

N - demand

- 1) Total Crop N uptake : Season output > Column 'M'
- 2) Grain N : Season output > Column 'O'
- 3) Aboveground Residue N : Season output > $\left[\text{col 'M'} - (\text{col 'N'} + \text{col 'O'}) \right]$

N - Supply

- 1) N from Cover crop Red clover: Total crop N
Daily output > Column 'N' [it is cumulative, so just copy the last cell of red clover growing season]
- 2) N from alfalfa grown as forage:
- 3) mineral N (NH_4^+ and NO_3^-) at corn planting :-
Daily output > Col. 'AT' + Col. 'AU' when Col. 'H' = "planting"

- 3) Net N-mineralization in Corn:
- Daily output $> \sum \text{Col 'Ax'}$ when $\text{Col 'Gc'} = \overset{\text{before Corn}}{\uparrow}$ "Fallow" & "maize"

N losses

- 1) N-Leaching: \circ
Daily output $> \sum \text{Col 'BD'}$ when Col 'C' = "maize"
- 2) gaseous loss: \circ
Daily output $> \sum \text{Col 'BA'} + \sum \text{Col 'BC'}$ when Col 'C' = "maize"

Soil health:

1) SOC at beginning of Corn:

Daily output > Col 'BG' when Col 'H' = "planting"
'G' = "Corn"

2) SOC at ~~beginning~~ end of Corn:

Daily output > Col 'BG' when Col 'H' = "maturity".
(***)

3) Humified C: Select the years when there was Corn.

Annual soil outputs. >
$$\frac{\text{Sum col 'J' up to layer thickness 25 cm (to P 4 layers)}}{\text{Sum col 'G' up to layer thickness 25 cm.}}$$

X 100