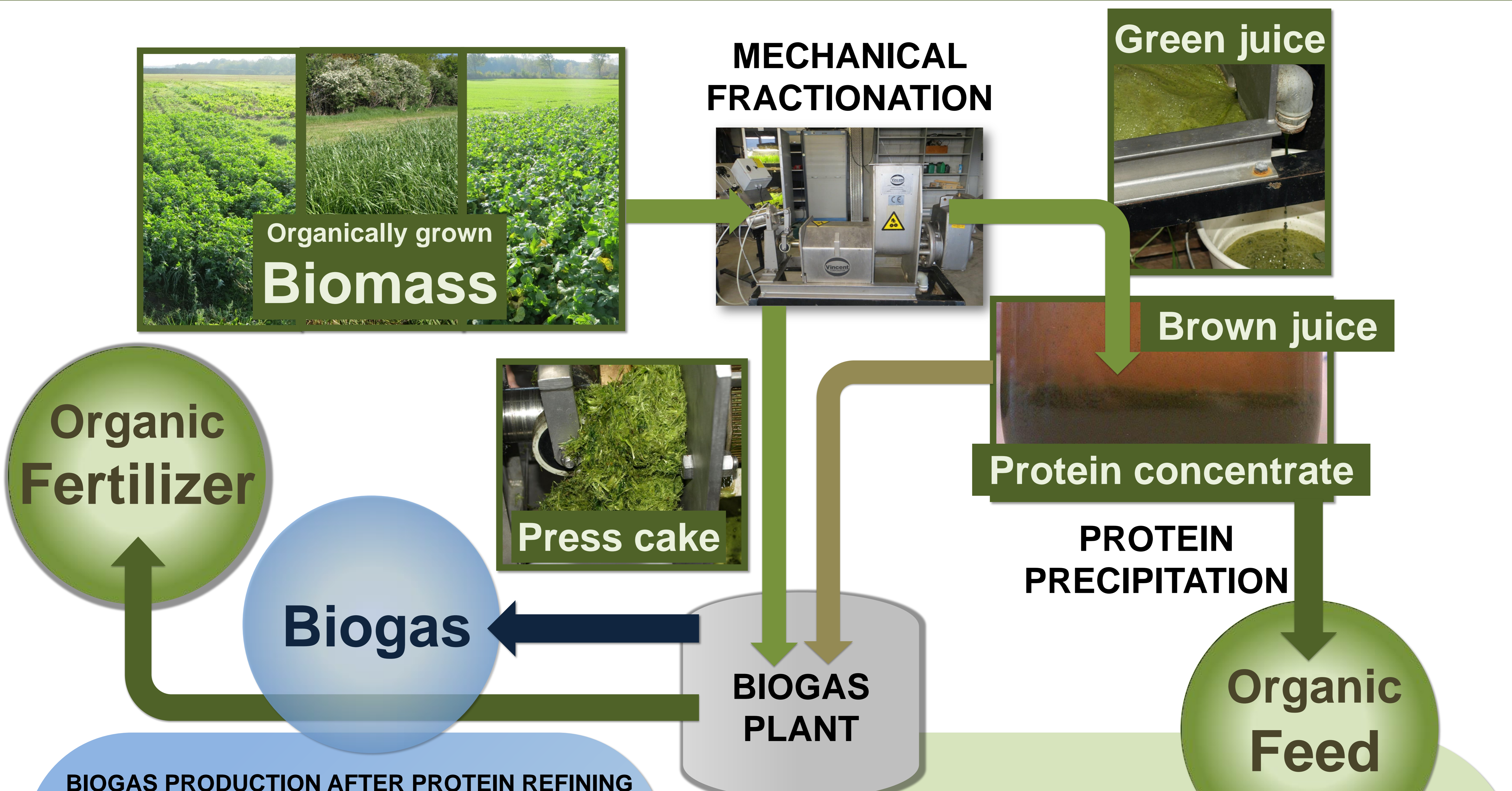


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BIOGAS PRODUCTION AFTER PROTEIN REFINING

- ✓ Most of the organic matter of the crops remains in the residual fractions after protein extraction.
- ✓ 41-69% of the potential methane recovered in press cake.
- ✓ 10-16% of the potential methane recovered in brown juice.
- ✓ The digestate will be used as organic fertilizer.

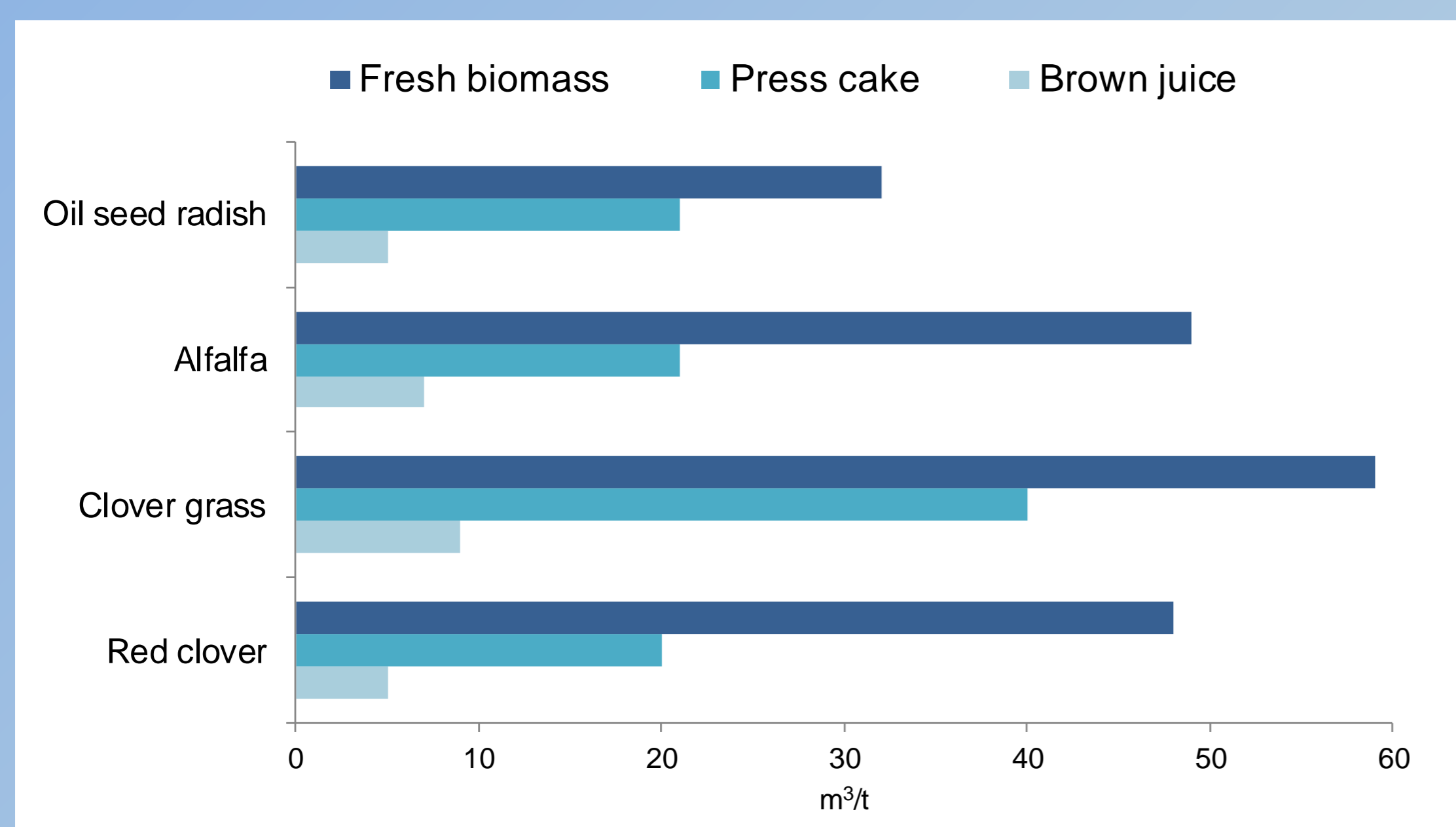


Figure 1. Methane yield of the fresh biomass (m³/t) and of the residual biomass fractions after the biorefinery process (m³/t of fresh crop).

- ✓ Specific methane yield in the same range for press cake of red clover, clover grass and alfalfa. Higher specific methane yield for oilseed radish.
- ✓ High specific methane yield of brown juice. Low pH (4-5), need of pH control.

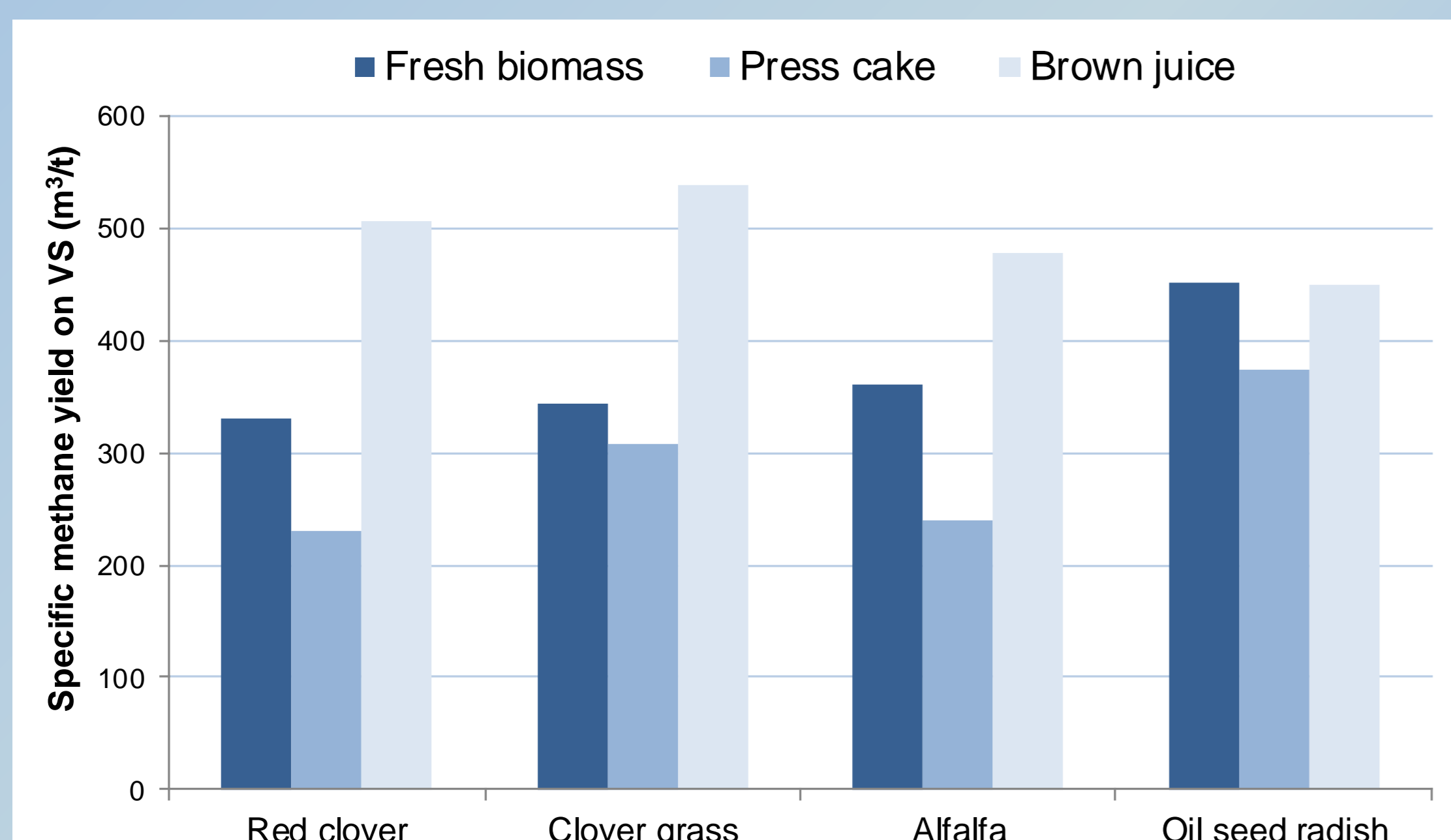


Figure 2. Specific methane yield of the different fractions.

PROTEIN CONCENTRATE for ORGANIC FEED (PC-OF)

- ✓ 48-140 kg of PC-OF recovered per ton of green biomass (dry matter basis).
- ✓ 39-46% of crude protein in the PC-OF (dry matter basis).
- ✓ The concentration of crude protein in PC-OF is 2-fold higher than in fresh biomass.

Table 1. Mass balance of the biorefinery process (dry matter basis).

| Dry matter kg/t | Red clover | Clover grass | Alfalfa | Oilseed radish |
|---------------------|------------|--------------|---------|----------------|
| Fresh crop | 1000 | 1000 | 1000 | 1000 |
| Press cake | 718 | 797 | 752 | 767 |
| Green juice | 282 | 203 | 248 | 233 |
| Brown juice | 142 | 155 | 162 | 173 |
| Protein concentrate | 140 | 48 | 86 | 60 |

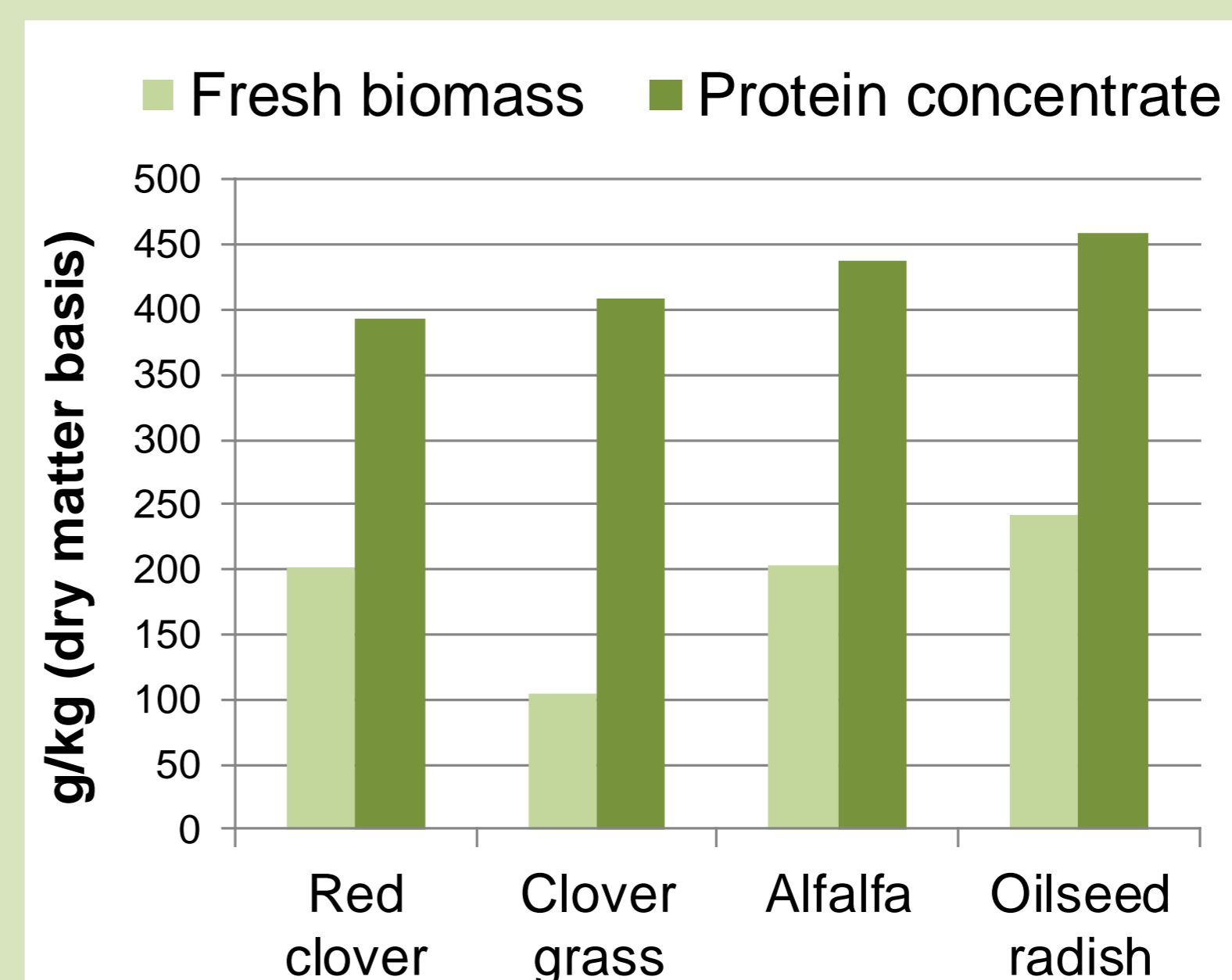


Figure 3. Crude protein content.

- ✓ Amino acid profile of PC-OF comparable with current organic poultry feed.

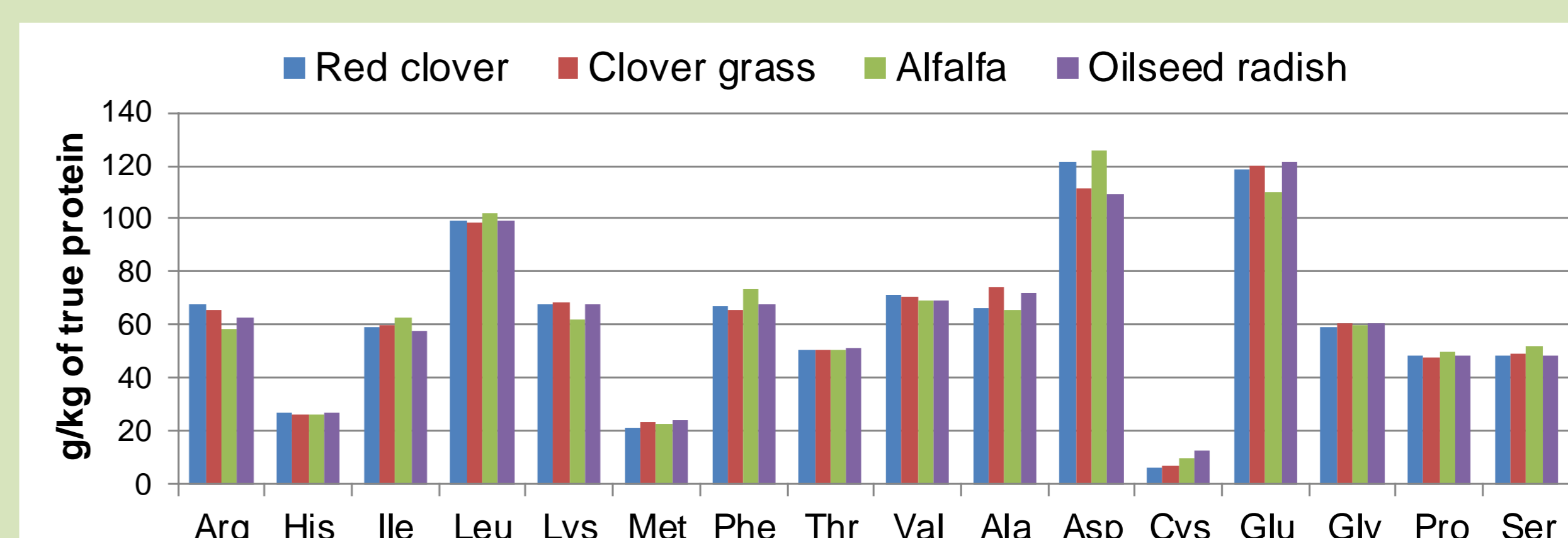


Figure 4. Amino acid composition of protein concentrates.