



ICAR 2015 - MANUFACTURERS SHOWCASE

AUTOPESEE, a French automatic weighing scale developed for the beef cattle performance recording

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Agenda

- ▶ Introduction and context
- ▶ Development of the weighing scale
- ▶ Demonstration
- ▶ Conclusion



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Introduction and context 1/3

France, a country of beef performance recording!

		Campaign of birth (from August 1st, n-1 to July 31st, n)			
		2011		2013	
		Animals	Herds	Animals	Herds
Females	AW04m	203,767	8,786	195,164	8,198
	AW07m	193,257	8,478	183,812	7,978
	AW12m	62,869	4,316		
	AW18m	36,445	2,202		
	AW24m	25,082	1,595		
Males	AW04m	204,764	8,847	195,725	8,221
	AW07m	189,783	8,518	179,444	7,948
	AW12m	33,358	3,172		
	AW18m	4,567	878		
	AW24m	202	120		

>1,200,000 weights before 300 days



Introduction and context 2/3

Specific constraints of the weighing in field

Increasing of the size of the herds

Several groups of animals in one herd

Distance of the plots of land

Stress of the animals when weighed

Less manipulations to prevent accidents

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Introduction and context 3/3

⇒ The French national beef recording organisation (FCEL), 3 local beef cattle performance recording organisations and the French Livestock Institute (idele) decided to develop an automatic weighing scale thanks to Maréchalle-Pesage (manufacturer).

Aims:

1- To develop the performance recording in France and the genetic schemes

2- To improve the exhaustiveness of the data

3- To improve the breeders monitoring in their herds

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Development of the weighing scale: 2 steps

Step 1

Electronic platform with an
electronic indicator
TRU-TEST + RFID + corridor



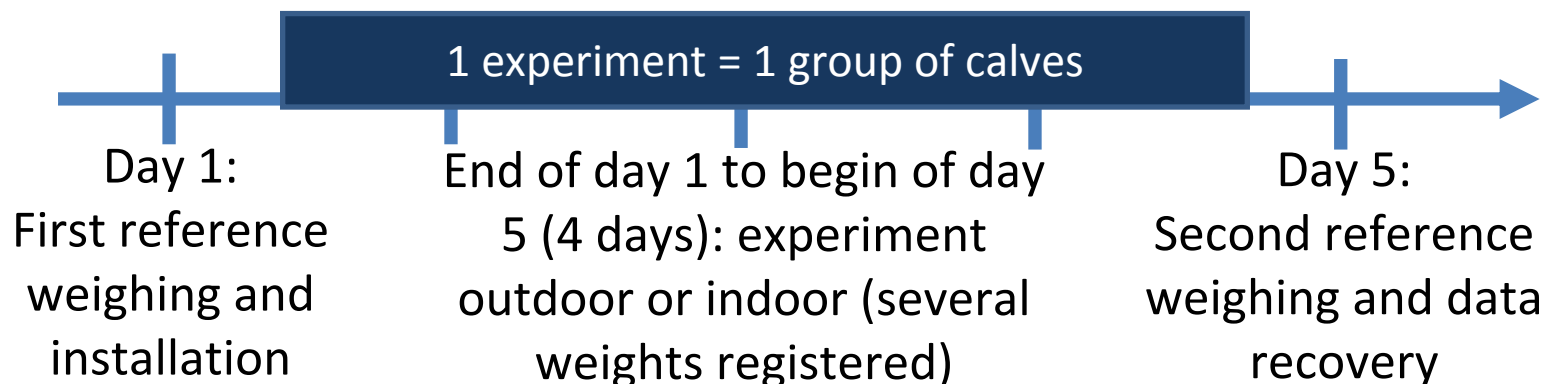
Step 2

Prototypes of the
autonomous weighing scale
PM 6000 Liberty

Patented

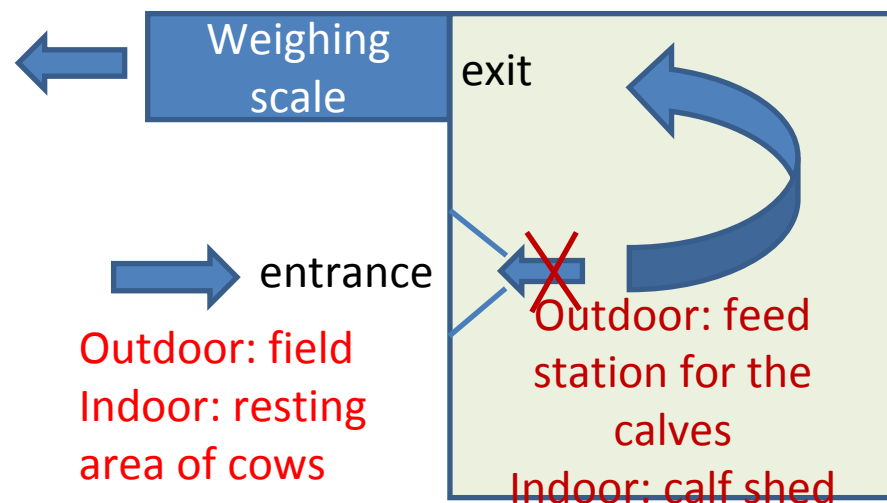


Development of the weighing scale: material and method



Data analysis:

comparison between the reference weights and the validated weights (correlation, bias...)



Development of the weighing scale: global results

► Step 1:

- 5 experiments
- Problems with RFID (reading of animals)
- Sometimes more than one animal in the weighing scale or less than one! → high variation of the weight

► Step 2:

- 6 experiments with 4 prototypes of the PM 6000 + final draft
- Algorithm to validate the weights: algorithm using some reference table for every breeds...

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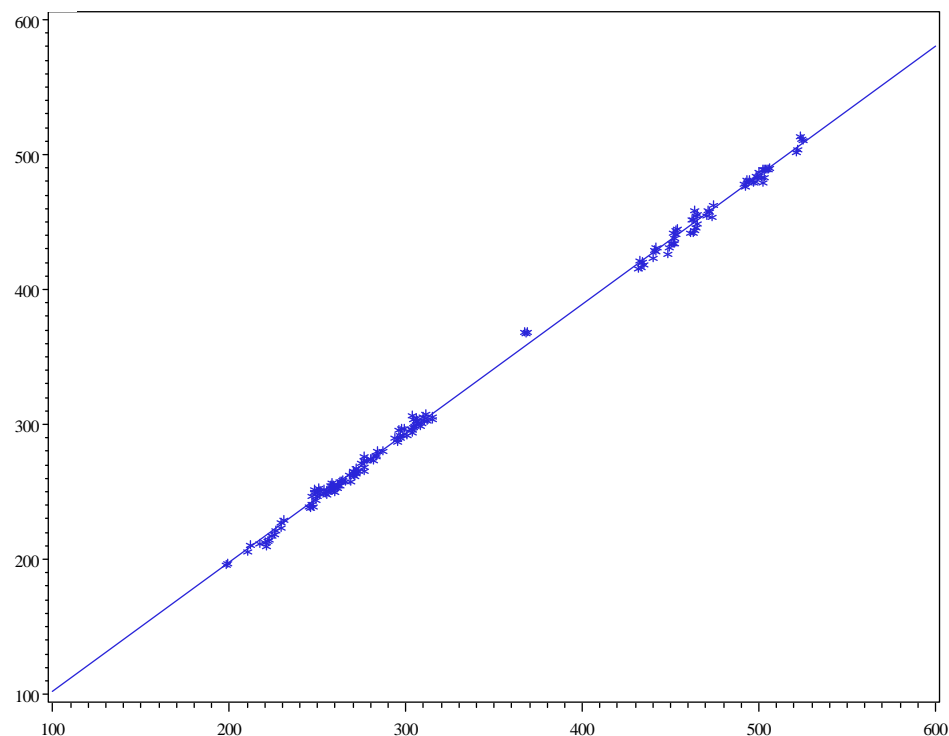
Development of the weighing scale: detailed results (step 2)

Date	Breed	where?	Nb. of calves	% of calves with validated weights	Correlation reference weights / validated weights	Bias	Remarks
Apr-12	Blonde d'aquitaine	Indoor	27		Not performed		First prototype of PM 6000
Aug-12	Blonde d'aquitaine	outdoor	25	68%	0,98	+8,4 kg	Prototype PM 6000 n° 2
Mar-13	Maine Anjou	outdoor	18	100%	0,996	-15kg (-3,16 %)	Prototype PM 600 n° 3 - Problem with the gate - Elaboration of the algorithm
Mar-13	Salers	outdoor	12	100%		-6 kg (+2,25 %)	
Jul-13	Blonde d'aquitaine	outdoor	22	59%	0,998	-1,27 kg (-0,45%)	Prototype PM 600 n°4 - Problem with the antenna
May-14	Maine Anjou	outdoor	23	100%	0,991	-1,77 kg (-0,59%)	Final draft of the PM 6000

Development of the weighing scale: results in 2013 (step 2)

Validated weights
(PM 6000)

Comparison between
the reference weights
and the validated
weights produced by
the algorithm:
163 weights and 42
calves, $r^2=0,998$



Reference weights
(=official weights)



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FRANCE
CONSEIL ÉLEVAGE
Donner du sens à la mesure

Demonstration



MARÉCHALLE PESAGE
CONTENTION • PESAGE • IDENTIFICATION



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Conclusion

The PM 600

Validated for the beef performance recording in France

An automatic weighing (no human support)

A weighing of a moving animal

An autonomous system (low need of energy)

A need of an electronic identification



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Conclusion

Recommendations:

- Outdoor: need of a feed station for the calves, at least 4 days of registration, small plots, the calves need to stay a few days in the plot before weighed
- Indoor: at least 2 days of registration, the weighing scale should be between the resting area and the calf shed

2 main uses:

- Automatic = no human support, several weights per animal
- Classic = used with a corridor, someone has to check the weighing, one weight per animal

Thank you for your attention



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