ICOS ancillary data workshop

Gembloux, September 2015
Cropland ancillary data
• AGB: Above ground Biomass
• *definition*: the dry matter (DM) of the Aboveground fraction of standing vegetation, expressed per unit of ground area
• Units: g DW m\(^{-2}\)
AGB - methodology

- GAI: **destructive sampling**
AGB – spatial sampling

- (a) broadcast sown crops
- (b) row crops with uniform plant distance
- (c) row crops with irregular plant distance
AGB – spatial sampling

a) Harvest 0.3 x 0.3 m
b) Harvest at least 6 plants (uniform planting distance)

c) Harvest 1m of plants (irregular planting distance)

At least 8 points per plot. But more is highly recommended
AGB – temporal sampling

• once at seasonal maximum AGB, if occurring before harvest
• once at harvest
• after each major disturbance, such as a storm event (to be judged by the PI, could be events that occur only once every 5 years which result in reduction in AGB, ...)
• once in between two crop seasons if the field is vegetated: at the AGB peak of cover crops (timing based on PI judgement), voluntary regrowth or significant weed populations
Litter

• Definition: the dry mass of litter, expressed per unit of ground area

• Units: g DW m$^{-2}$
Litter - methodology

1) Litter collection
2) Litter traps
   - Method selection depends on soil type.
   - Only mandatory for crops where relevant.
     List of crops to be drawn.

Mandatory: collect harvest residue with collection method after harvest.
GAI

• GAI: Green Area Index

• definition: the photosynthetically active surface area of standing vegetation, expressed per unit of ground area. (For Forests GAI = LAI)

• Units: m$^2$ m$^{-2}$
GAI - methodology

1. Ceptometer

a) SS1 Sunscan Canopy Analyzer

b) AccuPAR LP-80
GAI - methodology

2. Digital hemispherical pictures
GAI - methodology

3. GAI: destructive sampling
   “clipping and weighing”
GAI – spatial sampling design

1. Ceptometer

- (a) broadcast sown crops
- (b) row crops with a closed canopy
- (c-d) row crops with an open canopy
- (e) single-spaced large-sized crop plants

12 measurement points per location. At least two locations per plot.
GAI – spatial sampling design

2. Destructive sampling

- (a) broadcast sown crops
- (b) row crops with uniform plant distance
- (c) row crops with irregular plant distance

At least two locations per plot
GAI – temporal sampling design

- Once during each development stage
- Depends on crop
- See appendix
GAI – temporal sampling design

• Validation of indirect (ceptometer) measurements with destructive measurements should be done once per year at peak GAI.