

A monoculturing experiment was conducted in the Phycology Laboratory of Government College University Lahore. The purpose of the study was to culture some freshwater pennate diatoms on Chu#10 medium. Three species *Navicula seminum* Grun, *Synedra minuscula* and *Nitzschia-navis-varingica* were identified and cultured on both solid and liquid Chu#10 medium. *Nitzschia navis-varingica* has great ecological importance due to its domic acid production and as an indicator of heavy metal contamination. So it was additionally selected to test three physiological parameter of growth viz, pH, temperature and concentration of silicate and added selenium in Chu#10 medium. All of the selected species showed good growth in both solid and liquid Chu#10 media however growth was slightly high in liquid medium. Growth of *Navicula seminum* Grun on solid medium initiated after third day and it was maximum between 6th (250±3.60 units per ml) to 12th day (981.65±1.45 units per ml) after that it slowed down till 18th day (1291.65±1.77 units per ml) and started decreasing till 21st day (976±2.51 units per ml) reading. *Navicula seminum* Grun also grew well in liquid Chu#10 medium. Species maximum cell count was obtained on 18th day (1458.35±1.76 units per ml) and growth declined on 21st day (1163.35±3.26 cell count per ml). Cell count of *Synedra minuscula* Grun obtained on 18th day from solid Chu#10 medium was (1570±1.97 cells per ml) slightly higher than the cells from liquid medium (1480±2.80 cells per ml). Exponential growth rate of *Nitzschia navis-varingica* was from 6th to 9th day in both solid and liquid media and maximum cell count obtained on 18th day was 1583.35±1.98 (units per ml) and 1591.65±2.40 (units per ml) respectively. Physiological parameter have great effect on the growth of diatoms. *Nitzschia navis-varingica* performed respectively on variable pH viz 7.6≥7.1≥6.6. Cell count increased with increasing pH. Increased temperature of earth affect the growth of diatom. Diatom *Nitzschia navis-varingica* was also subjected to test the effect of temperature on its growth. There was a significant difference between the cell counts of *Nitzschia navis-varingica* grown on two temperatures. It performed best at 22 °C temperature than temperature 32 °C.