Performance of rabbit does and litters kept collectively with different management systems or individually

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Background

- Group housing in commercial rabbits (European Parliament, 2017):
  - Social interactions & increased space
  - Animal-friendly systems demanded by public opinion

- In reproducing females… Continuous-group systems!!!
  - Injuries and chronic stress
  - Impaired doe & litter productive performance

Szendrő & McNitt (2012), Hoy & Matics (2016), Szendrő et al. (2016)

Background

- Semi-group (part-time) housing:
  - Isolation from 1-3 d before to 12-18 d after kindling
  - Better performance than continuous systems (Szendrő et al., 2016)
  - Few studies vs. individual cages with heterogeneous results

❖… AGGRESSION at re-grouping is not solved…

Several strategies (hiding places, straw, territory, sprayed odours, etc.)
…without success

(Andrist et al., 2012; Rommers et al., 2014; Buijs et al., 2015; Gerencsér et al., 2018)

Objective

To assess the effects of housing (individual vs. part-time) and group management on doe and kit performance throughout one reproductive cycle

Material and Methods

- Farm of the University of Padova
- Animals: 60 crossbred multiparous pregnant rabbit does
- Housing:
  a) 12 Individual pens (0.5 m^2; 0.5 m width x 1.0 m length); 12 does
  b) 12 Collective pens (2 m^2; 4 contiguous pens); 48 does

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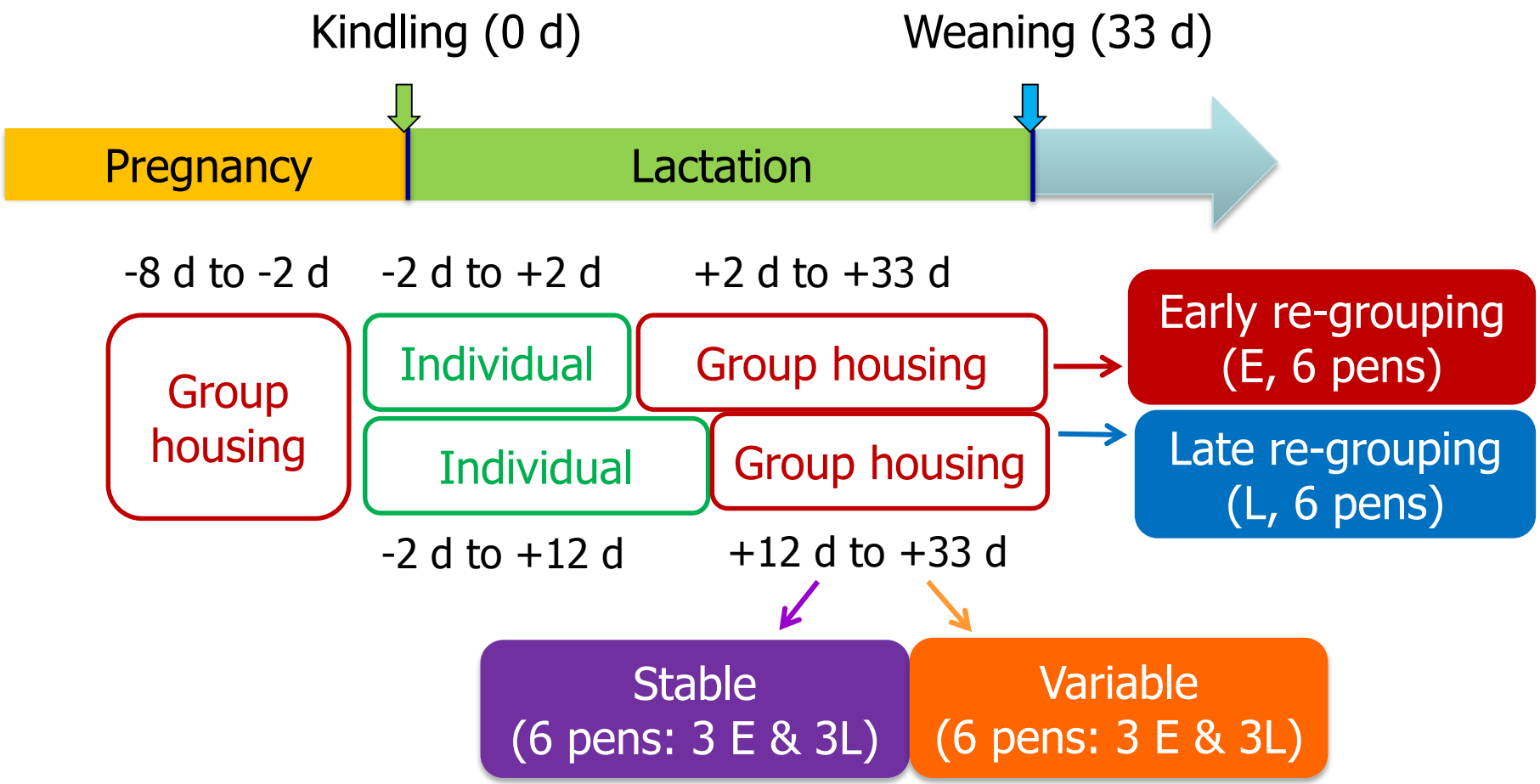
- ✓ Plastic-slatted floor
- ✓ Feeder
- ✓ Automatic nipple drinker
- ✓ Removable nest box
- ✓ Controlled lactation (19 d)

Group management outline



Performance recordings

- ✓Doe performance at kindling and during the cycle:
  - Number and weight of total kits and kits born alive
  - Doe body weight, milk production and feed intake
- ✓Litter and kit performance from standardization until weaning:
  - Litter size and weight, litter weight gain and individual kit weight



Statistical analysis

SAS software (2013)

1) With all data:

- PROC MIXED
- Model: Housing system + Pen (random)

2) With collective data:

- PROC MIXED
- Model: Re-grouping time + Group composition + Interactions + Pen (random)

Results: Housing system

Doe performance	Individual	Collective	*P*
Litter size (born alive) (n)	11.3	11.7	n.s.
Litter weight (born alive) (g)	652	693	n.s
Doe weight (at weaning) (g)	4572	4428	n.s.
Milk production 3-12 d (g/d)	226	209	0.08
Milk production 12-19 d (g/d)	307	288	n.s.
Feed intake 3-19 d (g/d)	398	380	n.s.
Feed intake 19-33 d (g/d)	712	655	0.01

Results: Housing system

Kit performance	Individual	Collective	*P*
Litter weight gain 3-19 d	142	131	0.05
Litter size at 19 d, n	9.0	8.9	n.s.
Litter weight at 19 d, g	2914	2741	0.08
Litter weight gain 19-33 d	357	324	<0.01
Litter size at 33 d, n	8.9	8.8	n.s.
Litter weight at 33 d, g	7916	7281	<0.05
Weaned kits at 33 d, n	8.8	8.9	n.s.
Weaned kits at 33 d, g	887	864	n.s.

Results: Group management

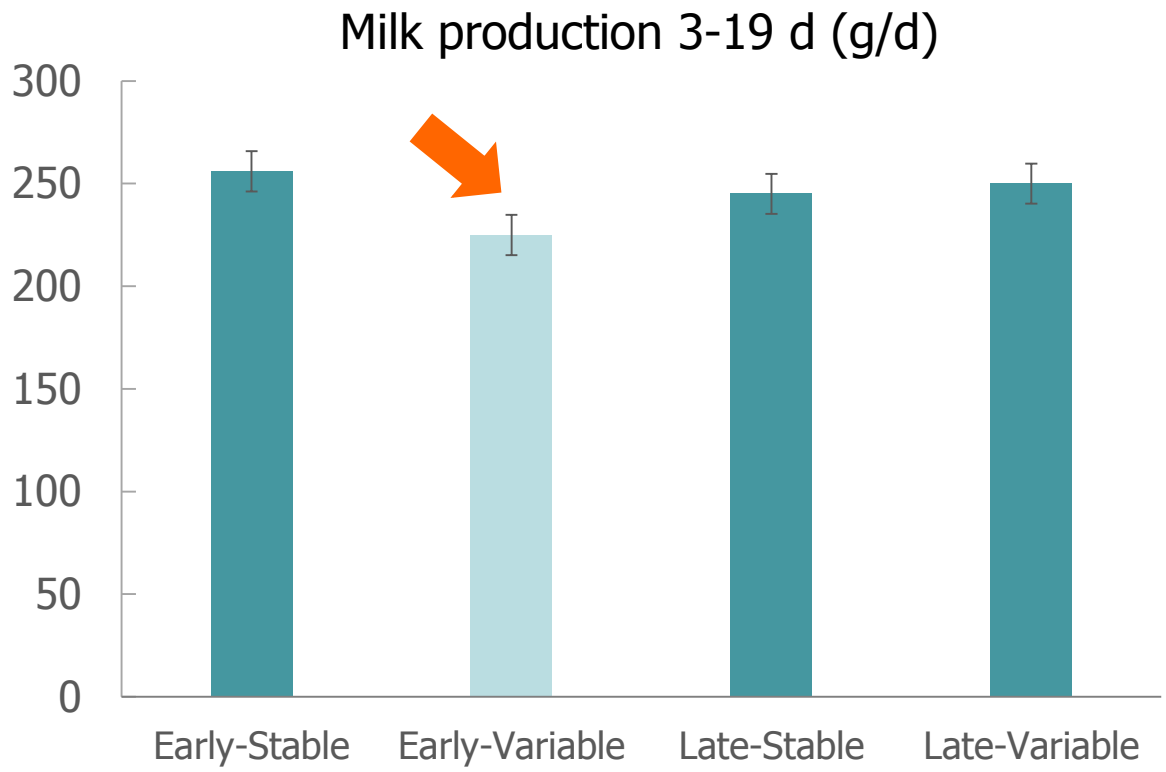
	Re-grouping time		
Doe & kit performance	Early (2 d)	Late (12 d)	*P*
Milk production 3-12 d (g/d)	204	214	n.s.
Milk production 12-19 d (g/d)	289	291	n.s.
Weaned kits at 33 d, n	8.8	8.8	n.s.
Weaned kits at 33 d, g	847	851	n.s.

Results: Group management

	Group composition		
Doe & kit performance	Stable	Variable	*P*
Milk production 3-12 d (g/d)	213	205	n.s.
Milk production 12-19 d (g/d)	300	280	n.s.
Weaned kits at 33 d, n	8.7	8.8	n.s.
Weaned kits at 33 d, g	851	829	n.s.

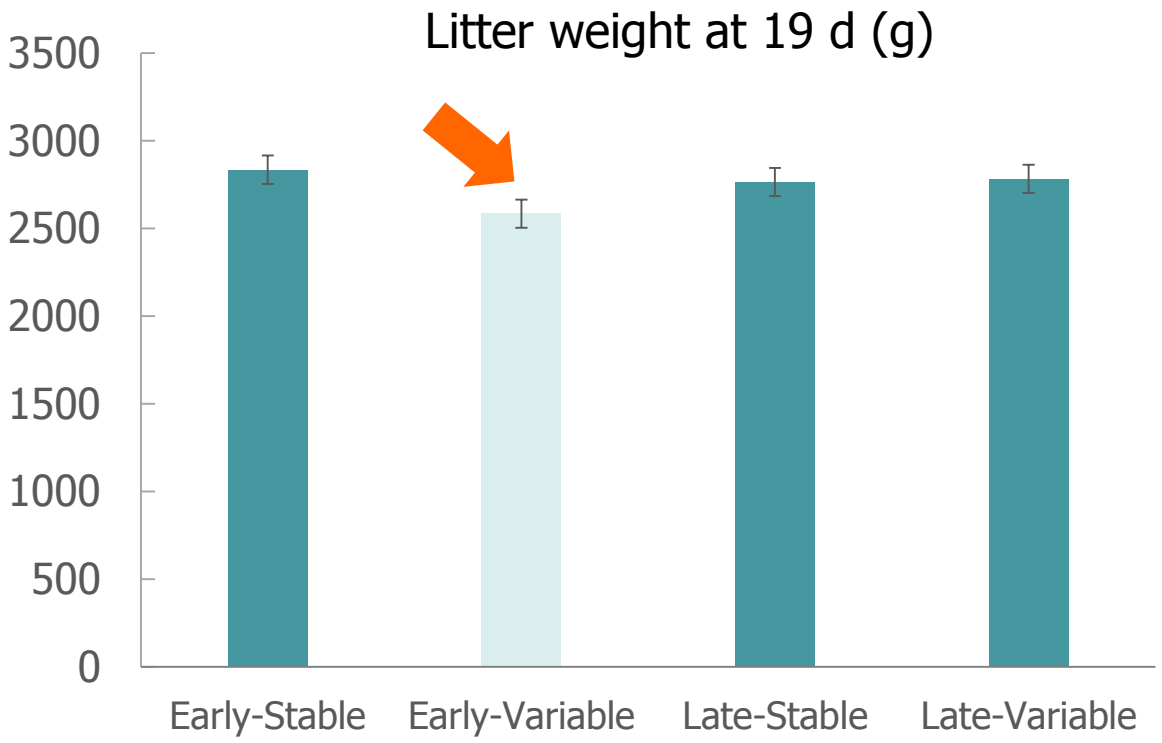
Results: Group management

Interaction re-grouping time × group composition ($P < 0.10$)



Results: Group management

Interaction re-grouping time × group composition ($P < 0.10$)



- No differences at weaning

Conclusions

- Part-time group housing impaired litter performance compared to individual
- Re-grouping time and group composition showed weak effects
- Behavioral data are under analysis, but with present results (limited animal number and one reproductive cycle)

Implementation on commercial farms not yet feasible

Thank you

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