Comparative Analysis of the Effectiveness of Polyethylene, Cetyl Alcohol (Hexadecan-1-ol) and Shade Balls in Preventing Evaporation of Water and Its Effect on Water Quality

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Water is the most important natural resource. There are many ways to prevent water evaporation, including the recently used “Shade Balls.” These four inch polyethylene balls cover reservoirs to preserve water and prevent formation of carcinogenic chemicals. Other methods used are continuous coverings of high density polyethylene and covering the surface with Cetyl Alcohol(Hexadecan-1-ol). This study was completed to compare how effective these methods are at preventing water evaporation and how they affect water quality. The procedures included covering a water surface with a double layer of 2 inch white plastic balls to simulate “Shade Balls” and applying 100 grams of Cetyl Alcohol (Hexadecan-1-ol) creating a thin film over the water’s surface. Water was covered in three different polyethylene thicknesses: 0.42mm, 0.84mm, and 1.26 mm thick. Measurements taken included the amount of water evaporated, temperature, pH, ammonium, nitrate, nitrite, and dissolved oxygen. Results found the average water remaining in the control bin was 33.25%, Cetyl alcohol had 33.3% remaining and white plastic balls had 85.75% of water remaining. The 0.42mm thick polyethylene layer had 93.75% remaining, 0.84mm had 95.15% remaining, and 1.26mm layer of polyethylene had 96.65% remaining. This experiment demonstrated the 1.26mm polyethylene covering had the least amount of water loss from evaporation compared with using the Cetyl alcohol and “Shade Balls”. A safe water quality was maintained. This shows that polyethylene coverings are a viable method for covering reservoirs.

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