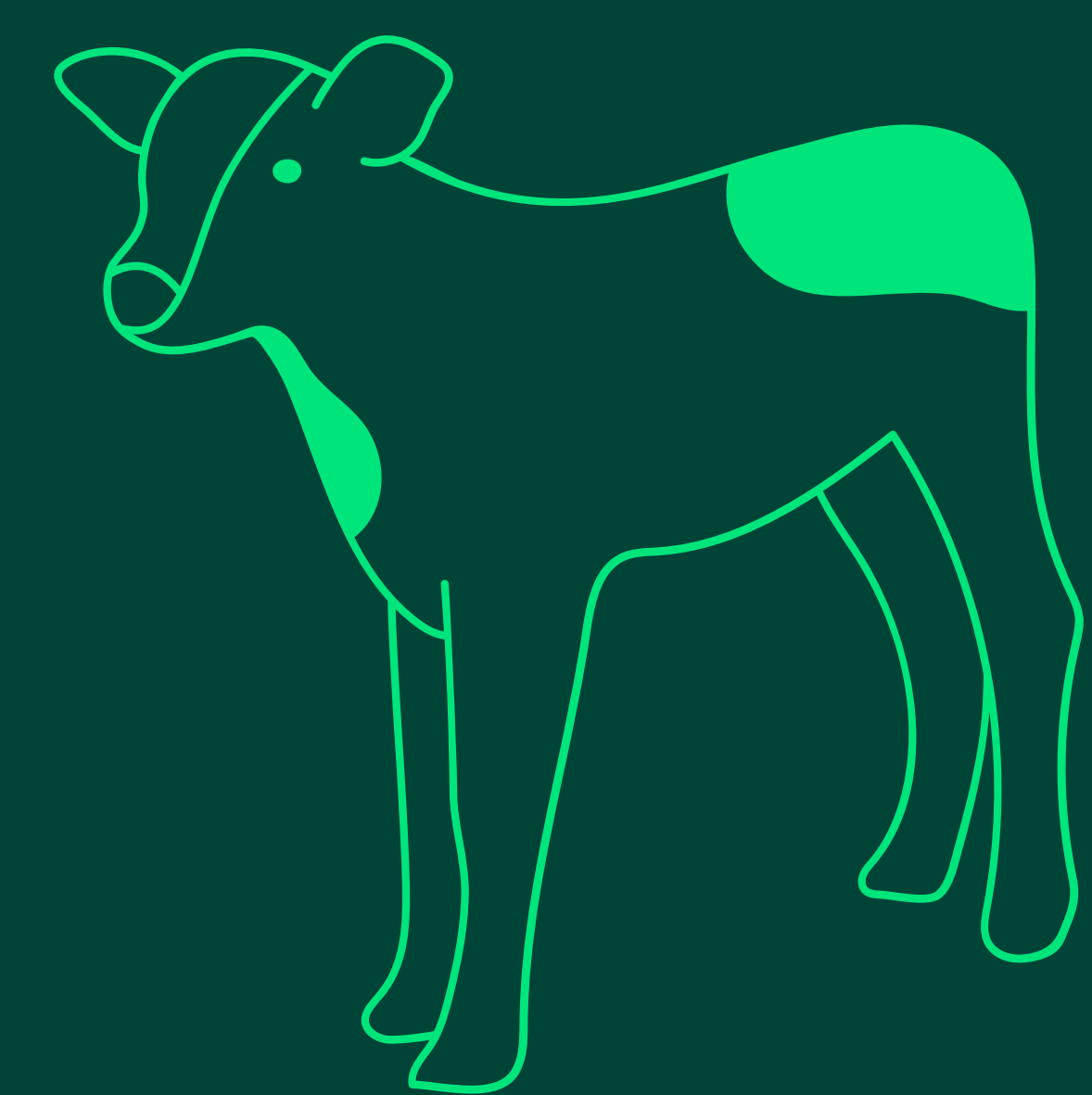


Enhanced production efficiency with BRD vaccination in white veal calves: Increased carcass weight and reduced losses under field conditions



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Objectives

This study aimed to evaluate the productivity of vaccinated versus unvaccinated white veal calves in an endemically BRD-affected herd (n=1,578) in Northern Germany. Outcomes included carcass weight distribution, homogeneity, and proportion of carcasses exceeding the economically relevant threshold of 120 kg. Three vaccinated fattening groups were compared with one unvaccinated group under identical management conditions.

Material and Methods

A total of 1578 calves were randomly allocated to three groups (group 1: n=489, group 2: n=562, group 3: n=527) within an all-in-all-out system over six months. Calves originated from multiple sources with unknown immune status and entered the facility at approximately 31–32 days of age. Housing occurred sequentially at two-week intervals across three barns. Fattening duration ranged from 188 to 192 days. Calves in group 1 remained unvaccinated. Group 2 received two doses of an inactivated vaccine (Bovalto Respi 3*) at a three-week interval. Group 3 followed a PRIME-BOOST protocol described in the first publication consisting of an intranasal modified-live vaccine (Bovalto Respi Intranasal*) followed by two doses of an inactivated vaccine (Bovalto Respi 3*). Vaccination was initiated $\pm$ 4 days after arrival. Health and performance data, including treatments, mortality, morbidity, and individual slaughter weights, were recorded using VET VET software (VET VET© Beratung GmbH & Co. KG). An appropriate sample size of diseased calves was chosen for obtaining nasal swabs, which were subsequently analyzed per PCR pool sample of 5 for *Mycoplasma bovis*, BRSV, PI3V, *Histophilus somni*, bovine coronavirus and bacteriological examination.

* For more detailed information see SPC Bovalto Respi Intranasal and Bovalto Respi 3.

Results

The proportion of carcasses <110 kg was highest in the unvaccinated group (6.75 %) compared to group 2 (5.34 %) and group 3 (4,37 %). group 2 achieved the highest percentage of carcasses >170 kg (13.17 %), while group 3 showed the highest proportion within 140–170 kg (67.17 % vs. 60.12 % in controls). There is a highly significant difference in the weight distribution between groups ($p < 0.000001$). Paired comparisons show that group 1 differs significantly from group 2 ($p \approx 0.02$) and group 3 ($p < 0.0001$), while there is no significant difference between group 2 and group 3. (see Table 1)

Carcass homogeneity was superior in vaccinated groups, particularly in group 3 (93.35 % within 110–180 kg), followed by group 2 (90.92 %) and group 1 (89.97 %).

Mortality rates declined across groups (group 1: 4.50 %; group 2: 3.56 %; group 3: 2.47 %). Biological performance, integrating mortality, growth, slaughter weight, and fattening duration, resulted in increased carcass weight of +4.75 kg/animal (group 2) and +4.98 kg/animal (group 3) compared to controls. (see Table 2)

Table 1. Slaughter weight grades

There is a highly significant difference in the weight distribution between groups ($p < 0.000001$). Paired comparisons show that group 1 differs significantly from group 2 ($p \approx 0.02$) and group 3 ($p < 0.0001$), while there is no significant difference between group 2 and group 3.

Categories (kg)	Group 1	(%)	Group 2	(%)	Group 3	(%)
>200	0.00 %	11.86 %	0.36 %	13.17 %	0.00 %	7.21 %
190–200	0.41 %		0.71 %		0.57 %	
180–190	3.07 %		2.67 %		1.71 %	
170–180	8.38 %		9.43 %		4.93 %	
160–170	21.06 %	60.12 %	16.55 %	61.03 %	16.32 %	67.17 %
150–160	20.25 %		23.84 %		26.19 %	
140–150	18.81 %		20.64 %		24.67 %	
130–140	11.66 %		11.03 %		12.14 %	
120–130	7.98 %	21.47 %	7.30 %	20.46 %	5.69 %	21.25 %
110–120	1.84 %		2.14 %		3.42 %	
100–110	1.43 %		0.89 %		0.949 %	
90–100	0.20 %		0.53 %		0.380 %	
<90	0.61 %	6.75 %	0.36 %	5.34 %	0.57 %	4.368 %
losses	4.50 %		3.56 %		2.47 %	
Total number of calves	489		562		527	

Table 2. Biological performance

	Group 1	Group 2	Group 3
fattening period (d)	192	188	190
diffrence (d)	0	4	2
daily gain/d (kg)	0.651	0.66	0.65
daily gain/kg (kg)	0	2.64	1.30
average slaughter weight (kg)	150.98	151.26	148.75
losses (kg) because of mortality rate	6.79	5.38	3.67
losses <110 kg (kg)	10.19	8.08	6.50
difference*		2.11	3.69
losses - gains (kg)	6.79	2.75	2.38
losses - gains (kg)	10.19	5.44	5.21
difference** (kg) between gr. 1 vs. gr. 2 and gr. 3 <110 kg		4.75	4.98

* Difference: less loss in comparison to group 1
** Difference between losses including notional increase because of the different days of fattening periods in comparison to group 1

Conclusion

BRD remains a major challenge in veal calf fattening systems due to commingling and high stocking density. Although vaccination in this study was applied post-arrival rather than at the source farm, both vaccination protocols resulted in clear economic and performance benefits. Vaccinated groups exhibited higher proportions of carcasses above 110 kg, improved carcass homogeneity, and increased average carcass weights (+4.75 kg to +4.98 kg/animal). These findings indicate that both vaccination strategies – PRIME-BOOST and inactivated-only – enhance production efficiency under commercial conditions. Earlier vaccination on the origin farm may further improve these outcomes and warrants investigation.