

NOTICE OF PUBLICATION



AQUACULTURE COLLABORATIVE RESEARCH SUPPORT PROGRAM

RESEARCH REPORTS

Sustainable Aquaculture for a Secure Future

Title: Comparison of rice straw and bamboo stick substrates in periphyton-based carp polyculture systems

Author(s): Sunila Rai¹, Yang Yi^{1,2}, Md AbdulWahab³, Amrit N Bart¹ & James S Diana⁴

1. Aquaculture and Aquatic Resources Management, School of Environment, Resources and Development, Asian Institute of Technology, Pathumthani, Thailand

2. College of Aqua-Life Science and Technology, Shanghai Fisheries University, Shanghai, China

3. Faculty of Fisheries, Bangladesh Agricultural University, Mymensingh, Bangladesh

4. School of Natural Resources and Environment, University of Michigan, Ann Arbor, MI, USA

Date: 24 August 2017

Publication Number: AquaFish Research Report 08-A24

The CRSP authors will not be distributing this publication. Copies may be obtained by writing to the authors.

Abstract: An experiment was conducted to compare rice straw mat and kanchi (bamboo sticks) as substrates in periphyton-based polyculture systems. The experiment had three treatments: (a) no substrate (control), (b) rice straw as a substrate (3 x 2.7 kg pond⁻¹) and (c) kanchi as a substrate (390 kanchi pond⁻¹). Fingerlings (n540) of rohu, *Labeo rohita* (24.5 ± 0.5 g); mrigal, *Cirrhinus mrigala* (25.1 ± 0.6 g); catla, *Catla catla* (25.8 ± 0.5 g); common carp, *Cyprinus carpio* (27.6 ± 0.6 g), and silver carp, *Hypophthalmichthys molitrix* (30.4 ± 0.9 g) were stocked at a 3:2:2:2:1 ratio and cultured for 90 days. There were no differences in the number of plankton, periphyton and macro-zoobenthos among the treatments. The total plate count of bacteria was higher in the rice straw treatment (41320million – cfu m⁻²) than that in the kanchi treatment (11780million cfu m⁻²). Growth and the final mean weight of rohu, catla and common carp were higher in the substrate treatments than those in the control. Rice straw and kanchi treatment, respectively, resulted in 38% and 47% higher combined total weight gain over control. Gross margin analysis showed that rice straw treatment resulted in more profit than the control and kanchi treatment. Therefore, rice straw has the potential to be used to increase production in the low-input rural aquaculture.

CRSP RESEARCH REPORTS are published as occasional papers by the Program Management Office, Aquaculture Collaborative Research Support Program, Oregon State University, 418 Snell Hall, Corvallis, Oregon 97331-1643 USA. The Aquaculture CRSP is supported by the US Agency for International Development under CRSP Grant No.: LAG-G-00-96-90015-00. See the website at < <http://pdacrsp.oregonstate.edu/> >.

Continued...

This abstract was excerpted from the original paper, which was in the *Aquaculture Research* (2008), 39(5): 464-473.

CRSP RESEARCH REPORTS are published as occasional papers by the Program Management Office, Aquaculture Collaborative Research Support Program, Oregon State University, 418 Snell Hall, Corvallis, Oregon 97331-1643 USA. The Aquaculture CRSP is supported by the US Agency for International Development under CRSP Grant No.: LAG-G-00-96-90015-00. See the website at < <http://pdacrsp.oregonstate.edu/> >.