced the highest yield and water use efficiency

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WATER MANAGEMENT FOR COTTON YIELD IN NORTH DELTA

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ABSTRACT

Two field experiments were conducted at the farm of El-Karada water management research station-Kafr El-Sheikh Governorate. (Water management and Irrigation System Research Institute National water research

center Egypt) during 2007 and 2008 season for cotton crop. The experiment was arranged in split-plot design with four replicates. The main plot represented two methods of planting : 1- Furrow and Bed methods, while, the sub-plot treatments represented water applied methods e.g. 1) irrigate at F.C% 2) irrigated at F.C +10%, 3) irrigate at F.C - 10% 4) irrigate at F.C- 15% and 5) irrigate at F.C - 20% . The results indicated that under furrow cultivation method received more amount of water consumptive use, seed cotton yield, while, bed cultivated method was opposite. Also, data revealed that water applied methods was significant effect of traits under study, where as, F.c + 10% water applied treatment received more amount of water, water consumptive use, seed cotton yield, but it gave sufficient water stored, crop water use efficiency and field water use efficiency, while, F.C-20% water applied was opposite. The Bed cultivated method achieved the highest value of water saving (20.21 %). This results led to recommend to use Penman-Month equation for estimating water consumptive use for seed cotton yield in North delta. Interactions between planting methods and water applied treatment was significantly. Where as, the high values observed by furrow cultivate method with F.c + 10% and F.c treatments particularly net income for irrigation water unit (L.E/m³).

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DESIGN AND MANUFACTURE OF LIGHT TRAP TO DETERMINE THE START OF THE ACTIVITY AND THE ATTRACTION OF INSECT MEDITERRANEAN FRUIT FLY(*CERATITIS CAPITATA*)

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ABSTRACT

This research examines the design and manufacture of optical trap attractive adhesive-friendly environment in order to determine the activity and the emergence of some insects (such as Mediterranean Fruit fly *Ceratitidis capitata*). The results the attraction of insects to the trap during the months of testing, a months (March ; April and May) 2009. Increasing numerical density of the insects tended to improve as the weather and increasing temperature. The results indicated that increase in the incidence in the month of May. It is clear from the study that the trap was effective in controlling and attract the insect, which can be considered an important element in the fight against this scourge. The best rule is attractive beer yeast with the water - and the height of the trap 100 cm - and the best highlight is the color white.
