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Reproductive performance and early life stages of spotted seatrout *Cynoscion nebulosus* in captivity.

[Desempeño reproductivo y primeros estadios de vida en corvina pinta *Cynoscion nebulosus* en cautiverio]

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ABSTRACT

The first experiments in maturation, spawning and larval rearing of spotted seatrout *Cynoscion nebulosus* in Sisal, Mexico were conducted. Sexual maturation and spontaneous spawning in wild captured fish after 20 months in captivity were obtained. In a spawning period of 88 days, 28 spawns were observed, of which 17 were viable. In total 28×10^6 eggs were collected, 70% of viability and 91% of fertilization was observed. The spawned eggs had mean diameter of $710 \pm 8 \mu\text{m}$ with an oil droplet of $199 \pm 9 \mu\text{m}$. The percentage hatching of viable eggs was 96% and larval survival at 48 h after hatching was 79%. At 48 h post-hatch (PH), no traces of yolk and only traces of the oil droplet were observed. The most appropriate period for first feeding period is between 30 and 42 h PH, after which the mean survival decreases sharply to $9.3 \pm 4.4\%$ and $11.3 \pm 4.8\%$ at 54 h PH and 66 h PH, respectively. The larval rearing was done in 2 tanks, 4-m^3 with an initial density of 75 viable eggs L^{-1} (95.6% fertilization, hatching 97.7% and 88.8% survival at 48 h). Survivals were 0.4 and 1.2% at 26 days, with 1011 and 2903 juveniles harvested, with wet weights of $0.13 \pm 0.04 \text{ g}$ and $0.16 \pm 0.03 \text{ g}$ and total lengths of $25.3 \pm 2.6 \text{ mm}$ and $27.4 \pm 1.9 \text{ mm}$ respectively. Final densities and biomasses were 0.25 and 0.50 juveniles L^{-1} and 0.03 and 0.08 kg m^{-3} , respectively.

Keywords: *C. nebulosus*; Larval culture; Spontaneous spawning; Starvation; Yolk-sac consumption



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**Características y propiedades del maíz (*Zae mays L.*)
criollo cultivado en Aguascalientes, México**

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ABSTRACT

In this study characteristics of cobs and grains were analyzed, plus the mineral content and protein nixtamales, nejayotes and tortillas to 12 accessions of landraces cultivated in the region of El Llano, Aguascalientes, Mexico; an area considered highly marginalized. The results indicated that the cobs and grains had similar characteristics in length, perimeter and number of rows of kernels; however, it did exist marked difference in grain weight and germination percentage. As for the content of minerals, corn's nixtamalized high in iron, zinc and boron were the "Santa Rosa", "Retoño-7" and "AMET-2" with 81.3, 29.8 and 59.4 mg kg⁻¹, respectively. While in tortilla with higher content of iron, zinc and boron were those of "Retoño-7", the "AMET-1" and "Retoño-1", with 54.2, 8.1 and 95 mg kg⁻¹, consecutively. Protein content, highlighted the tortillas made with corn "Retoño-5" (10.72), "Retoño-1" (10.32) and "Retoño-7" (10.31%). Additionally, it was found that nejayotes contain important minerals such as N, P, K, Ca, Mg, Fe, Zn and B. It is concluded that landraces have features and important properties for cultivation and consumption: important criteria to justify further preservation cultivation and diversification of these native breeds, together with strengthening research in culture and encourage the use of this endemic genetic wealth.

Keywords: Zea mays L., iron, protein, tortilla, zinc



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