

Physiology

- Greek “physis” =, ology =
- study of the function of living things
- Mechanistic basis by which plant processes occur.
- a knowledge of plant physiology allows us to understand
- e.g. nutrient uptake, drought and cold tolerance, disease resistance, and
- photosynthesis

Carbon cycle

- Energy is "trapped" and transported as (glucose, fructose, sucrose)
- Energy is stored in
- Energy = carbon
- The carbon cycle in forages is the basis of
- Important carbon forms
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Total non-structural carbohydrates (TNC) =
all TNC are completely

Characteristics of C3 and C4 forages

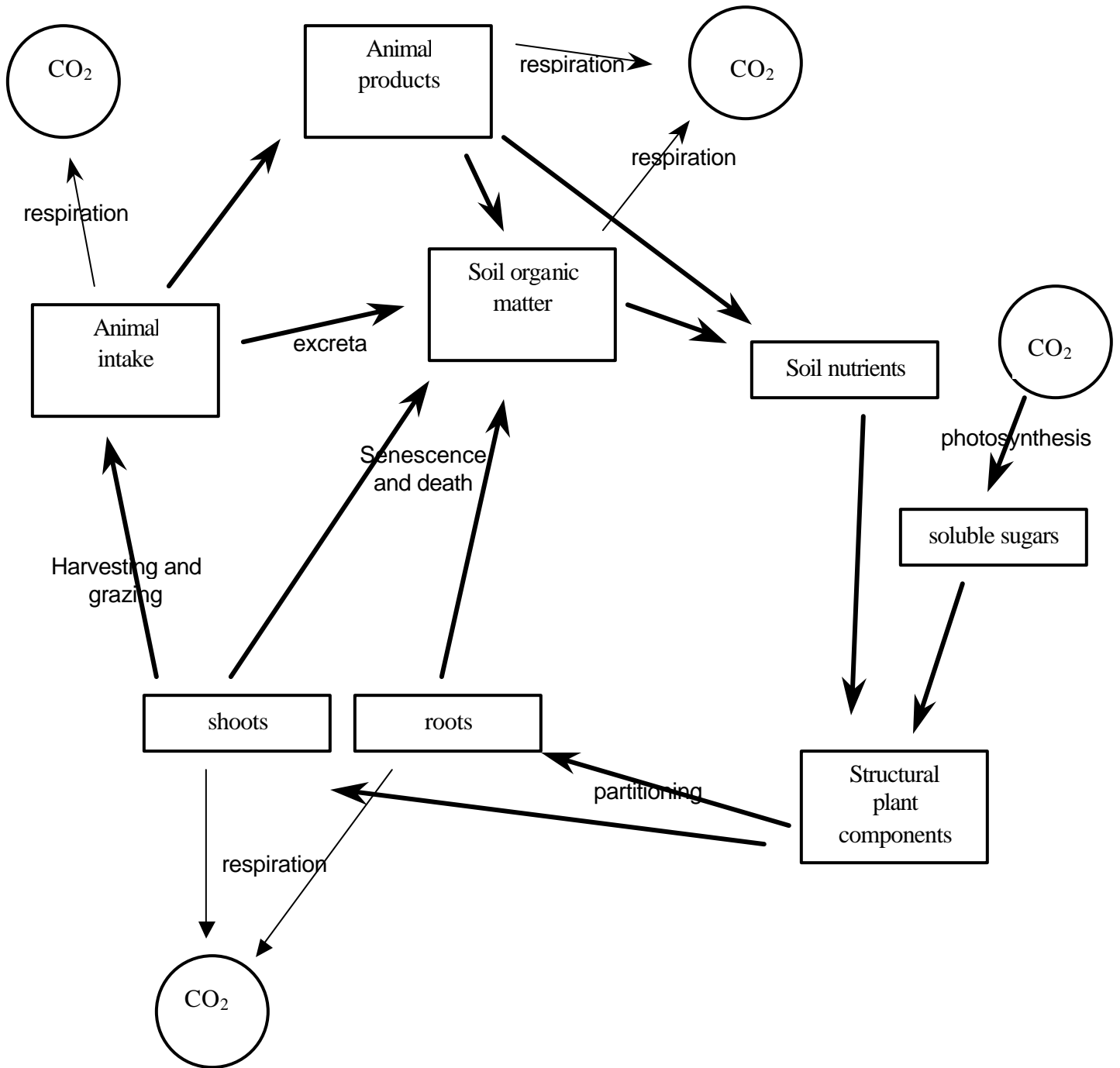
C3 Forages

C4 forages

Characteristics

examples

Carbon Cycle



Management implications

1. Photosynthesis is maximized by a
Gross photosynthesis will be maximized at canopy closure, and net photosynthesis may decrease if senescence of shaded leaves gets too high.

2. Crop quality is maximized by the, and the minimum amount of

3. following winter – initial plant growth is from
(carbohydrates stored in the crowns, stolons, rhizomes and roots of plants). Defoliation during this phase will and weaken the stand.
The forage crop will take several months to reach a positive energy balance

4. for an establishing pasture, it takes time for the crop to build root reserves (energy reserves for regrowth after cutting/grazing). Defoliation during establishment can
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5. In fall, plants will be translocating carbohydrates as reserves for subsequent regrowth. The standard recommendation for alfalfa is to allow 4-6 weeks between the last harvest (August/Sept) and the 1st killing frost

6. After any defoliation (grazing/cutting) plants will use stored carbohydrates for regrowth. It will take 2-4 weeks for the crop to rebuild its reserves. Repeated defoliation will weaken plants and stands.