

## Perch School 2008 – O.S.U. South Centers

**Reference:** Culver, D.A. 1996. Fertilization procedures for pond culture of walleye and saugeye. Pages 115-122 in R.C. Summerfelt, editor. Walleye culture manual. NCRAC Culture Series 101. North Central Regional Aquaculture Center Publications Office, Iowa State University, Ames.  
<http://www.ncrac.org/Publications/>

### Calculating volume of pond

- Quarter-acre pond
- $148.5 \text{ ft} \times 73.4 \text{ ft} = 10,900 \text{ sq.ft}$  X Average depth is 5 ft = 54,500 cubic feet
- Convert to cubic meters  
 $54,500 \text{ ft}^3 \times 1 \text{ m}^3 / 35.31 \text{ ft}^3 = 1,543.5 \text{ m}^3$

## Inorganic Fertilizer Calculations

### Nitrogen Concentration needed

- Target is 600 mg / L (micrograms per Liter)

Formula used:

$$V_{nf} = \frac{(600 - N_p) V_p}{N_f \times 1,000}$$

Where:  $V_{nf}$  = volume of N fertilizer needed (L)

$N_p$  = inorganic nitrogen concentration in pond

$V_p$  = volume of pond

$N_f$  = Nitrogen fertilizer concentration

1,000 = conversion factor L and m<sup>3</sup> and mg and g

$$V_{nf} = \frac{(600 - 0) 1543.5 \text{ m}^3}{396 \times 1,000} = 2.34 \text{ L Fertilizer needed}$$

- Assumes there is 0 Concentration in pond
- Most ponds this is the case after one week, though exceptions occur

### Phosphorus Concentration needed

- Target is 30 mg / L

$$V_{pf} = \frac{(30 - P_p) V_p}{P_f \times 1000}$$

Where:

$V_{pf}$  = volume of phosphorus needed in pond

$P_p$  = Phosphorus concentration in pond

$V_p$  = pond volume

$P_f$  = Phosphorus concentration in fertilizer

1,000 = conversion factor

$$V_{pf} = \frac{(30 - 0) 1543.5 \text{ m}^3}{237.25 \times 1,000} = 195 \text{ mL}$$

Again, assumes zero concentration of phosphorus in pond

## **Perch School 2006 – O.S.U. South Centers**

### **Organic Fertilizer calculation**

- P – 30 mg/ L Concentration  
30 mg/ L x 1.54 million L (pond) = 46 g needed  
Roughly, 0.1 lb needed
- N – 600 mg/ L Concentration  
600 mg/ L x 1.54 million L (pond) = 926 g needed  
Roughly, 2 lbs needed  
50 lb bag has 1 lb of Nitrogen, 0.1 lb P
- We doubled the amount of alfalfa meal to 100 lbs per week, to give us 600 mg/ L N concentration, but also gave us a 60 mg/ L concentration for P.
  - 10:1 Ratio, remember ideal is 20:1