Effect of agriculture practices and stocking rates on performances of Barbarine ewes grazing on wheat stubble in Tunisian semi-arid conditions

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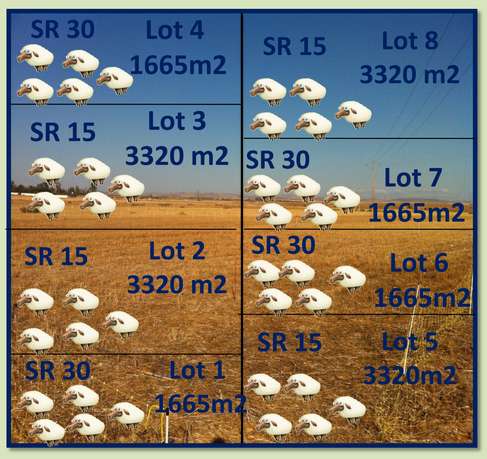
1. Introduction and Objectives

- Conservation agriculture is defined as minimal soil disturbance (no-till) and permanent soil cover (mulch) combined with rotations.
- Livestock can be fully integrated into conservation agriculture.
- Conflict between the use of organic matter to feed the animals or to cover the soil.
- Evaluation of ewes' performances, grazing wheat stubble in Bourabiaa station under conventional (Conv.A) and conservation agricultural (CA) practices.
- 2 factors: Agricultural practices (Conv. A ; CA) and Stocking rates (SR15 and SR30 ewes/ha).

2. Experimental design

- ANIMALS: 40 Barbarine ewes: Initial average LW: 43 kg , 8 homogenous groups of 5 ewes each



3. Measurements

Period (Day)	J0	J5	J10	J15	J20	J25	J30	J35	J40	J45	J50	J55	J60
Weighing of animals	✓		✓		✓		✓		✓		✓		✓

➢ LW was determined each 10 days

4. Statistical analysis

Data were analyzed according to GLM procedure, using Statistical Analysis System software (SAS, 2002). LSMEAN test was used to compare factors levels. The model included: Agricultural practices (ConvA. or CA), Stocking rates (SR15 or SR30), period and interactions.

5. Results

5.1. Effect of stocking rate on LW and DLWG in conventional agriculture

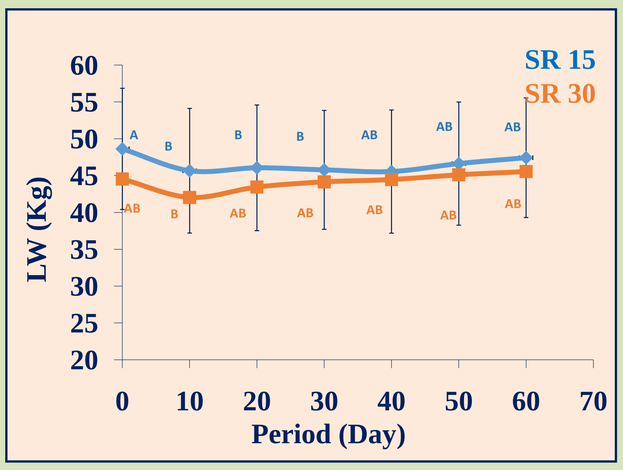


Figure1: LW Variation in Conv. A

A, B : Different letters mean different values of LW among periods (P<0.01, P<0.001, respectively for SR15 and SR30)

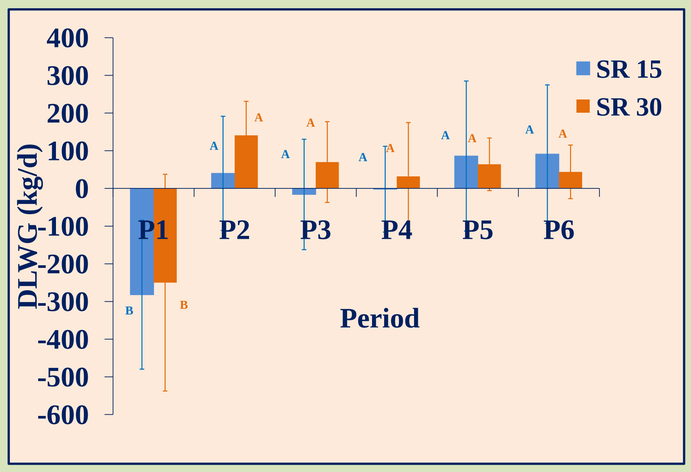


Figure 2: DLWG variation in Conv. A

A, B: Different letters mean different values of DLWG among periods (P<0.0001)

5.2. Effect of stocking rate on LW and DLWG in conservation agriculture

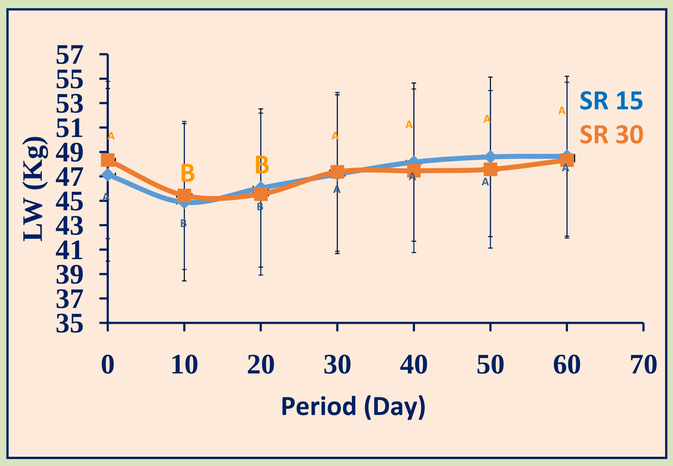


Figure 3: LW Variation in CA

A, B: Different letters mean different values of LW among periods (P<0.05, P<0.0001, respectively for SR15 and SR30)

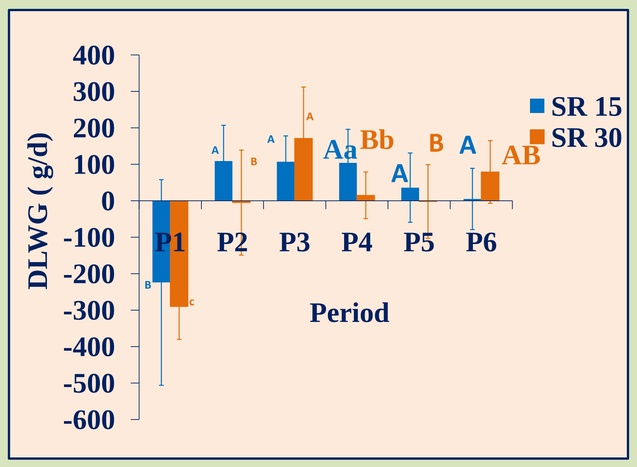


Figure 4: DLWG variation in CA

A, B, C: Different letters mean different values of DLWG among periods (P<0.0001)
a, b : Different letters mean different values of DLWG between the two stocking rates (<0,05)

5.3. Effect of agriculture conditions on LW and DLWG

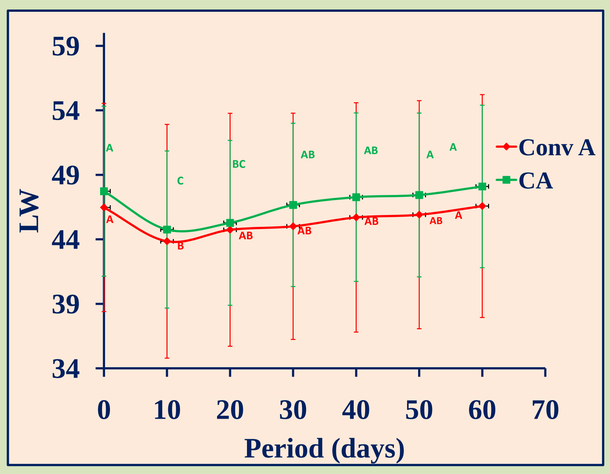


Figure 5: LW variation

A, B, C : Different letters mean different values of LW among periods (P<0.01,P<0.001, respectively for SR15 and SR30)

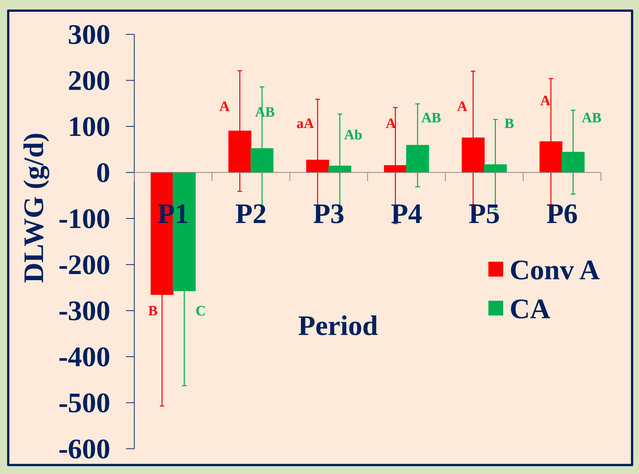
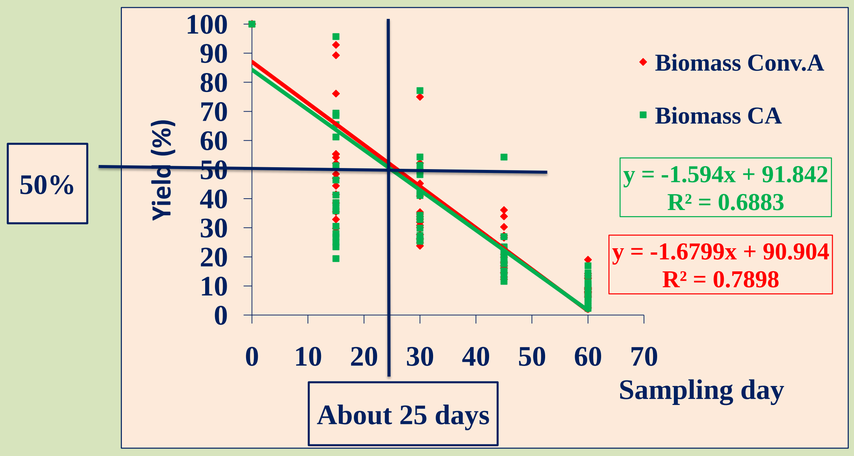


Figure 6: DLWG variation

A, B, C : Different letters mean different values of DLWG among periods (P<0.0001)
a, b: Different letters mean different values of DLWG between agricultural condition (p<0.0001)

5.4. Relation between biomass and grazing period



5. Conclusions

- For all the weighing times, no major differences were noted in performances (LW and DLWG) between the two agricultural practices and the two stocking rates.
- Biomass seemed to be not limiting and ewes conserved similarly their body weights.
- A stubble grazing managment tool was developped as a support for technical decisions (4.4).