



Organization of milk recording for goats in France

Looking for new recording schemes : estimation of daily variables (yields and contents), according to Liu's method

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insight of milk recording for goats in France

- number and territorial distribution
- performances, selection scheme and selected traits
- milk recording schemes in use

RISE ASTO

Iooking for a new recording scheme with less constraints

> evaluation of yields and contents from data collected on one milking only : Liu's method

Plan

- results for daily performances
- results for lactation performances





Evolution of goats'milk recording since 1963



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Density of recorded goats herds in 2014



Breeding scheme and selection objectives FONCTION SEXUELLE CROISSANCE for Alpine and Saanen Breeds



ALLE ALLE ALLE

selected dairy traits :

- 1. Protein yield
- 2. Protein content
- 3. Fat content
- selected conformation traits
 - 4. udder form
- last selected trait added :
 - 5. somatic cell count



Performances

		Firs	st Lact	ations		Lactations of adults					
	Number	lact. lenth (days)	Milk yield (kg)	Protein content g(Kg)	Fat content g(Kg)	Number	lact. lenth (days)	Milk yield (kg)	Protein content g/Kg	Fat content g/Kg	
Alpine	49 000	302	816	33.4	38.7	107 000	290	926	33.1	37.0	
Saanen	36 500	327	947	32.1	36.6	74 000	296	945	32.0	35.6	
Poitevine (local breed)	120	255	397	31.1	36.4	390	259	557	30.5	33.5	

lactation length is sometimes very long :

> 450 days for 9 % of L1 Alpine, and for 14 % of L1 Saanen

reference period for comparison of goats lactation and genetic evaluation : 250 days for Alpine and Saanen

Recording schemes used in France

Α	AZ	CZ	AT				
milk yied mornii of every	ng and ev test day	ening	milk yield morning or evening alternatively				
1 or 2 milk samples	mori	1 ning or	milk sample evening alternatively				
recording intervals : 4 to 6 weeks							
35 %	18 % 2 % 45 %						

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Requirements according to the type of recording schemes

non qualified lactations for some reason

%

too long intervals

8

for all schemes :

Recording

schemes

Α

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- interval between parturition and first test-day (7 80 days)
- intervals between two test-days

ATTACK AND AND

• « normal » (30 to 41 days) and « extra-long » intervals : max 75 days

% of qualified

lactations

92

• forbidden interval : +75 days

number of

lactations

112 983

- for alternate schemes
 - alternation morning / evening strictly respected

AZ/CZ	147 736	86	11	3				
AT	54 120	90	7	3				
The non qualified lactations do not participate to the genetic evaluation !								



%

default of alternation

Requests of Breeders and Recording Organizations

- They ask for new recording schemes, more simple, more flexible, and less expensive
- The main solution is to reduce the number of recordings wich involve a technician => development of AT and CZ
- The challenge is to maintain the quality of results that are delivered for
 - herd management

AND AND ASTRO

genetic evaluation

At first we searched a solution that avoids the need of alternation : ⇒ Liu's method



Liu's correction for variables obtained from only one milking :

 $y_{Day}^{[ijk]} = b_0^{[ijk]} + b_1^{[ijk]} y_{Test}^{[ijk]} + e^{[ijk]}$

the coefficients are calculated with separate regressions for combinations of 3 effects:

Nb of classes	Class definition
2	1 st lactation, 2 nd and later lactations
10	1, 2, 3, 4, 5, 6, 7, 8, 9, 10 +
5 AM: 5 PM:	≤ 12.5h long; 12.5h to 13h ; 13h-13.5h; 13.5h-14h; ≥14h long ≥ 11.5h long; 11h-11.5h; 10.5h-11h; 10h-10.5h; ≤10h long
	Nb of classes 2 10 5 AM: 5 PM:

DATA SET	Training population	Validation population
Nb of test-day records (with morning	28,700	11,370
and evening samples)		
Nb of lactations	5,500	1,700
Mean of test-day per lactation	5,2	6,9
Percent of 1 st parity	35%	33%

Estimation of the daily variables

		Estimated performances		Bi	as	Slope	(1-R ²) %
		mean	Std	Mean	std		
	Reference (A)	3.52	1.19				
Milkvield							
(kg)							
(*6/							
	Reference (A)	39.6	7.3				
Fat content							
(g/kg)							
(8/ - 8/							
	Reference (A)	33.6	3.8				
Protein							
content							
(g/kg)							

Estimation of the daily variables

			Estimated performances		Bias		(1-R ²) %
		mean	Std	Mean	std		
	Reference	3.52	1.19				
Milkviold	AM *2	3.68	1.29	+0.15	0.39	0.88	8.9
	PM *2	3.38	1.21	-0.15	0.39	0.93	10.1
(ĸg)		4 %					
	Reference	39.6	7.3				
Eat contont	AM sample	35.7	8.0	-3.9	3.6	0.81	26.2
	PM sample	43.9	8.2	+4.3	3.8	0.78	17.3
(8/ %8)			10 %	10 %			
	Reference	33.6	3.8				
Protein	AM sample	33.2	3.9	-0.4	0.8	0.96	5.6
content	PM sample	34.0	3.9	+0.4	0.9	0.94	5.4
(g/kg)			1 %				

Fat content shows the most important variation between morning and evening and a great individual effect www.idele.fr

Estimation of the daily variables

			Estimated performances		Bias		(1-R²) <u>%</u>
		mean	Std	Mean	std		
	Reference	3.52	1.19				
	AM *2	3.68	1.29	+0.15	0.39	0.88	8.9
(kg)	PM *2	3.38	1.21	-0.15	0.39	0.93	10.1
	AM Liu	3.49	1.16	-0.04	0.35	0.98	8.5
	PM Liu	3.53	1.15	0	0.39	0.97	10.4
Fet contout	Reference	39.6	7.3				
	AM sample	35.7	8.0	-3.9	3.6	0.81	26.2
	PM sample	43.9	8.2	+4.3	3.8	0.78	17.3
(8/ 5	AM Liu	38.6	6.8	-1.0	3.5	0.94	22.6
	PM Liu	39.0	6.3	-0.6	3.3	1.03	17.3
	Reference	33.6	3.8				
Protein	AM sample	33.2	3.9	-0.4	0.8	0.96	5.6
content	PM sample	34.0	3.9	+0.4	0.9	0.94	5.4
(g/kg)	AM Liu	33.4	3.7	-0.2	0.8	1.00	7.4
	PM Liu	33.6	3.7	0.0	0.9	1.00	7.7
				oias is reduc	ced	slope is	lack of pred

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closer to 1 more or less the same

Estimations for the reference lactation (250 days)

		Estimated performances		Bias		Slope	ρ corre-	(1-R ²) %
		mean	Std	Mean	std		lations	
	Reference (A)	639.9	389.2					
Milk yield								
(kg)								
	Reference (A)	40.1	6.0					
Fat content								
(g/kg)								
Drotoin	Reference (A)	33.0	2.9					
content (g/kg)								

Estimations for the reference lactation (250 days)

		Estimated performances		Bias		Slope	ρ corre-	(1-R ²) %	
			Std	Mean	std		lations		
Milk yield (kg)	Reference AT AM/PM	639.9 650.7	389.2 394.5	10.8	36.7	0.98	0.996	0.86	very good
Fat content (g/kg)	Reference AT AM/PM	40.1 39.3	6.0 6.0	-0.8	2.5	0.91	0.911	24.8	not very efficient 8
Protein content (g/kg)	Reference AT AM/PM	33.0 32.9	2.9 2.7	-0.1	0.9	0.99	0.950	3.6	good

Estimations for the reference lactation (250 days)

		Estimated performances		Bias		Slope	ρ corre-	(1-R ²) %	
		mean	Std	Mean	std		lations		
	Reference	639.9	389.2						
Milk yield	AT AM/PM	650.7	394.5	10.8	36.7	0.98	0 996	0.86	
(kg)	AC AM Liu	629.9	381.3	-10.0	33.6	1.02	0.996	0.72	AC Liu as
	AC PM Liu	633.1	377.8	-6.7	41.9	1.02	0.994	1.10	good as AT
	Reference	40.1	6.0						- <u>()</u>
Fat content	AT AM/PM	39.3	6.0	-0.8	2.5	0.91	0 911	24.8	
(g/kg)	AC AM Liu	39.5	6.0	-0.7	2.6	0.90	0.908	25.7	AC Liu the
	AC PM Liu	39.3	5.1	-0.8	2.4	1.07	0.914	18.3	same as AT
Protoin	Reference	33.0	2.9						
content (g/kg)	AT AM/PM	32.9	2.7	-0.1	0.9	0.99	0.950	3.6	
	AC AM Liu	32.7	2.6	-0.3	1.0	1.04	0.946	4.1	AC Liu almost
	AC PM Liu	33.0	2.4	0	1.0	1.12	0.947	5.1	as good as AT
bias is more or									

bias is more or less the same

Conclusion

Our results show that :

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- Results of Liu's corrective method with a non alternate recording scheme, give results
 - **o** better than AT for daily variables
 - o as good as AT for genetic evaluation (reference and total lactation)
- > We'll give priority to Liu's method for data collected on one milking only
- Recording Organisation will choose the moment of the technician' visit

Our next project is to simplify the rules on recording intervals ...



thank you for your attention

Thanks for their advices or their data to:



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