Table1: Nutritional composition of the Startup feed with the inclusion of Azolla

INGREDIENT(KG)	0kg AZ	1kg AZ	2kgAZ	3kgAZ
Yellow corn	51.2	50.589	50.078	49.567
Soya bean meal	25	24.75	24.5	24.25
Azolla meal	0	1	2	3
Fish meal	5	4.95	4.9	4.85
l-Lysine	0.2	0.297	0.294	0.291
dl-Methionine	0.2	0.198	0.196	0.194
Monodicalciumphosphate	0.2	0.198	0.196	0.194
Calcium carbonate	2	1.98	1.96	0.194
Wheat bran pellets	16	15.84	15.68	1.94
Salt	0.2	0.198	0.196	15.52
Total	100	100	100	100
NUTRITIONAL COMPOSITION				
Metabolizable energy ME (Kcal/kg)	2889.99	3181.59	3473.19	3764.79
Crude protein (%)	20.33	20.37	20.42	20.46
Fat (%)	7.91	7.85	7.79	7.73
Crude fiber (%)	5.36	5.47	5.59	5.70
Calcium (%)	0.97	0.96	0.95	0.94
Phosphorus (%)	0.64	0.63	0.63	0.62

Table2; Nutritional composition of the finition feed with the inclusion of Azolla

Ingredient(kg)	0kg AZ	1kg AZ	2kgAZ	3kgAZ
Yellow corn	62.2	61.6	60.95	60.33
Soya bean meal	23	22.7	22.5	22.3
Azolla meal	0	1	2	3
Fish meal	2	1.9	1.96	1.94
l-Lysine	0.2	0.29	0.29	0.29
dl-Methionine	0.2	0.19	0.19	0.19
Monodicalciumphosphate	0.1	0.19	0.1	0.1
Calcium carbonate	2	1.98	1.96	1.94
Wheat bran pellets	10	9.88	9.77	9.62
Salt	0.3	0.27	0.28	0.29
Total	100	100	100	100
Nutritional composition				
Metabolizable energy ME (Kcal/kg)	2889.99	3305.98	3596.33	3886.67
Crude protein (%)	20.33	18.23	18.29	18.36
Fat (%)	7.91	7.52	7.47	7.41
Crude fiber (%)	5.36	5.16	5.27	5.39
Calcium (%)	0.97	0.88	0.87	0.86
Phosphorus (%)	0.64	0.49	0.48	0.48

Diets were formulated using FeedLIVE software (FeedLIVE 1.52).

Table3: Nutritional composition of Azolla Pinnata

Parameters	Percentage (%)
DM (Dry Matter	5.16
Moisture	94.84
Ash	11.63
CP (Crude Protein)	23.25
EE (Ether Extract)	2.02
CF (Crude Fiber)	15.67
NDF (Neutral Detergent Fiber)	42.55
ADF (Acid Detergent Fiber)	32.15
ADL (Acid Detergent Lignin)	16.77
Hemicellulose	11.45
Cellulose	14.11
NFE (Nitrogen-Free Extract)	34.95
Gross energy (MJ 100 g-1 DM) (GE)	1490

Table 4. Effect of Azolla pinnata meal supplementation in feedintake (g), weight gain and feed conversion ratio in broilers. The values are in Mean± SD.

Groups: Control A, B = 1g APM/kg feed, C = 2g APM/kg feed, D = 3g APM/kg feed. $^{a-d}$values that do not share a common superscript differ in the same column (P>0.05).

Parameters	Week	Control	Azolla pinnata meal supplementation			P-value
			1gm/kg	2gm/kg	3gm/kg	
Feed intake(g)	2nd	370.00^{a}±1.73	369.67^{a}± 1.15	373.00^{a}± 1.15	363.00^{b}± 1.15	0.002
	3rd	615.00^{a}± 1.73	623.00^{b}± 1.73	611.00^{b}± 1.15	635.00^{c}± 1.15	0.000
	4th	895.00^{b} ±2.02	895.33^{a} ±1.15	896.00^{a} ±1.73	889.00^{b} ±1.73	0.002
	5th	1200.0^{a}± 1.45	1195.0^{ab}± 1.15	1198.0^{a} ± 1.15	1185.0^{c} ± 1.15	0.000
	Overall	3080.0^{a} ±7.79	3083.0^{a} ±9.24	3078.0^{b} ±2.60	$3072.^{bc}$± 2.08	0.000
Weight gain(g)	2nd	240.00^{b}± 1.73	240.00^{b} ± 1.15	241.00^{b}± 1.73	248.00^{a} ±1.73	0.021
	3rd	397.00^{c}± 1.73	400.00^{c} ± 1.15	411.33^{b}± 2.08	420.00^{a}± 1.73	0.000

	4th	515.00^{b}± 1.15	510.00^{c} ± 1.15	511.00^{bc}±1.73	525.00^{a} ±1.15	0.000
	5th	618.00^{b}± 1.15	615.00^{b} ± 1.15	619.00^{ab}±1.73	623.00^{a}± 1.15	0.017
	Overall	1770.0^{c}± 1.73	1765.0^{c} ± 2.30	1782.3^{b}± 3.71	1816.0^{a}± 2.30	0.000
FCR	**2nd**	1.53^{a} ± 0.12	1.53^{a} ± 0.05	1.53^{a} ± 0.08	1.44^{b} ± 0.02	0.000
	3rd	1.54^{a}± 0.11	1.52^{b} ± 0.01	1.48^{c} ± 0.01	1.42^{d} ± 0.10	0.000
	4th	1.73^{b} ± 0.00	1.75^{a} ± 0.04	1.74^{ab} ± 0.01	1.68^{c} ± 0.01	0.000
	5th	1.93^{a} ± 0.08	1.94^{a} ± 0.16	1.93^{a}± 0.01	1.89^{b}± 0.20	0.000
	Overall	1.73^{a} ± 0.00	1.73^{a} ± 0.01	1.72^{a} ± 0.02	1.66^{b} ± 0.08	0.000

Table 5. Effect of Azolla Pinnata meal supplementation in feed on Gut histomorphology and Crypt depth of broilers.

Groups A= Control; Groups B = 1g APM/kg feed, Groups C = 2g APM/kg feed, Groups D = 3g APM/kg feed. $^{a\text{-values}}$ in a similar column not sharing the same superscript vary (P<0.05).

Parameter	**Azolla pinnata meal supplementation**				**P value**
	Group A	**Group B**	**Group C**	**Group D**	
VillusHeight (mm)	0.418^{b}±0.02	0.661^{ab}± 0.03	0.701a^{b} ± 0.02	0.913^{a}± 0.07	0.049
CryptDepth (mm)	0.188^{a}± 0.03	0.249^{a}± 0.02	0.274^{a}± 0.05	0.232^{a} ± 0.06	0.849
Villus width	0.143^{c} ± 0.02	0.187^{b} ± 0.03	0.102^{d} ± 0.02	0.330^{a} ± 0.05	0.000
Villus-Crypt Ratio (VCR)	2.22^{d} ± 0.01	2.65^{b} ± 0.01	2.55^{c} ± 0.02	3.93^{a} ± 0.02	0.000

Table 6: Effect of effect of Azolla pinnata meal supplementation on Economics of broilers.

Groups	**Total Cost (PKR)**	**Gross return (PKR)**	**Net return (PKR)**
Group A(control)	445.49a ± 2.43	470.18c ± 2.09	24.60d ± 2.43
Group B(1g APM/kg feed)	449.40b ± 2.43	494.85b ± 1.38	35.46c ± 2.41
Group C(2g APM/kg feed)	453.54c ± 2.37	539.20a ± 1.94	45.58b ± 2.39
Group D(3g APM/kg feed)	557.47d ± 3.29	551.56a ± 1.55	54.42a ± 2.26
P value	0.002**	0.01*	0.000*