FORMAT – I – EXTENDED ABSTRACT

GUIDELINES

SECTION OF EXTENDED ABSTRACTS

1. **Theme area/Topic**
   During the abstract submission, you will be asked to write topic/theme area of your interest (please check the conference theme areas and give the area which best describes the topic area of your presentation).

2. **Title in upper/lower case and format genus and species in italics. Example:** Monitoring the American Bollworm *(Helicoverpaarmigera)* in Bt cotton.

SAMPLE - EXTENDED ABSTRACT

Theme area: Aquaculture Production Systems

Title: Comparative evaluation of fish and crop production in an aquaponic system with traditional culture systems

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Keywords: Aquaponics, Pangas, Mint, Stocking density, Pigments

1. Introduction

Aquaculture is one of the fastest growing food producing sectors, with significant contributions towards food security, livelihood generation and economic growth across the globe. Traditional

3. **Author(s) name(s) and affiliation(s):** Authors name(s) bold and affiliations normal font in italics.

4. **The corresponding author's email address** should be inserted in the footnote after affiliation

5. **Keywords:** 4-5 words

6. **Introduction:** 100-150 words.

7. **Materials and methods:** 150-200 words.

aquaculture systems require large volumes of water and land resources; and are associated with environmental concerns in respect to disposal of nutrient rich waste water. In this context, intensive aquaculture technologies (recirculatory aquaculture system, Biofloc aquaculture and aquaponics are gaining popularity, especially among semi-rural and urban populations due to small land holdings. Aquaponics refers to complementary combination of aquaculture with hydroponics, offering a synergistic food production system, requiring only 10-12% of the resources as compared to traditional culture practices with very less waste water production (Rakocky*et al*., 2006, Shete*et al.,* 2016). With this background, a study was conducted to evaluate the integration of Pangas catfish, *Pangasianodonhypophthalmus*and mint in an automated aquaponics system, under climatic conditions of Punjab during the summer season.

2. Materials and Methods:

The study (4 months) was conducted in an automated aquaponics unit at Instructional cum Research Farm of College of Fisheries, GADVASU, Ludhiana. Pangas catfish fingerlings were stocked at three stocking densities i.e. 30 m^{-3} (SD1), 40 m^{-3} (SD2) and 50m^{-3} (SD3) in circular cemented tanks (10 m^3) of

8. **Results and conclusion with 1-2 tables/figures:** 250-300 words (excluding tables/figures) – Total number of figures/tables should not exceed 2

9. **References:**
   Maximum 2 (For sample follow the style of the Indian Journal of Ecology for references **https://indianecologicalsociety.com/society/guidelines-for-authors/**).
10. **Font Type &Size**
    a. Whole abstract in **Times New Roman.**
    b. **Text font size 11.**
    c. **Double spacing** throughout the text except tables
    d. Theme area/Topic: **11 normal.**

aquaculture unit and mint was planted in hydroponics unit (HM). Water from aquaculture units was circulated into the hydroponic unit at fixed intervals through biological filter, so that the mint plants could uptake the nutrients present in the fish tank water for their growth. For comparison with traditional system, Pangas fingerlings were stocked in cemented tank of equal size ($10m^3$) at standard stocking rate of 4 m^{-3} and mint was plated outdoor in a soil bed system (SM) by following Completely Randomized Design (CRD). Fish growth was studied at monthly intervals and growth parameters were calculated after the completion of experiment. Mint growth was assessed in terms of total plant height, root length, yield and pigment content (chlorophyll and carotenoids). The data were statistically analyzed by one way analysis of variance (ANOVA) and significant difference between treatment means was determined by CPCS-1.

3. Results and Discussion:

Although, significantly higher fish growth, in terms of total length gain (TLG), net weight gain (NWG) and specific growth rate (SGR), was recorded in control tank as compared to aquaponic fish tanks, but the average yield (kgm^{-3}) was found significantly higher in all aquaponic tanks, with maximum yield (6.35 times) recorded at 50 m^{-3} stocking density (SD3). Condition factor of fish remained above 1.0 in control and aquaponic tanks (SD1-SD3), without any significant differences (Table 1).

e. Title: **13 bold.**
f. Author name(s): **11 bold.**
g. Institution/ affiliation: **11 italics (Not bold).**
h. Headings **- 11 bold.**
i. Table - **Single spacing 10 Normal without inner horizontal and vertical lines.**
j. Table captions **-11 bold**
k. Table footnote **-10 normal**
l. Use grammar and spell-check.

Word Limit for complete abstract - Not more than 900 words, including table(s).

The mint yield (kgm^{-2}) increased by 1.14 times in the hydroponic unit, with significant improvement in plant height, root length, plant height gain (PHG) and root length gain (RLG). The chlorophyll a and b content were significantly higher (1.28 and 1.31 times, respectively) in the mint crop harvested from the hydroponic system (HM), as compared to the control mint (SM) harvest (Table 2). However, no significant differences were found with respect to the carotenoid content. The results clearly indicate potential of aquaponic system in enhancing fish productivity substantially (over 6 times) and producing 14% higher mint biomass containing higher chlorophyll content. It is attributed to improved water quality maintained in the aquaponic fish tanks through water recirculation and uptake of excessive water nutrients by the mint crop in the hydroponic unit.

Table 1: Comparative growth of pangas catfish in different control and aquaponic tanks

Parameters	Control	SD1	SD2	SD3
Fish $Tank^{-1}$	40	300	400	500
Average TLG (cm)	11.32^{a}	8.04^{ab}	7.30^{b}	7.57^{ab}
Average NWG (g)	119.0^{a}	66.72^{b}	59.00^{c}	58.72^{c}
Yield (Kg m^{-3})	0.525^{d}	2.308^{c}	2.701^{b}	3.334^{a}
	--	(4.396)	(5.144)	(6.350)
SGR (%)	1.97^{a}	1.53^{b}	1.46^{c}	1.44^{c}
Condition factor (K)	1.08^{a}	1.04^{a}	1.05^{a}	1.00^{a}
FCR	2.02^{b}	2.18^{ab}	2.30^{a}	2.03^{b}
Survival (%)	100.00^{a}	97.00^{a}	94.50^{a}	93.40^{a}

* SD = Stocking Density, Control = 4 m^{-3}, SD2= 30 m^{-3}, SD3 = 40 m^{-3}, SD4= 50 m^{-3}
Values in parentheses indicate change over control

How to submit the Abstract

1. Before submission of abstract, Register yourself, make an account OR log in if already signed up.
2. Submit the abstract on link **http://iesfaconf.in/submit-paper/.**
3. If you have any questions or problems related to the submission process don't hesitate to get in touch at: **iesfac2023@gmail.com**

Note: Abstract and full-length articles should report the results of the original research. The material should not have been previously published or submitted for publication elsewhere. Strictly follow the author guidelines for **ABSTRACT** (word count, font size, formatting and references).

Values with same superscript (a, b,…..d) in row do not differ significantly ($p \leq 0.05$)

Table 2: Growth of mint in soil based traditional system and hydroponic unit of aquaponic system

Growth Parameters	SM	HM	CD* (=0.05)	CV (%)
IPH (cm)	NS	NS	NS	5.49
FPH (cm)	33.233	82.783	2.724	1.34
PHG (%)	267.50	1046.60	-	-
IRL (cm)	3.386	3.6167	0.131	1.07
FRL (cm)	25.233	40.9667	0.358	0.31
RLG (%)	607.98	1005.80	-	-
Yield (kg m^{-2})	5.120	5.871 (1.147)	254.63	1.32
Chlorophyll a (mg g^{-1})	3.95	5.08	0.16	0.98
Chlorophyll b (mg g^{-1})	2.72	3.57	0.15	1.35
Carotenoids (mg g^{-1})	22.65	23.44	NS**	2.36

*CD = Critical Difference, **NS= Non-Significant; Values in parentheses indicate change over control
IPH/FPH – Initial/Final Plant Height, IRL/FRL – Initial/Final Root Length

4. References

Rakocy, J. E., Masser, M. P., &Losordo, T. M. (2006). Recirculating aquaculture tank production systems: Aquaponics– integrating fish and plant culture. SRAC Publication, No. 454 USDA.

Shete, A. P., Verma, A. K., Chadha, N. K., Prakash, C., Peter, R. M., & Ahmad, I. (2016). Optimizing of hydraulic loading rate in aquaponic system with Common carp (*Cyprinuscarpio*) and Mint (*Menthaarvensis*). *Aquacultural Engineering*, 72-73: 53–57.