

LUZEX

Extractie van eiwit uit luzerne ten behoefte van kippen en varkens

Graslanddag 23 augustus 2024



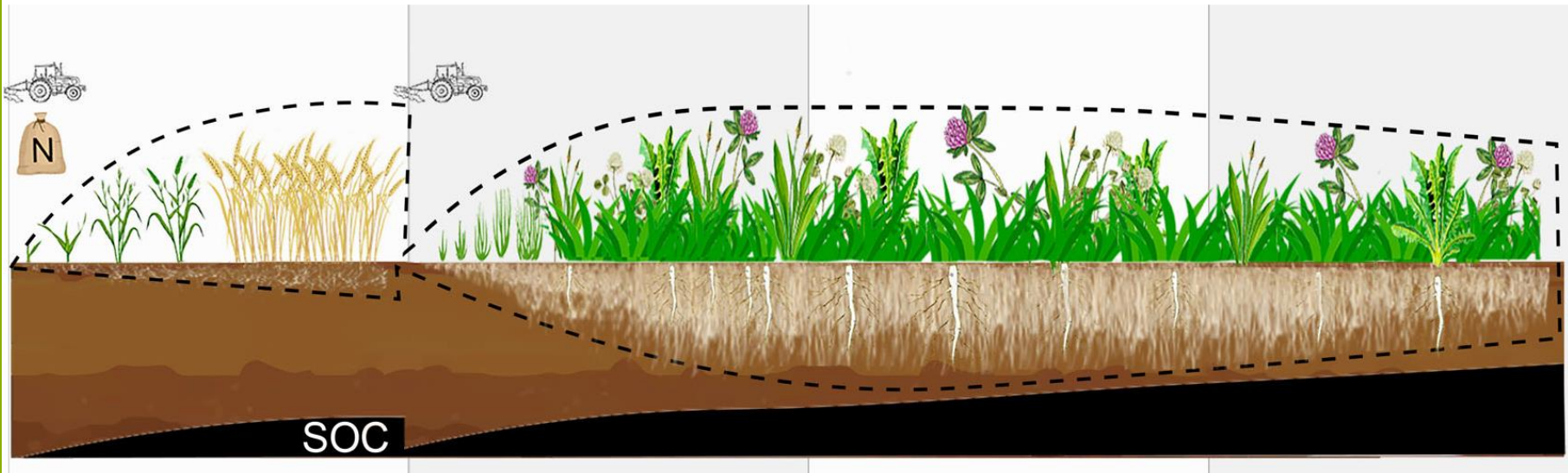
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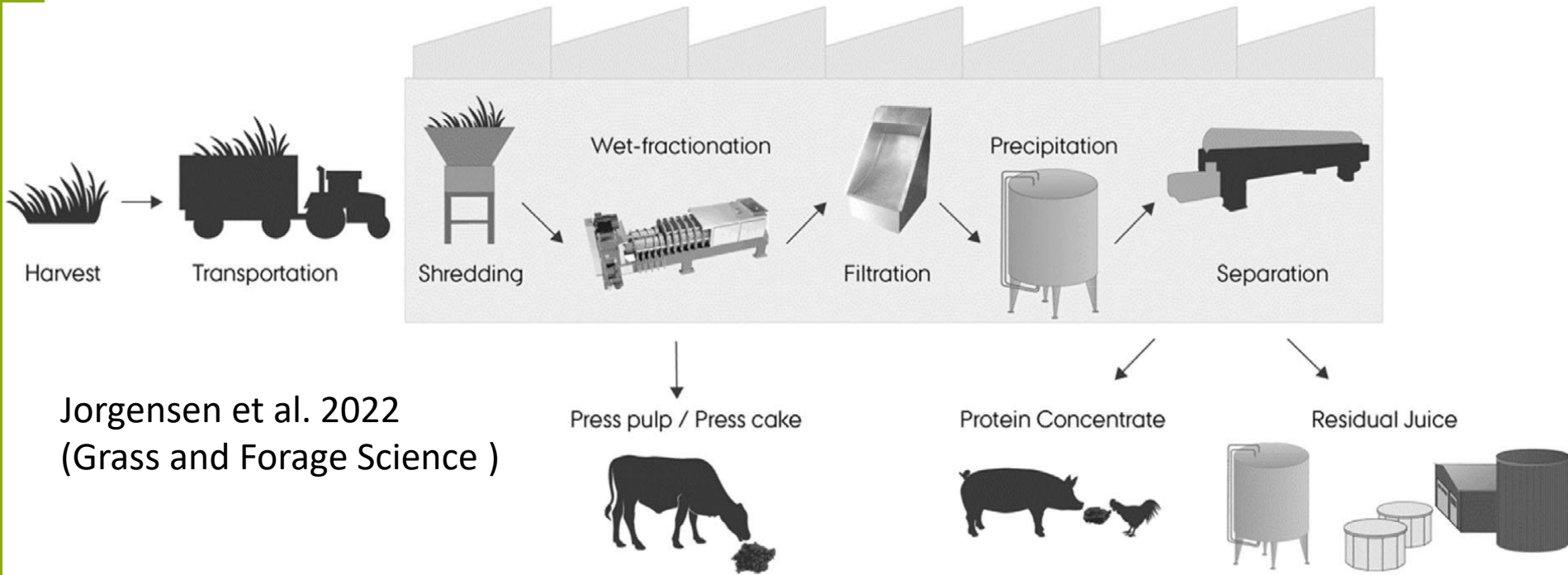
Eiwitopbrengst van aantal gewassen

- Tarwe: 10 t graan à 13 % RE = 1300 kg RE
- Veldboon: 5 t peulvrucht à 28 % RE
= 1400 kg RE
- Gras: 14 t droge stof à 13 % RE = 1820 kg RE
- Grasklaver: 14 t droge stof à 16 % RE
= 2240 kg RE
- Luzerne: 15 t droge stof à 18 % RE
= 2700 kg RE

Wisselbouw



Concept grasextractie

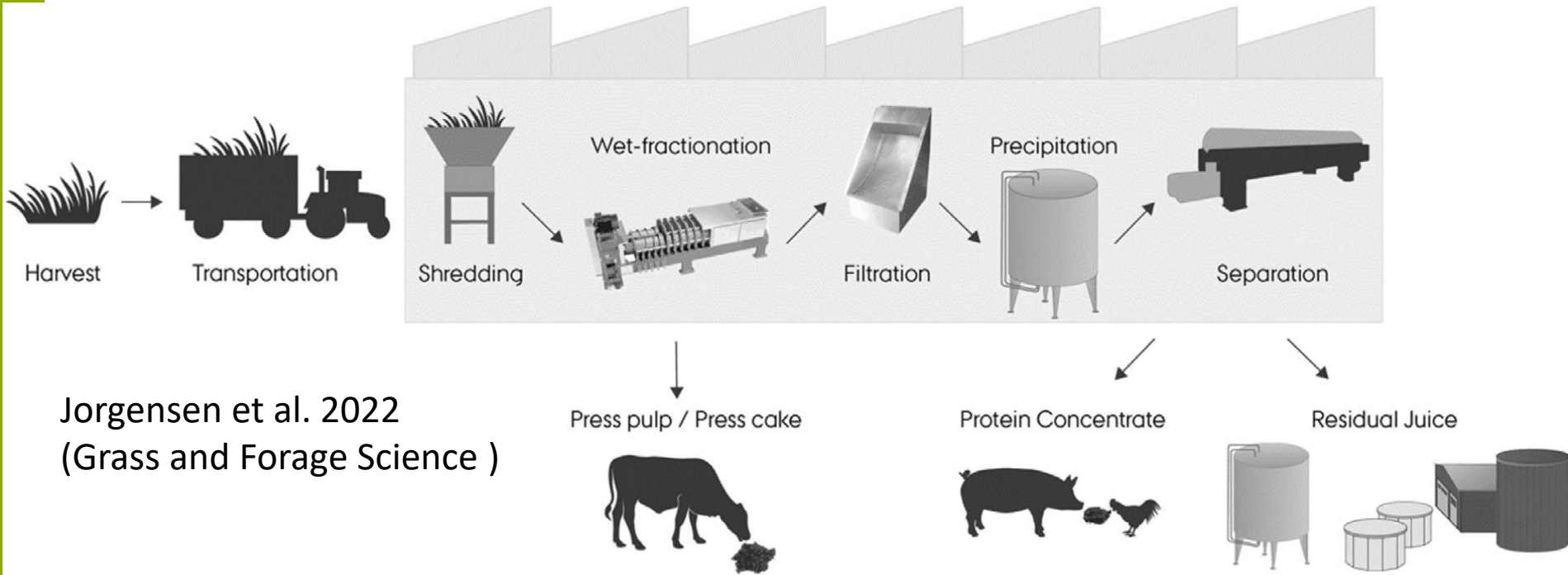


Input: Gras / Luzerne / Grasklaver

Output:

- Perspulp (vezelrijke fractie)
- Sap (mineralen, suikers, ...)
- Eiwitconcentraat (ca. 50 % RE)

Concept grasextractie

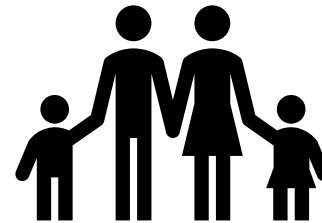


Jorgensen et al. 2022
(Grass and Forage Science)

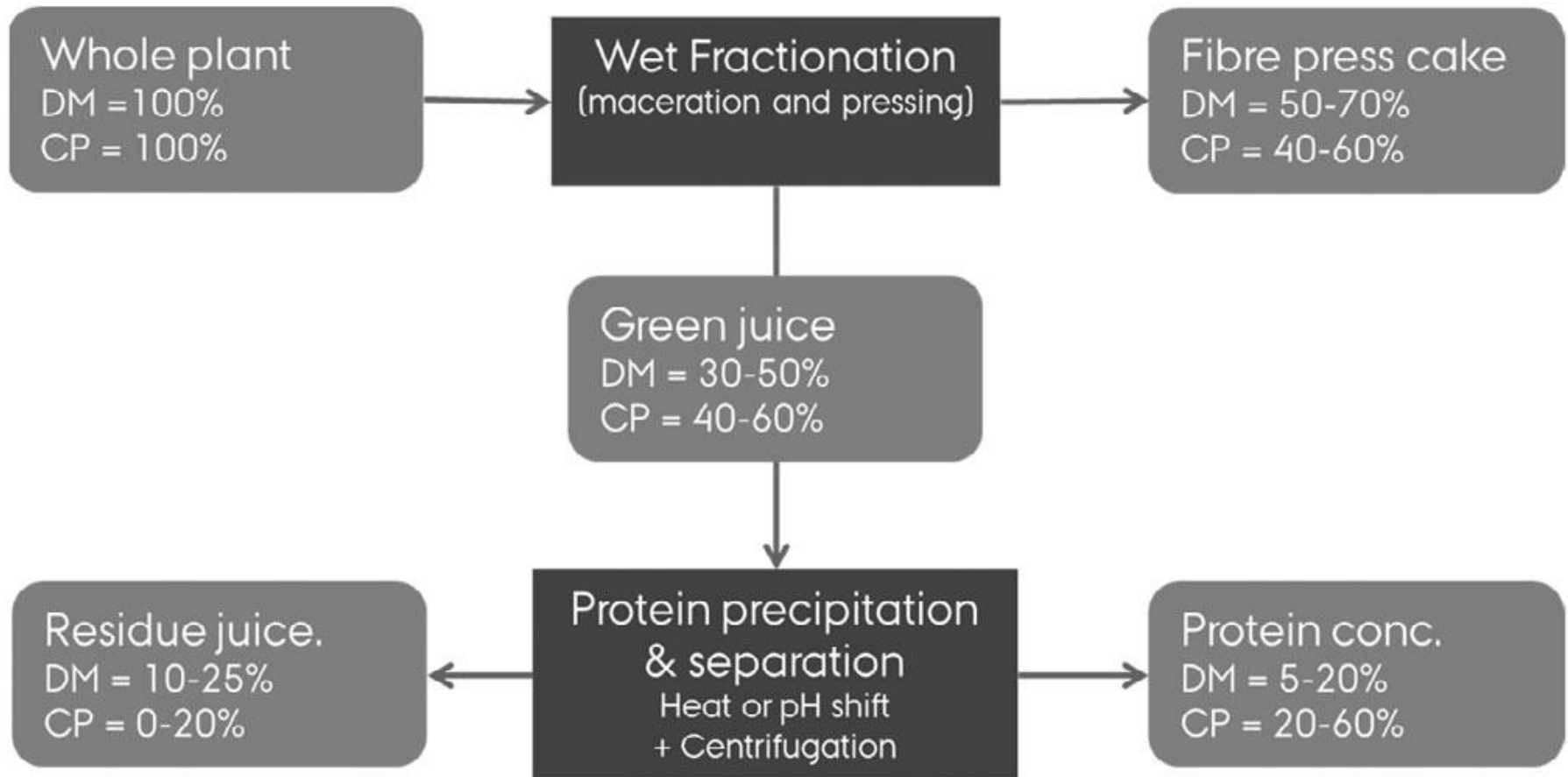
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Concept grasextractie



Jorgensen et al. 2022
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Verwezenlijkingen luzex: aanleg veldproeven



Lab Protocol



Finely ground fresh or dried lucerne in a kitchen blender

(picture is grounded fresh lucerne)

Water-extraction:
Mix Lucerne (fresh grinded/dried fine grinded) with water in a kitchen blender

pH set to 10 with NaOH
1 hour incubation at RT, pH is monitored and adjusted if necessary

Supernatant is cleared through centrifugation (10' – 15.000 g)

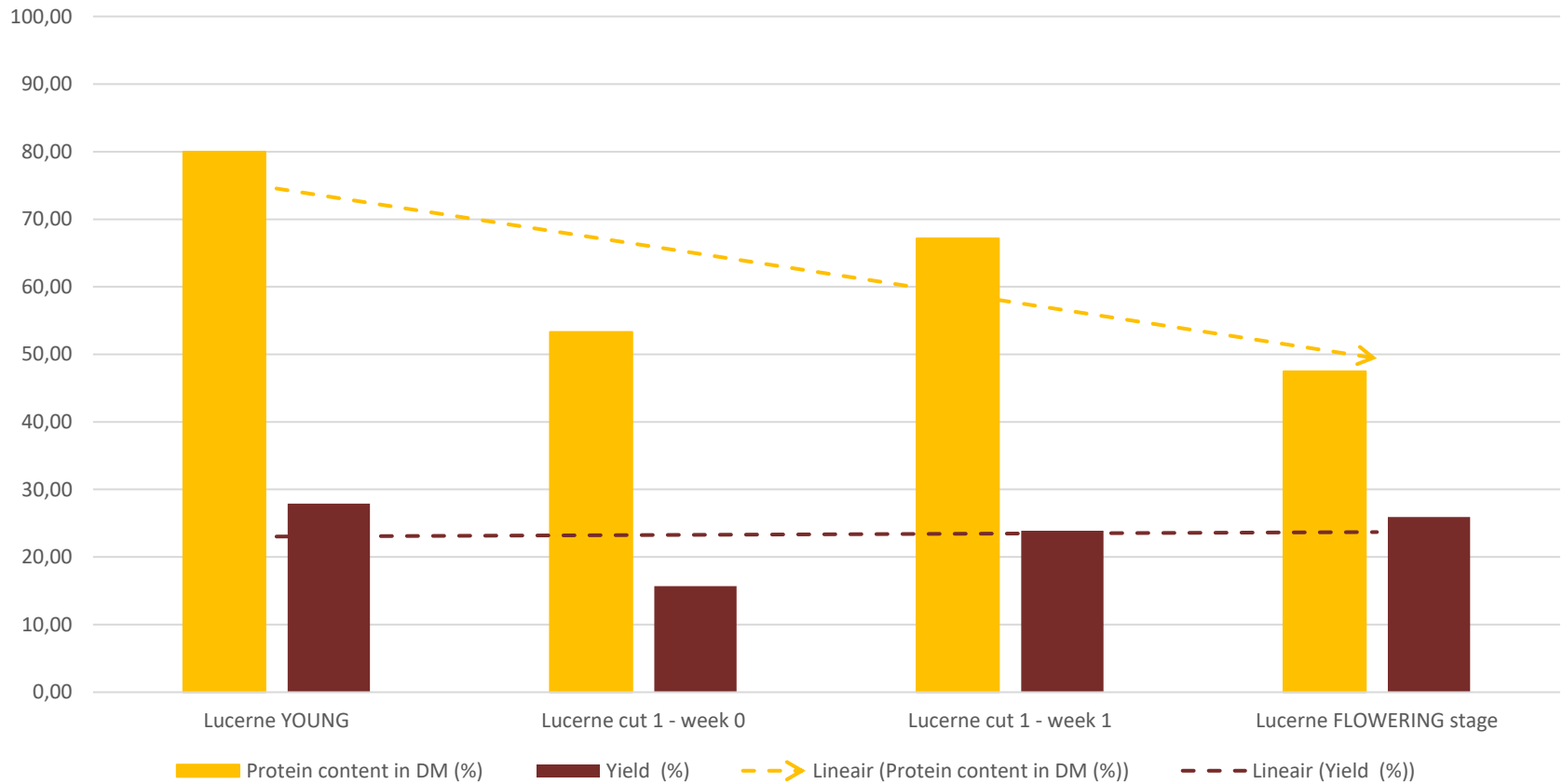
→
Potential reusable fiber rich (?) rest fraction is left

Acidifying supernatant to pH 3.5 with Citric Acid
1 hour incubation at RT, pH is monitored and adjusted if necessary

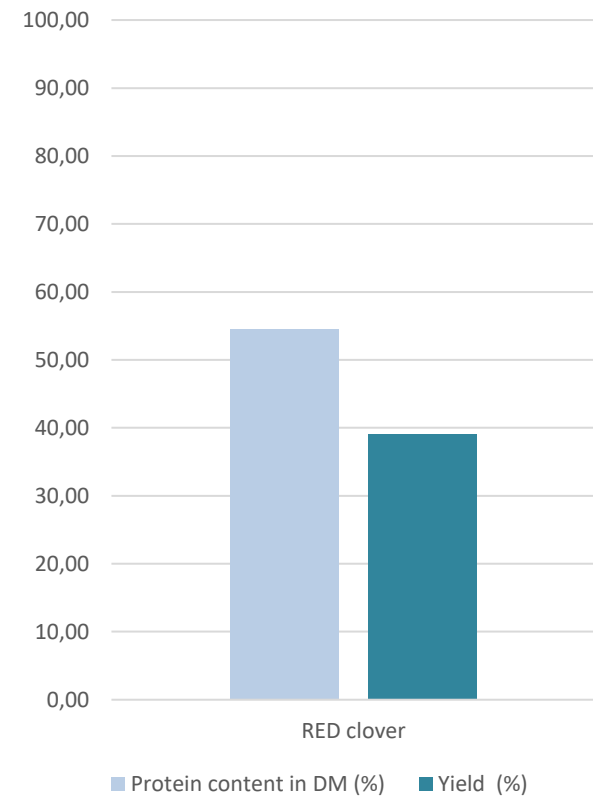
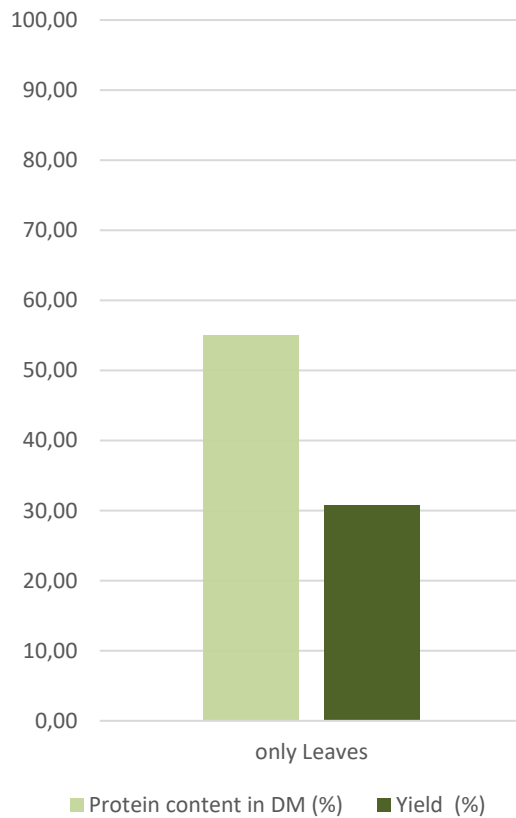
Precipitation through centrifugation (10' – 15.000 g)

→
Protein rich paste

Results – Extracted protein



Results – Extracted protein



Pilot scale testing



Extra focus on starting material

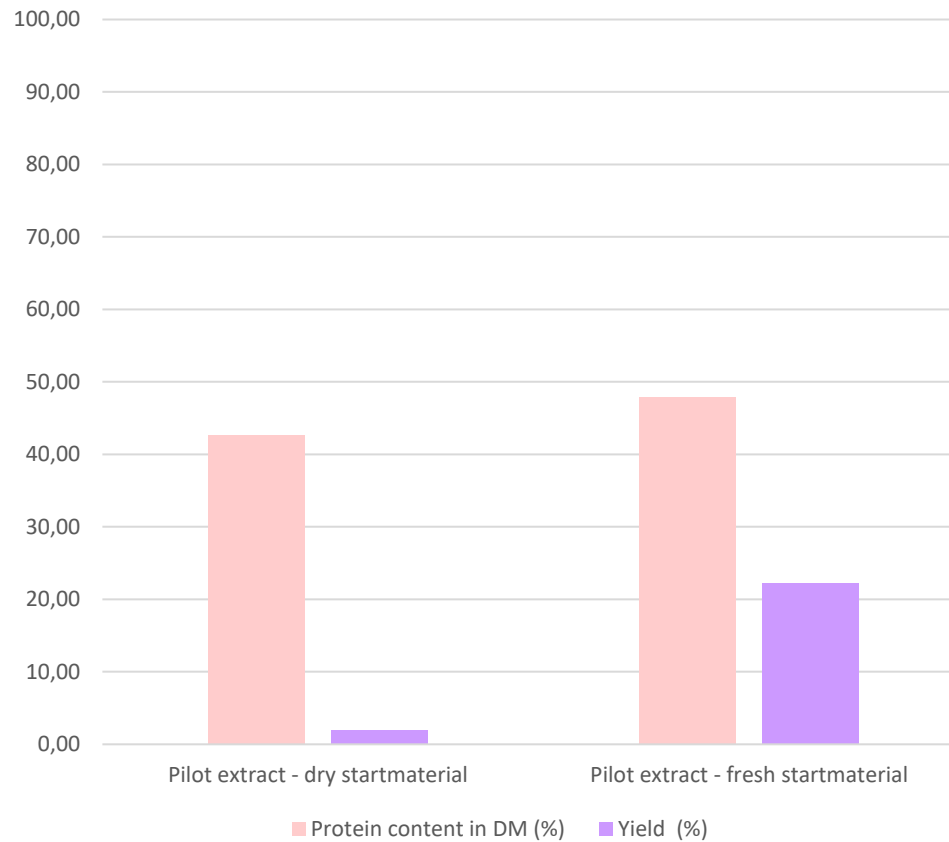


- Quality
- Visual inspection (other herbs ?)
- As freshly harvested as possible = a couple of hours before first treatment
- Enough volume: 40 à 50 kg

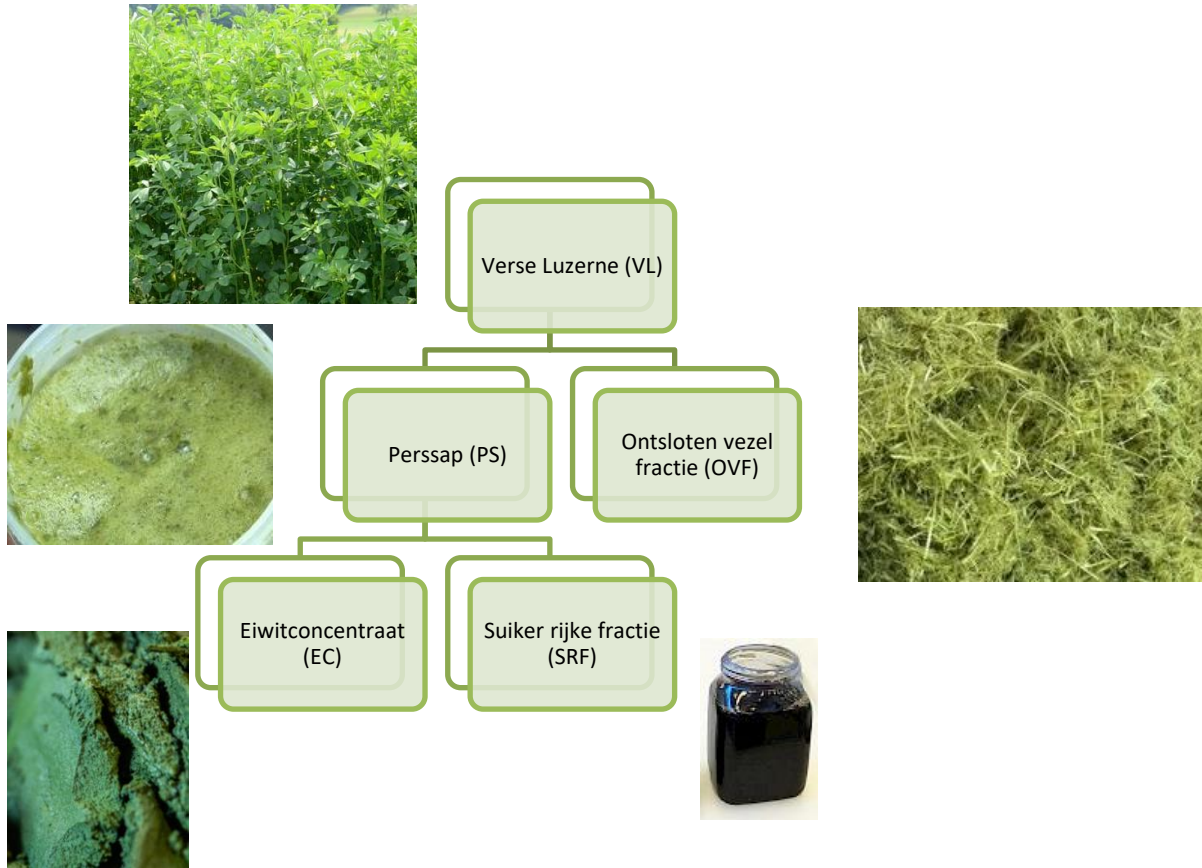
Fractionating: Centrifuge → Decanter



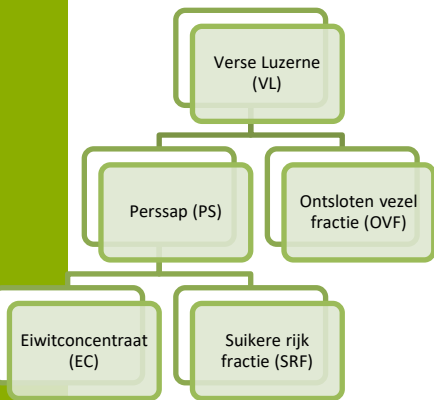
Results – Extracted protein



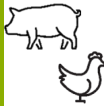
Schema eiwit extractie



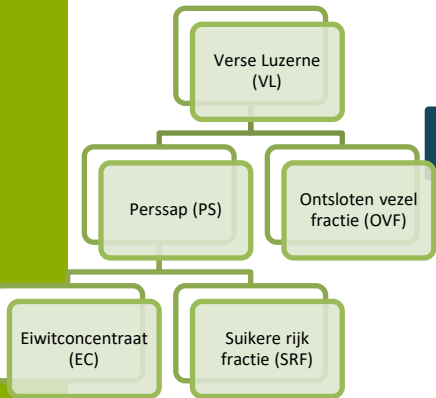
Eiwit extractie - resultaten



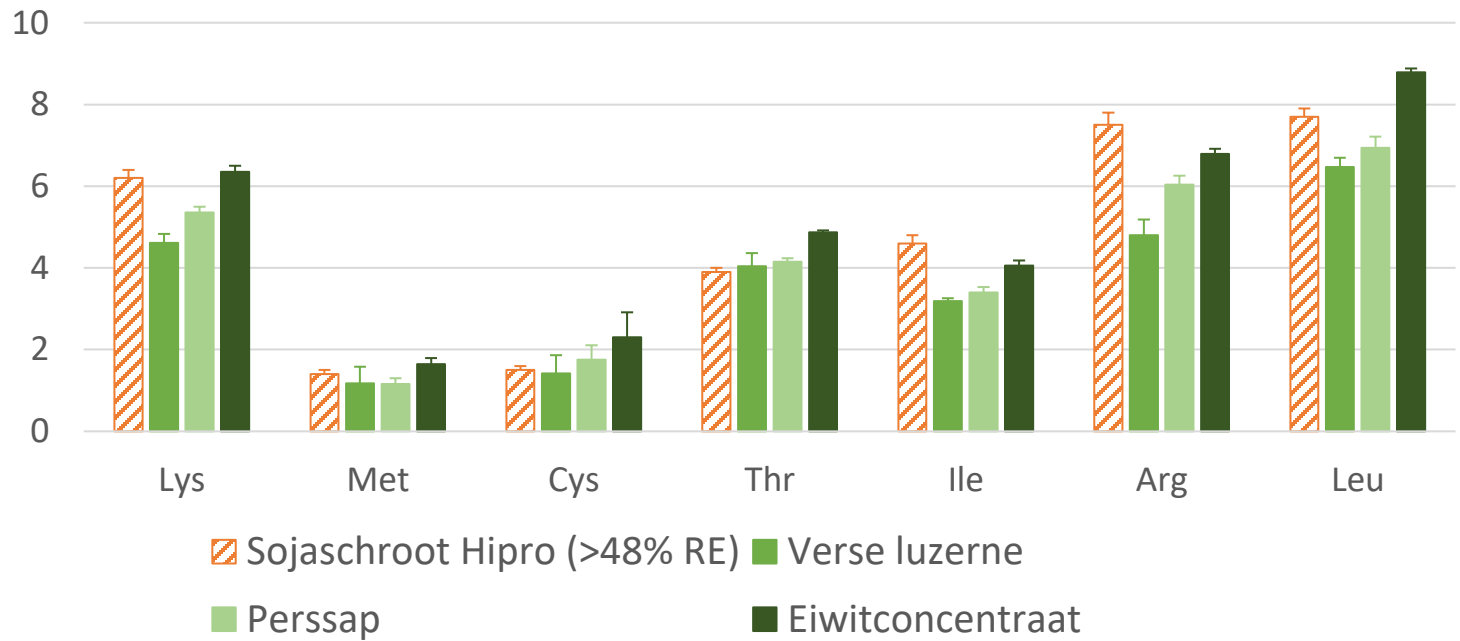
| | Verse Luzerne | Ontsloten vezel fractie | Perssap | Suikerrijk fractie | Eiwit concentraat |
|-----------------------|---------------|-------------------------|------------|--------------------|-------------------|
| Droge stof (g/kg) | 365 ± 2,75 | 374 ± 3,63 | 111 ± 2,24 | 64,5 ± 0,03 | 364 ± 4,42 |
| Ruw Eiwit (g/kg DS) | 220 ± 1,43 | 127 ± 1,46 | 325 ± 2,24 | 174 ± 1,75 | 492 ± 3,60 |
| Ruw Celstof (g/kg DS) | 428 ± 2,51 | 429 ± 2,12 | - | - | - |



Eiwit extractive - resultaten



Aminozuur profiel (% RE)



Dank u wel

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