

**RANCANGAN DAN KARYA TEKNOLOGI**



**JUDUL**

**DESAIN BUBU LAMPU UNTUK PENANGKAPAN IKAN NILA  
DI KOLAM PERCOBAAN**

**PENGUSUL**

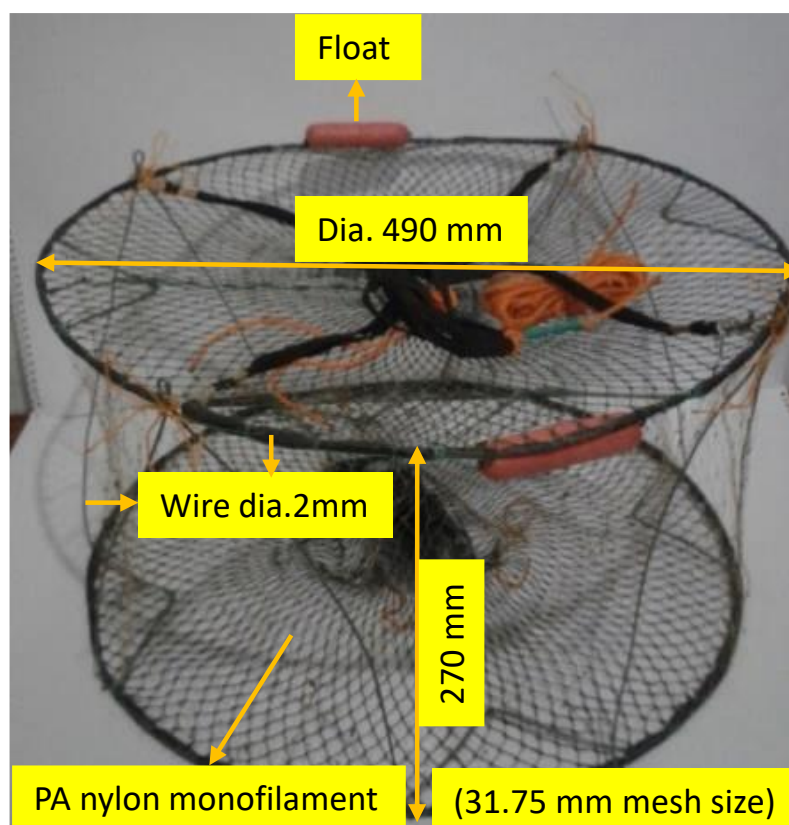
**Ahmadi, S.Pi, M.Sc, Ph.D  
NIDN. 0028097107**

**UNIVERSITAS LAMBUNG MANGKURAT  
FAKULTAS PERIKANAN DAN KELAUTAN  
BANJARBARU**

## **Outline of Presentation**

- 1. Design and Specification of Light Trap**
- 2. Trapping experiments with the lights**
- 3. Data collection**

## 1. Design and Specification of Light Trap



**Figure 1.** Light trap design used for catching Nile tilapia in a pond

**Table 1.** The gear and lamp specification of the light trap used for Nile tilapia

No.	Gear and Lamp Specification	Description		
1	Shape and Material	Circle-shaped, 1540 mm perimeter. 2 mm diameter solid wire. It is collapsible trap		
2	Size	Top and bottom panels: 490 mm diameter. 270 mm height		
3	Netting Material	Polyamide (PA), 31.75 mm mesh size Additional net: Polyethylene (PE), 25 mm mesh size. The upper part used for taking out the catch, The bottom part for attaching the lamp		
4	Hanging Ratio	0.45		
5	Typical Lamp	0.9 W LED (Light Emitting Diode) Torpedo light (215 × 50 mm, Fishing Net Industry Co. Ltd. China), powered by 3 V dry-cell batteries		
6	Color, Intensity and wave-length	Blue	$8.4 \pm 1.65$ lx	450-495 nm
		Green	$3116 \pm 342.74$ lx	495-570 nm
		Yellow	$332.0 \pm 37.14$ lx	570-590 nm
		Orange	$42.5 \pm 2.68$ lx	950-620 nm
		Red	$376.4 \pm 93.40$ lx	620-750 nm
		White	$1282.6 \pm 91.35$ lx	-

## 2. Trapping Experiments with the lights for Nile tilapia

A total of 13 circle-shaped traps were constructed with the same dimensions and materials (**Figure 2**). Six continuous light traps, six blinking light traps and a control (trap without lamp), and simultaneously tested in the concrete pond at the beginning of trials. The trap made of Polyamide (PA) nylon monofilament (31.75 mm mesh size), was fastened around two wire ring frames (wire dia. 2 mm); 1540 mm perimeter, was placed on the top and bottom (490 mm diameter). The net height was 270 mm with a hanging ratio of 0.45. Each trap had four entry holes located on each side of the trap with about 5 cm opening mesh. A sheet of Polyethylene (PE) nylon multifilament was placed on the top, allowing for catch removal, and another was placed on the bottom where the lamp was attached.

Each of the light traps was assigned with 0.9 W LED (Light Emitting Diode) Torpedo light (215 × 50 mm, Fishing Net Industry Co. Ltd. China) containing blue ( $8.4 \pm 1.65$  lx), orange ( $42.5 \pm 2.68$  lx), yellow ( $332.0 \pm 37.14$  lx), red ( $376.4 \pm 93.40$  lx), white ( $1282.6 \pm 91.35$  lx), and green ( $3116 \pm 342.74$  lx), powered by 3 V dry-cell batteries, respectively. The intensity of each lamp was measured using a light-meter LX-100 (Lutron, Taiwan) at Basic Laboratory of Faculty of Mathematic and Natural Science, Lambung Mangkurat University. The experimental data were presented in **Table 2**.



**Figure 2.** A fish sample of Nile tilapia, the traps and lamps used in a fish pond

### 3. Data Collection

**Table 2.** Number of catches, weight, YPUE and condition factor (K) of Nile tilapia by the sex collected from the pond experiments  
YPUE = yield per unit effort

Light Trap	Treatment	Number of catches			Weight (g)			YPUE (g/trap/trial)			K	
		Male	Female	Total	Male	Female	Total	Male	Female	Total	Male	Female
Without lamp	Control	5	3	8	48	99	147	3.43	7.07	10.50	2.25±0.70	1.71±0.27
Blue	Continuous	1	2	3	12	22	34	0.86	1.57	2.43	1.65±0.00	1.70±0.06
	Blinking	5	5	10	40	79	119	2.86	5.64	8.50	1.58±0.31	1.61±0.21
Green	Continuous	6	6	12	79	528	607	5.64	37.71	43.36	1.79±0.08	1.90±0.43
	Blinking	2	2	4	17	26	43	1.21	1.86	3.07	2.27±1.04	1.52±0.00
Yellow	Continuous	8	7	15	78	267	345	5.57	19.07	24.64	1.87±0.55	1.99±0.54
	Blinking	6	4	10	58	119	177	4.14	8.50	12.64	1.84±0.24	1.75±0.35
Orange	Continuous	3	2	5	41	10	51	2.93	0.71	3.64	1.74±0.16	1.45±0.15
	Blinking	2	3	5	29	36	65	2.07	2.57	4.64	1.64±0.01	2.58±1.05
Red	Continuous	9	1	10	78	27	105	5.57	1.93	7.50	1.64±0.36	1.78±0.00
	Blinking	5	6	11	73	308	381	5.21	22.00	27.21	1.62±0.40	1.70±0.18
White	Continuous	5	5	10	74	214	288	5.29	15.29	20.57	2.30±0.51	1.59±0.50
	Blinking	2	0	2	14	0	14	1.00	0	1.00	1.82±0.10	0
<b>Total</b>		59	46	105	641	1735	2376	45.79	123.93	169.71	-	-
<b>Mean ± SD</b>		5±2.44	4±2.15	8±3.93	49±25.86	133±156.17	183±175.47	4±1.85	10±11.15	13±12.53	1.79±0.41	1.80±0.47