



Perches for broilers: Effect of perch configuration and dietary crude protein level on growth performance, carcass traits and profitability

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Background

Provision of perches could serve as an environmental enrichment for broilers, while at the same time reducing contact between birds and wet litter - an aggravating factor in the development of footpad dermatitis. Provision of perches may in turn translate into improved broiler performance, particularly when birds are fed high crude protein (CP) diets, which are reported to cause an increase in litter moisture levels.

The objective of this experiment was to determine the effect of dietary crude protein level (Standard vs. High CP) and provision of different perch configurations (no perch vs. 'X' or 'I') on growth performance, carcass traits and profitability in broilers raised to 35 d.

Our Approach

Perch treatments included a control (no perch), or two 'I'- or 'X'-configuration perches per pen (total of 12 linear ft. of perch space/pen; **Figure 1**).

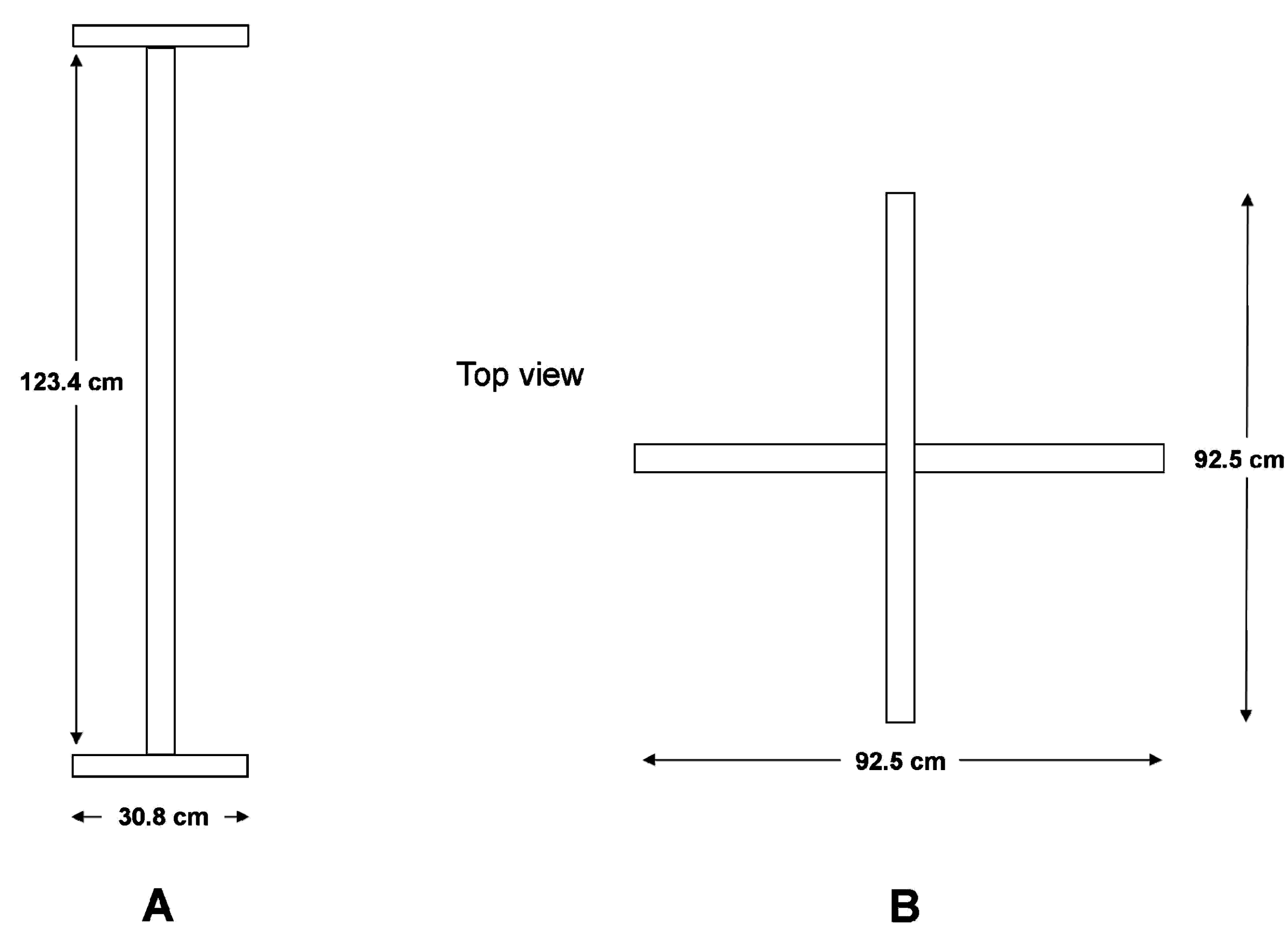


Figure 1. Design of a) 'I'- and b) 'X'-configuration perches used in the study. Perches were constructed from 2 x 4 softwood lumber.

Dietary regimens consisted of nutritionally-complete wheat-soybean meal diets (i.e., normal CP) or wheat-based diets containing 30% canola meal (high CP) within each of three growth phases (i.e., d 0-11, 12-24, 25-35). Mixed-sex, Ross 308 broiler chicks (n=1500) were housed in 34 floor pens (45 birds/pen; 30 kg/m² stocking density) for the duration of a 35-d growth experiment. Each pen was assigned to one of the three perch treatments and one of the two dietary regimens in a 3 x 2 factorial arrangement. Each perch x diet combination was assigned to a minimum of 5 replicate pens in a completely randomized experimental design.

Birds were weighed as pen groups at d 0, 11, 24, and 35 of age to calculate average daily gain (ADG) in the three growth phases (d 0-11, d 12-24, d 25-35). Average daily feed intake (ADFI) and Feed:Gain ratio were calculated by measuring feed disappearance over the same periods. On d 36, 10 focal birds of each gender from each perch x diet combination were weighed individually and slaughtered at the Poultry Research Centre pilot-scale slaughter plant. Carcasses were air-chilled to 4°C, weighed and divided into primal components, which were also weighed to determine yield.

What We Observed

Providing perches to broilers had no effect on growth performance, carcass traits or yield (as a proportion of carcass wt) of carcass components (**Table 1**). The high dietary CP regimen resulted in lower carcass weight and dressing percentage than the standard CP regimen, although pre-slaughter weight did not differ. Despite lower carcass weight for the high CP regimen, the actual weight of carcass components did

not differ between dietary regimens, resulting in proportionately higher yield of breast fillet and total saleable cuts for the high CP regimen.

Table 1. Effect of perch configuration and dietary crude protein regimen on growth performance, carcass traits and relative yield of carcass components.

	Perch configuration			SEM	Dietary CP level		SEM	P-values	
	None	'I'	'X'		Standard	High		Perch	CP
Growth performance, (d 0 - 35)									
Body Wt (d 35), g	2270	2266	2268	18	2285 ^a	2251 ^b	17	0.970	0.029
ADG, g/d	61.8	61.3	61.7	0.7	62.1	61.2	0.6	0.881	0.284
ADFI, g/d	106.8	105.5	105.6	1.0	106.6	105.3	0.9	0.408	0.134
GF, g:g	0.615	0.615	0.622	0.007	0.616	0.619	0.005	0.711	0.735
Carcass traits (d 36)									
Pre-slaughter Wt, g	2167	2151	2123	28	2164	2130	23	0.529	0.293
Carcass Wt, g	1487	1479	1486	4	1493 ^a	1475 ^b	3	0.274	< 0.001
Dressing percent	0.693	0.689	0.692	0.002	0.696 ^a	0.687 ^b	0.002	0.270	< 0.001
Component yield, % of carcass									
Breast, major	0.246	0.243	0.247	0.002	0.241	0.25	0.002	0.432	0.003
Breast, fillet	0.052	0.053	0.053	0.001	0.052 ^b	0.054 ^a	0.001	0.350	0.013
Thighs	0.177	0.181	0.179	0.003	0.181	0.177	0.003	0.382	0.201
Drumsticks	0.139	0.138	0.139	0.001	0.139	0.139	0.001	0.695	0.511
Wings	0.112	0.113	0.112	0.001	0.111 ^b	0.113 ^a	0.001	0.837	0.043
Total saleable cuts	0.726	0.729	0.730	0.003	0.723 ^b	0.733 ^a	0.002	0.565	0.003

In terms of profitability, perch treatments ranked differently depending on the dietary CP level (**Table 2**). For the standard CP regimen, total feed cost was highest for the 'I' perch and lowest for the 'X' perch treatment, with the control being intermediate. In contrast, feed cost (\$/liveweight marketed) was lowest for the 'I' perch treatment under the high CP regimen. Revenue over feed cost favoured the control and 'X' perch treatments fed the standard CP regimen. The 'I' perch configuration, however, netted an additional \$0.04/bird compared to the control treatment under the high CP regimen.

Table 2. Effect of perch configuration within dietary CP level on total feed cost and revenue over feed cost.

Dietary CP level	Standard CP			High CP			SEM	P-value	
	Perch configuration	None	'I'	'X'	None	'I'			'X'
Total feed cost									
\$/bird marketed		1.202 ^a	1.205 ^a	1.179 ^b	1.206 ^a	1.183 ^{ab}	1.199 ^{ab}	0.015	0.035
\$/kg liveweight marketed		0.524 ^{bc}	0.529 ^{ab}	0.516 ^c	0.537 ^a	0.526 ^b	0.535 ^a	0.006	< 0.001
Revenue over feed cost									
\$/bird marketed		2.752 ^{ab}	2.716 ^{bc}	2.755 ^a	2.658 ^d	2.699 ^c	2.664 ^d	0.026	0.004

Take Home Message

Providing broilers with simple wood perches as an environmental enrichment does not adversely affect performance or carcass traits. In addition, under certain conditions (e.g., higher than normal dietary CP levels), providing broilers with perches may yield a net economic benefit for the producer.

Acknowledgements

The authors would like to acknowledge **Breanne Chmilar, Jennifer Potter, Krishna Kandel, Michele Burke**, and the staff and students at the U of A Poultry Research Centre for technical assistance on this project.

In-kind support and funding was provided by:

