

## **Abstract**

Fish farming or aquaculture in ponds of agricultural water storage, in addition to optimal consumption of water and production of agricultural products, enables production of protein as one of the most important human food sources. Success in aquaculture largely depends on environmental and aquaculture conditions. Therefore, this study was carried out to evaluate the physicochemical properties of water in octagonal ponds in Sistan region and to compare it with quadrilateral (rectangular and rounded) ponds. Therefore, in the period of early October 2017-February 2017, samples were taken from 3 point (inlet, middle and outlet) of 15 various ponds in Sistan region, where agricultural water storage ponds were used for trout farming; during the process of sampling, some physicochemical factors of water were measured, including temperature, salinity, total hardness, alkalinity, pH, electrical conductivity, phosphate, nitrate, etc. Growth factors such as specific growth rate, daily growth rate, condition factor, feed conversion ratio, etc. were also measured in order to study fish growth rate and factors affecting it. Results of physicochemical factors of water showed that dissolved oxygen content in water at the inlet was lower than the middle and outlet of the ponds. However, there was no significant difference in pH between the ponds and all of the ponds had neutral pH, but octagonal ponds were slightly different from other ponds as they had slightly lower pH. Results of water hardness among the ponds showed that the highest hardness was related to the rectangular ponds ( $412.75 \pm 91.70$ ); water hardness in round ( $283.75 \pm 70.45$ ) and octagonal ( $323.55 \pm 85.31$ ) ponds was less compared to rectangular ponds ( $P \leq 0.05$ ). According to correlation between physicochemical data and fish growth index, there was a positive significant relationship between final fish weight and phosphate content, and a negative significant relationship between content of nitrate, sulfate and pH of the water and final fish size ( $P \leq 0.05$ ). Growth indexes indicated that final length, final weight, specific growth rate, daily growth rate, status factor, body weight gain and production condition were significantly different in these three types of ponds ( $P \leq 0.05$ ) and the highest efficiency was observed in octagonal ponds.

**Keywords:** Rainbow Trout, Octagonal Ponds, Water Quality, Sistan.



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**comparison of culture Rainbow trout fish in  
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