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Possibility of using discarded prickly pears cactus fruits as a feed for ruminants

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Southern Agency

Access to orchards

Processing unit *(Tighmart)*

Packaging line *(Ouaroune)*

Possibility of using discarded prickly pears cactus fruits as a feed for ruminants

1

- ***Nutritive value of cactus products***

2

- *Incorporating cactus products in balanced diets for sheep*

Nutritive value

- **Cactus fruit :**
  - water content (83-85%),
  - energy (1.07 UFL / kg DM)
  - calcium
  - low in protein (46 g PDIN / kg DM);
- **Cactus pads meal :**

  0.71 UFL and 30 g PDIN / kg DM;
- **Cactus fruit seed meal:**

  lignin (24% DM) and low in CP (9.22% DM).

1

- *Nutritive value of cactus products*

2

- ***Incorporating cactus products in balanced diets for sheep***

2008, In Guelmim

Training session for members of a coop.

Grinding the fruits

2008: Dry mix and small production of silage

Ingredients	%, as fed
Cactus fruit	45
Wheat bran	20
Sugar Beet pulp	16
Straw	16
Salt	01
Urea	01
Min. Vit	01

Huile: 1,75 Litres

Pépins 35 kg

Après séchage

Raquettes broyées

Son+Pulpe sèche de betterave+Paille+Urée+sel

Aliment de bétail 2144 kg

Composition of the diet based on cactus

Feeds	% as fed	Aliments
Cactus fruits (juice)	**45**	Fruits de cactus (jus)
Cactus pads (dry & ground)	**6**	Raquettes de cactus (sèches broyées)
Straw	**9**	Paille
Sugar beet pulp	**17**	Pulpe S. Betterave
Wheat bran	**20**	Son de blé
Urea	**1**	Urée
Salt	**1**	Sel
Min. Vit.	**1**	CMV
Total	**100**	Total

Preparation of fruits

Preparation of pads

Preparation of pads

Preparation of sugar beet pulp

Preparation of straw

Ingredients mixture

Ingredients mixture

Silage

Mix dry

Fermentation quality

Quality of conservation of silage				
Paramètres		**Poor**	**Good**	**Excellent**
% of total N	N- NH3	10 à 15	5 à 10	<5
	N- Soluble	60 à 70	50 à 60	<50
pH				<4

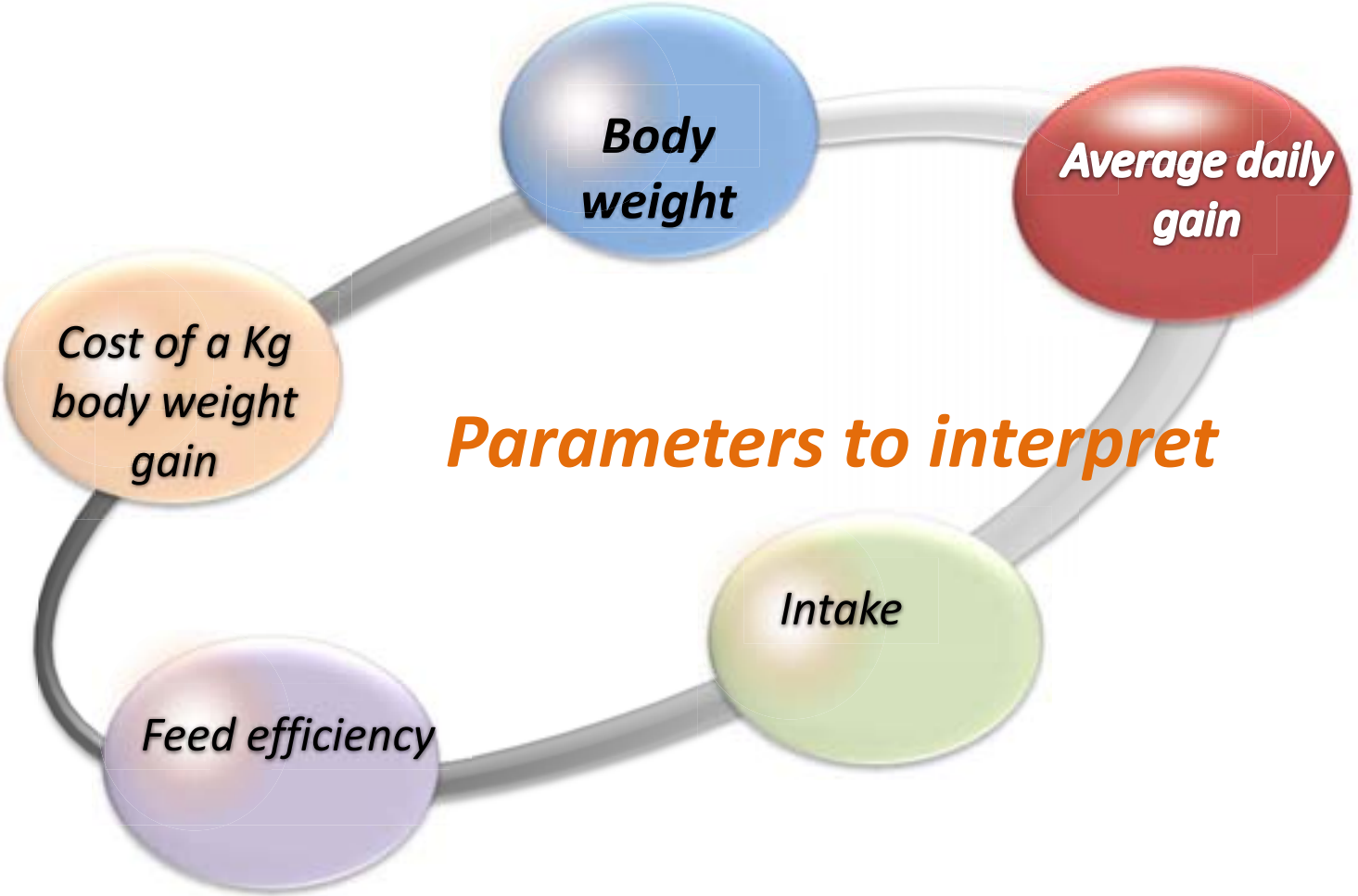
Evaluation of performance of animals fed diets containing cactus

Fattening trial

Feeds	Control	Dry - S	Dry + S	Sil - S	Sil + S
Straw	50% (ad lib.)				
Mix Dry		Ad lib.	Ad lib.		
Silage				Ad lib.	Ad lib.
Commercial feed	50% (ad lib.)				
Barley			200 g/d/al		200 g/d/al

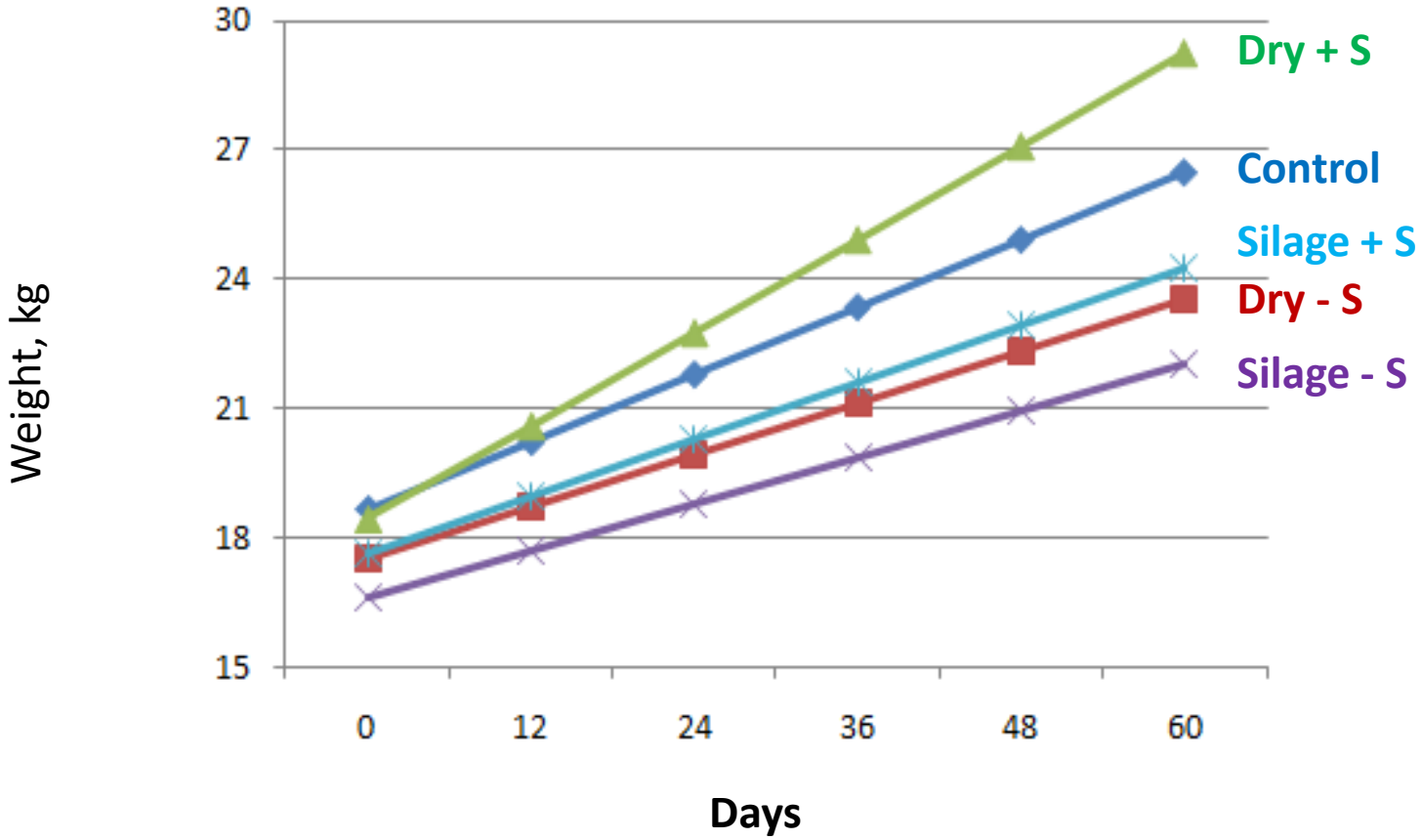
Adaptation period of 15 days

Trial of 62 days

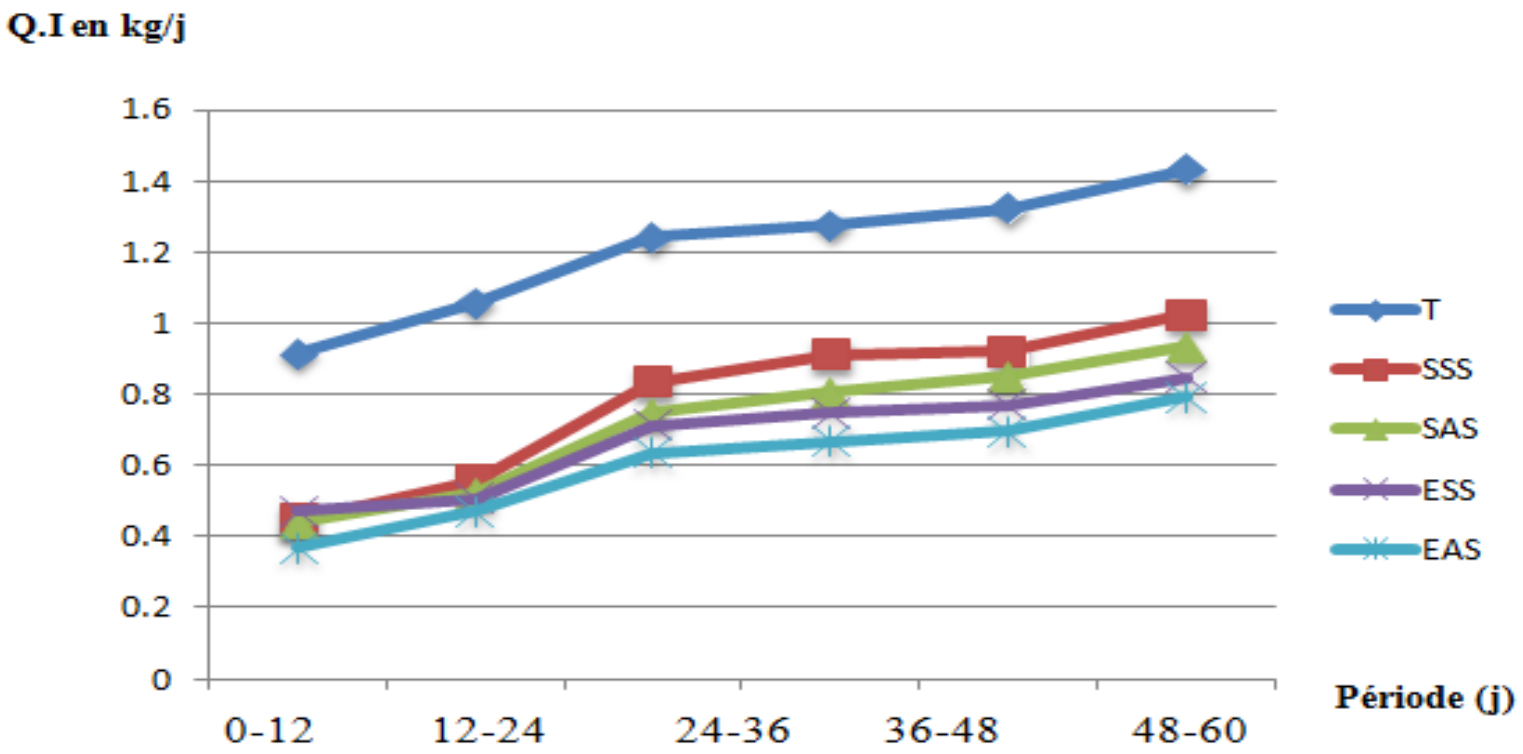


ANOVA + test de Duncan
Software: SAS

Evolution of body weight with diets



Intake


Q.I en kg/j
1.6
1.4
1.2
1
0.8
0.6
0.4
0.2
0
0-12
12-24
24-36
36-48
48-60
Période (j)
T
SSS
SAS
ESS
EAS

Comparison between **Dry Mix** & **Silage**

Parameters	***Diet***				
	Control	***Dry-S***	***Dry+S***	***Silage-S***	***Silage+S***
Number of animals	*8*	*8*	*8*	*8*	*8*
Initial body weight (kg)	18.58^{a}	17.46^{a}	18.57^{a}	17.17^{a}	17.79^{a}
Final Body weight (kg)	26.71^{ab}	23.87^{bc}	27.76^{a}	22.7^{c}	24.75^{abc}
Average Daily Gain (g/j)	$\mathbf{131^{ab}}$	$\mathbf{103^{bc}}$	$\mathbf{148^{a}}$	$\mathbf{90^{c}}$	$\mathbf{112^{abc}}$
Feed efficiency (Kg DM/kg BW gain)	11.47^{a}	$8.52^{a\,b}$	6.63^{b}	11.6^{a}	7.72^{ab}
Intake (kg DM/animal/d)	$\mathbf{1.26^{a}}$	$\mathbf{0.85^{b}}$	$\mathbf{0.95^{c}}$	$\mathbf{0.72^{d}}$	$\mathbf{0.82^{e}}$
Cost of production of kg BW (Dh)	$\mathbf{29.25^{a}}$	$\mathbf{17.24^{ab}}$	$\mathbf{14.44^{b}}$	$\mathbf{28.15^{a}}$	$\mathbf{21.43^{ab}}$

Effect of the **supplementation** with barley

Parameters	Diet				
	Control	Dry-S	Dry+S	Silage-S	Silage+S
Number of animals	8	8	8	8	8
Initial body weight (kg)	18.58^{a}	17.46^{a}	18.57^{a}	17.17^{a}	17.79^{a}
Final Body weight (kg)	26.71^{ab}	23.87^{bc}	27.76^{a}	22.7^{c}	24.75^{abc}
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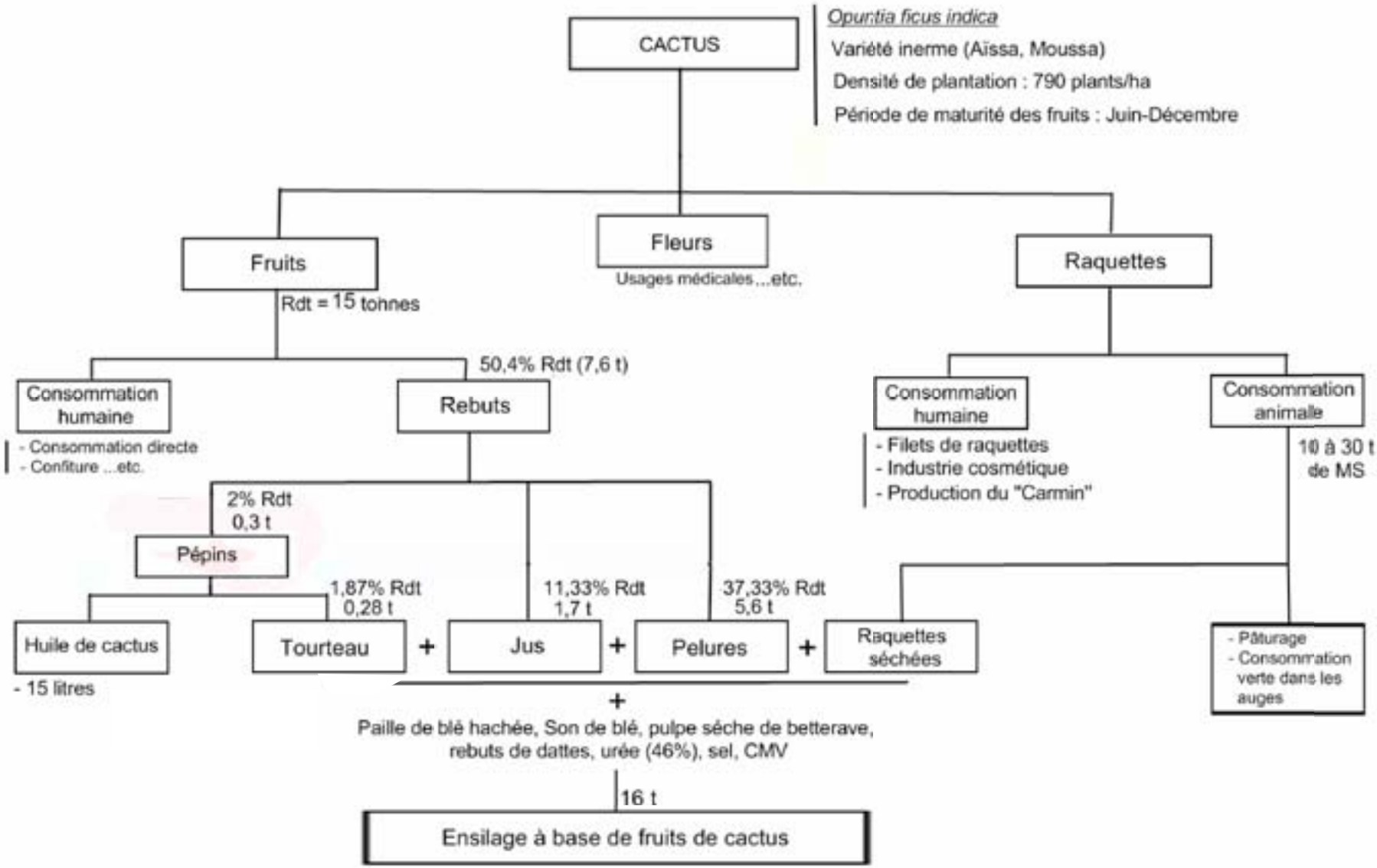
Cost of production of kg BW (Dh)	$\mathbf{29.25^{a}}$	$\mathbf{17.24^{ab}}$	$\mathbf{14.44^{b}}$	$\mathbf{28.15^{a}}$	$\mathbf{21.43^{ab}}$

Contribution of 1 Ha of cactus in animal feeding



Conclusions

1. Cactus fruits : high in energy, low in protein
2. New balanced feeds (dry mix & silage) for livestock in the southern part of Morocco
3. Animals perform better with dry-mix, however silage has its advantages too
4. These feeds would be more suitable to be used during fall and winter, and during the periods of reproduction and lambing
5. Cost of production of the feed may be reduced if ingredients are purchased the appropriate time and manner


Sunset at Tighmert/Asrir