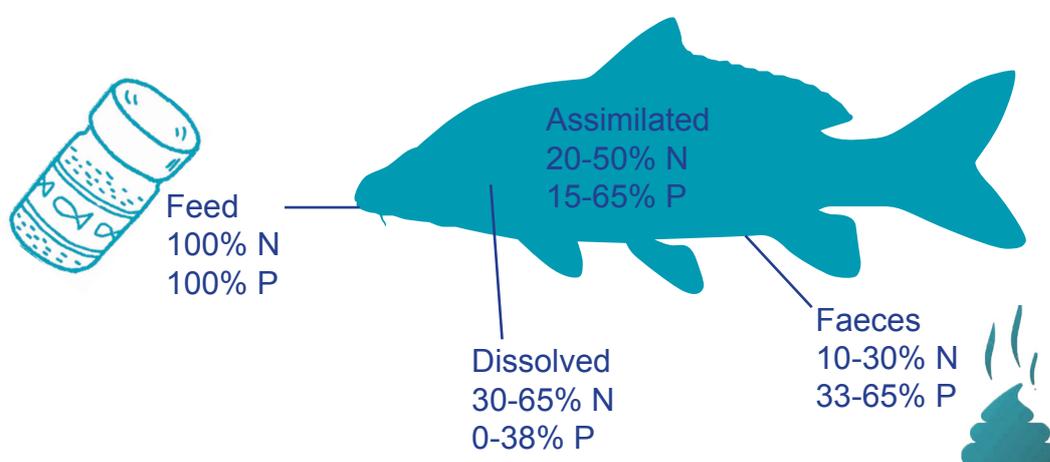


N and P partitioning in fish (waste)

Virtually all the wastes generated within an aquaculture unit originate from the fish feed. Of the feed that is eaten, 80-90% will eventually be excreted in the form of solids, liquids or gas. As a rule of thumb, 25% of the quantity fed to the fish will be produced as suspended solids on a dry matter basis (Timmons & Ebeling, 2007).

Schneider et al. (2005) found that fishes on average assimilate < 50% of N and P provided through their feed. Nitrogen is excreted mainly through the gills and in urine and comes into the system as dissolved ammonia. Phosphorous is preliminary excreted through the faeces.



To estimate the daily amount of **nitrogen** entering your aquaponics system, you commonly start from the protein content in the fish feed applied. Proteins are the nitrogen holding component in fish feed as they consist of N-rich amino acids. The total amount of N can be estimated using the Jones' factor where: **daily # N (in mg) = daily # proteins (in mg) / 6.25**. The daily amount of nitrogen calculated here forms the basis to size your biofilter where bacteria will control ammonia levels by converting it to less toxic nitrate.

Phosphorous in fish feed originates from both organic sources, and supplemented mineral phosphorous. Generally, the total phosphorous content is mentioned on the fish feed label.

References cited:

Schneider O, Sereti V, Eding EH, Verreth JAJ (2005) Analysis of nutrient flows in integrated intensive aquaculture systems. *Aquacultural Engineering* 32: 379-401.

Timmons MB, Ebeling JM (2007) *Recirculating Aquaculture*. Cayuga Aqua Ventures, 975 pp.

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