

Colour Preference by *Penaeus indicus* in Feeding

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Experiments on feeding behaviour of Indian white prawn, (*Penaeus indicus* H. Milne Edwards) indicate highly significant preference to bright colours in the order of red, green and yellow over white and dark shades. As colour of food appears to attract the prawns, colouring the diet is suggested to have application in better feed management.

Selection of food and feeding techniques play an important role in intensive and semi-intensive culture systems. Torrissen (1986) says that the pink to red pigment in wild salmon is of dietary origin and is mainly due to accumulation of the carotenoid astaxanthin. Otazu & Ceccaldi (1984) opine that the marine meat products with pink to red tint have better consumer appeal and in culture, the fishes are therefore fed with carotenoids from various sources to improve this quality. Similar works in improving the production and colour of meat were carried out by Deshimaru & Shigeno (1972), AQUACOP (1976), Choubert & Lique (1983), D'Abramo *et al.* (1983) and Arai *et al.* (1987).

Colouring the feed with carotenoids of red hue beyond improving the tint of the meat produced, may aid in the pickings of food by the animals. Various additives are at present being used to improve the quality of the feed. But it is not yet known whether the prawns and fishes are attracted to their food based on colour. However, some traditional farmers in Cochin are understood to use colouring materials of vegetable origin in the feed, for prawn culture farms and claim better results. An experiment was hence conducted in the laboratory to find out the prawns' behaviour towards colour of food on feeding.

Materials and Methods

Indian white prawn, *Penaeus indicus* of

70-80 mm size were collected from the wild and stocked in the laboratory in water of 22‰ salinity and acclimatised for 5 days. They were fed with cleaned squid meat (*Loligo* sp.) at fixed time schedule during acclimatisation. From a stock of nearly 150 prawns thus maintained, five each at a time were transferred to clear glass tanks filled with 40 litres of the filtered medium and starved for 4-5 h. Subsequently, squid meat, cleaned and uniformly cut into 7.0 mm cubes were stained using food grade synthetic colours namely, orange red, apple green and lemon yellow and a combination of the first and second for a dark shade. Cubes without colouring were used for white. Five pieces each of white, red, green, yellow and dark cubes were simultaneously and evenly spread in the experimental tank taking adequate caution not to have them sticking to each other. The prawns during the period of study were fed only at a fixed time in a day. The number of cubes picked within 10 min according to their colour at each feeding were recorded. After the day's experiments the test animals were released back to the stock. The observations were repeated for a month with the animals drawn from this stock at random.

Results and Discussion

The colourwise percentage of pickings during the experiment are given in Fig. 1. As seen here, red was preferred the maximum (43.84%) followed by green (27.09%) and yellow (19.97%). Attraction to dark colour was

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the least (2.46%), while 6.90% pickings were white. In fact, in fishes also red tint is liked the most (Hyatt, 1979).

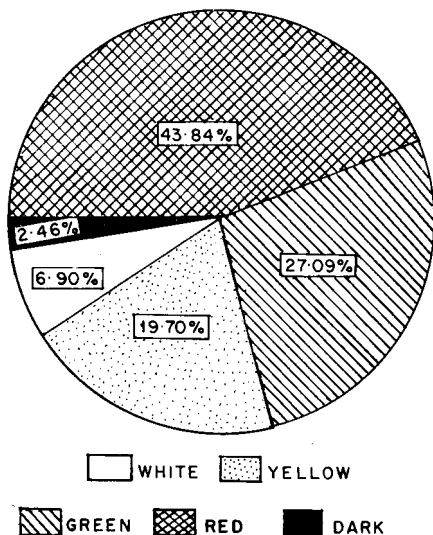


Fig. 1. Colourwise percentage of the cubes of *Loligo* meat picked by *P. indicus* within 10 minutes in experimental feeding.

Since bright colours were more attractive than the white and the dark, observations were made between white and red, white and green, white and yellow, yellow and red and green and red. The dark shade was omitted from this as it had only 2.46% pickings in the previous experiment. The preference shown in the above pairing experiment, in percentage is presented Fig. 2. Though bright colours were more attractive to the prawns than white; the rate of pickings between white and yellow, was almost equal (45 and 55% respectively). Against white and yellow, the red and green had higher values. But between red and green the pickings were almost equal with 52.17% for the former and 47.83% for the latter.

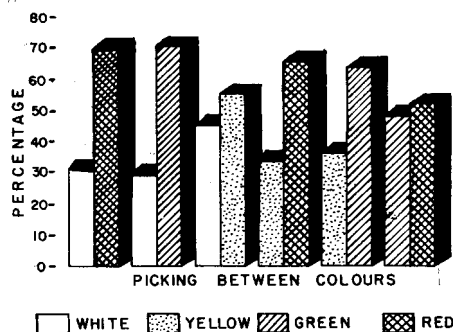


Fig. 2. Pairing experiments between colours to sort out preference by *P. indicus*.

Significance of the preference to bright colours tested by Chi-square statistic gave a value of 111.45 at 4 degrees of freedom which is highly significant. However, the test between red and green did not show any significance, although the red appeared more attractive than the green. The present experiment between red and green was confined to 138 animals drawn from the stock. Tests with higher number of prawns may perhaps prove whether the preference of red over green is also significant. At any rate, as the bright colours are preferred significantly to white and dark shade, addition of colours to the food will be of advantage for easier and quicker pickings by the prawns. It may prevent waste of food in the process of feeding. Resorting to use of colouring materials of natural origin such as beet root, carrot, etc. will have the added advantage of supplementing the quality of food.

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