ABSTRACT
"CONTRIBUTIONS TO SOME NUTRITION FACTORS INFLUENCE OVER BROILER CHICKEN RAISING AND THEIR MEAT QUALITY"

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In the last decades, worldwide were done more and more researches regarding the utilization of some biostimulator products as alimentation factors to weight growing and food conversion improvement at broiler chickens also for preservation of it health conditions and obtaining high quality carcasses.

Correlated with the increase of the number of the biostimulators and their producers capacity have appeared some „voices" who demands more powerful to be ensured a unitary legislation and a unique mode of utilization because it is growing the number of those who believe that some biostimulators would have improperly effects over animal products consumers obtained from animals feeded with this substances. In this mater there are biostimulators that were out of use or are restrictedly use to increase safety of human consume aliments. For example, antibiotics are restrictedly used.

It is to mention that as effect of many severe antibiotics interdiction as growing starters were found some alternatives of their use as: enzymes, probiotics and prebiotics. Same time the representers of ecologic associations, pushing the note, are looking to interdict the use of all additives in animal alimentation.

In the same context of animal and animal products consumers' protection it is more contested the intensive bird raising motive for specialists to elaborate alternative growing systems that offers life conditions closer to natural ones as raising chickens in permanent sheets shelters and access in exterior grassed zone.

Until now, this technology as the other bird raising technologies from alternative systems paid no conclusive results often unconcludent because of the decoration spendings, the lower productions, useless surfaces and the big amount of work and also general problems about sanitary-veterinary surveillance of the birds.

Regarding the related problems in this research are presented the results obtained after feeding broiler chickens with recipes of mixed food with and without biostimulators as enzymes and probiotics. Also there are presented the results obtained after raising broiler chickens in permanent sheets shelters with and without grassed zones access.

Researches were made in S.C. „Agricola Internațional" S.A. Bacău on a number of 134.000 1 day old broiler chickens from „Ross – 308" commercial hybrid in 3 experience series.

In first experience series were made researches regarding broiler chicken raising in intensive system with mixed food recipes with and without biostimulators; for this experimental series were created 2 sub-series by 16.000 1 day old chickens each; one sub-series was Lc1-control and the other L1exp-experimental.The chickens from control sub-series were feeded with mixed food without biostimulators while experimental sub-series got biostimulators („Avizyme 1500" product, 1kg/t mixed food dose).

Second experience series gathers researches regarding chicken broiler raising in different technologic comfort using biostimulators. This series too was divided in 2 sub-series of 12.000 1 day old chickens each; from this 2 sub-series one was for control-Lc2 and an experimental one-L2exp.Broiler chickens from control sub-series were raised in intensive system on permanent sheets while experimental one were raised in semi- intensive system on permanent sheets with access on grassed zones. In their first 14 days of life, chickens from both control and experimental sub-series were raised in shelters on permanent sheets without access on grassed zones. After this age, experimental sub-series had access on grassed zones during the day. Population density in the shelter was 12 chickens/m^2 for both experimental sub-series. For the experimental sub-series that had access on grassed zones was assured a density of 6 chickens/m^2.The drinking water administrated contained 1‰ acidifying „NUTRI-SURE DW1".

In third experience series was studied chicken broiler raising in intensive system with mixed food recipes with and without biostimulators (probiotics). This experimental series gathered 4 experience sub-series by 19.500 one day old chickens each; one of those was the control subseries-Lc3 and the other 3 were experimental sub-series- L3exp, L4exp şi L5exp.Broiler chicken's food from reference sub-series didn't contained biostimulators while experimental sub-series mixed food contained some prebiotics as it follows: at L3exp - „BioPlus 2B" in 1kg/t dose ; at L4exp – „Biomin IMBO" in 0,5 kg/t dose ; at L5exp – „Cylactin LBC ME 10" in 0,3 kg/t dose. Utilization doses of those feeded additives were recommended by producers.

As work method it was used group method cumulated with period method.

The followed indicators from the three experimental series were:

- temperature dynamic and relative air humidity from experience shelters;
- body weight growing dynamic at studied chicken ;
- daily, weekly and cumulated body weight growing spore;
- food consume: g f.c./chicken/day; consume indicator (kg f.c./kg spore);
- cardinal blood constants: hematocrite, hemoglobin, erythrocyte number ;
- effective losses and their causes;
- quantitative and qualitative meat production ;
- live quality class of studied chicken ;

- carcasses weight and quality class ;
- slaughtering efficiency;
- cardinal internal organs weight ;
- participation of cut parts in carcasses ;
- meat/bone ratio ;
- Physic-chemical characteristics of the meat: pH value immediately after slaughter, after 12 and 24 hours; the contained in: water (%), dry substance (%), proteins (%), fats (%) and minerals (%);
- European efficiency factor and economic efficiency.

Because some indicators as body weight growing dynamic couldn't be determined at such a big number of birds there were made some control groups each one for experience series of 200 chickens. All chickens from control groups were individualized. Marked chickens that were out from effective during the experience were replaced with another chicken from shelter with a body weight close to group medium.

After researches regarding, by one side, the productive effect of using enzyme and probiotics in chicken alimentation and the other side knowing productive performances at chickens raised in shelters with permanent sheets with or without access in grassed zones were dropped some conclusions that will be further presented.

a. Microclimate from experience shelters

We mention that in first experience series wasn't followed microclimate from experienced shelters.

- ✓ In second experience series the temperature from shelters was higher that recommended one by "Ross Breeders" firm for "Ross 308" hybrid. This fact was determined by higher exterior temperatures from period 12.07 – 30.08.2005 when experience was made. Through temperature comparing registered in both chicken shelters we observed that in second shelter with chickens from L2exp after 14 days when the doors were opened to grassed zones the measured temperatures were higher with 1-2ºC that in first shelter with control sub-series. Air relative humidity in shelters was generally maintained in the limits predicted for "Ross 308" hybrid just for control sub-series. At experimental series air humidity levels registered were in normal limits in first 14 days of life of the chickens after that were registered over 80% especially at the end of the experiment.
- ✓ Microclimate factors from all fourth shelters with chickens from third experience series didn't register variations from shelter to shelter. So, the temperature was lower that recommended "Ross Breeders" for "Ross 308" hybrid. Because of the acclimatized shelters and the exterior

temperatures during the experience were registered lower temperatures than standard. As for air relative humidity, it varied around recommended standard for "Ross 308" hybrid.

b. Referring at body weight growing dynamic

- ✓ From the dates we obtained in first experience series it concluded that experimental factor meaning enzyme used in L1exp food in 1kg/t mixed food dose determined a body weight growing different at this series compared to control sub-series; so at 42 days age, when chickens were slaughtered the medium body weight was 1960.85±15.89 g al L1exp compared to 1854.45±15.55 g at Lc1. Between series (Lc1 – L1exp) there were significant statistic different (Lc1 vs. L1exp: $\hat{F}$=22.90 > $F_{0,001}$(1.398) = 10.83). The homogeneity of studied character give by the values calculated for variation coefficient (V%) was medium at both experience series, Lc1 and L1exp (V%=11.46÷11.85).At the start of the experience 1 day old chicken body weight weren't different between series (39.45±0.24 g at Lc1 and 39.60±0.29 g at L1exp).Comparing to standard weights characteristic to commercial hybrid we used ("Ross 308") at the age of 42 days there were obtained lower values at both series caused by a lower quality of the chickens. Correlated with the values for body weight there were placed and daily medium spore registered with 5.85% higher at L1exp than Lc1.
- ✓ In second experience series we observed that in the case of studied chickens raised in permanent sheets shelters with access in grassed zones (L2exp) it obtained body weights much lower than chickens raised in closed shelters on permanent sheets (Lc2). At the age of 42 days when the chickens were slaughtered medium body weight at L2exp was 1760.35 ± 19.52 g and 2236.62 ± 22.87 g at Lc2 being with 21.29% bigger. Between series (Lc2-L2exp) were determined differences very significant (Lc2 vs. L2exp: $\hat{F}$ = 28.15>$F_{0,\,001}$ (1.398) =10, 83).The homogeneity of studied character determined through variation coefficient (V %) was medium at control series (V%=17.59) and larger at experimental series (V%=24.21).At the start of the experience, body weight of the 1 day old chickens wasn't significant between series (41.00 ± 0.36 g at Lc2 and 40.70 ± 0.31 g at L2exp).Compared with standard weights specific to the commercial hybrid used ("Ross 308") , at the age of 42 days there were obtained lower values at both series caused by a poor quality of the chickens. Correlated to values obtained for body weight was daily medium spore registered with 21.67% lower at L2exp than Lc2.
- ✓ Appreciating the dynamic of body weight of studied chickens in the third experience series we determined that the probiotics administrated determined some medium superior body weights with 3.33-8.40% than control series (Lc3); from the three experimental series the one who responds better at experimental factor ("Bioplus 2B" in 1kg/t mixed food dose) was L3exp where medium body weight at 42 days old was 2387.70 g. Correlated to growing speed was

situated the daily medium spore registered with 3.41-8.58% bigger at L3exp, L4exp, L5exp than control series (Lc2).

c. Food consume

- ✓ Cumulated food consume (g/c) in first experience series was higher at experimental series (L1exp) than control series (Lc1) with 5.32% tightly correlated with body weight evolution; food conversion ratio at this series was reduced with 0.48%(FCR=1.853) compared to control series Lc1(FCR=1.862).
- ✓ Cumulated food consume (g/c) in second experience series was lower with 11.69% at experimental series (L2exp) than control series correlated with the evolution of body weight. Regarding food conversion ratio, it was situated at a reduced level with 12.72% (FCR=1.839) at control series than experimental one (FCR=2.073).
- ✓ Cumulated food consume (g/c) in third experience series was higher with 2.43-7.32% at experimental series (L3exp-L5exp) than control series (Lc3) tightly correlated with body weight evolution; food conversion ratio of this series were reduced with 0.90-1.13% than control series (Lc3). The decrease of food conversion ratios at experimental series (L3exp-L5exp) is considered to be determined by the benefic effect of probiotics studied.

d. Effective losses and its causes

- ✓ From the related dates it concludes that for this indicator in first experience series were registered tiny raised values than standard (6.15% at Lc1 and 6.10% at L1exp than 5% standard for ”Ross 308” hybrid). The most many losses were registered especially in first week of life caused by transport stress from incubation station to farm. Other causes that determined losses were enteritis and coccidioza diagnosticated and rarely manifested.
- ✓ From the dates related in second experience series it concluded that for this indicator were determined values higher than standard for experimental series (8.39% than 5% standard for “Ross 308” hybrid) while at control series this losses were 4.54%.
- ✓ From the dates related to third experience series it concluded that effective losses from control series represented 6.74% while the losses from experimental series were 37.24-37.98% lower than the reference series. The most many losses were accidental in first week of life.

e. Blood constants

Blood constants were determined in first and third experience series.

- ✓ For blood constants (hematocrite; hemoglobin and erythrocyte number) determined in first experience series were obtained close values between series and the recommended in specialty literature consulted for the situation.
- ✓ In third experience series the determined values were between normal limits recommended by specialty literature. Plus, it concluded that introduction in chickens food of these 3 probiotics

("BioPlus 2B", "Biomin IMBO" and "Cylactin") determined some sanguine superior indices at control series; for example, hematocrite was raised with 0.34-4.46%; hemoglobin with 8.23-10.58% and erythrocyte number with 7.14-14.28%.

f. Economic efficiency and European Efficiency Factor (EEF)

- ✓ In first experience series the EEF values at both series were over 200. At L1exp were register a value with 6.28% higher than control series. Production spendings for control series were lower with 4.27% than experimental series because of the total food consume raised at L1exp with 5.05% than food consume at Lc1. The benefit realized by control series were by 1646.48 €, with 5.59% lower than experimental series by 1738.61€.
- ✓ In second experience series EEF value for control series was over 250 while experimental series it had a decrease with 32.92%.
- ✓ Using probiotics as „BioPlus 2B", „Biomin IMBO" and „Cylactin" in broiler chickens alimentation from third experience series proved to be efficient. At all experimental series registered benefit but the best economic results were observed at experimental series where the benefit was higher with 6.13-11.32% than control series (Lc3).If we divide the benefit to the entire effective (19.500 c/series) for each chicken from the shelter we obtained a benefit by: 0.86 lei/c or 0.24 €/c – at Lc3; 1,21 lei/c or 0.34 €/c – at L3exp; 1.16 lei/c or 0.32 €/c – at L4exp and 1,03 lei/c or 0,29 €/c – at L5exp.

Related to the dates presented we recommend the utilization in chickens broiler alimentation of the used feed additives ("Avizyme 1500" enzyme and "BioPlus 2B"; "Biomin IMBO" and "Cylactin LBC ME 10" probiotics) in experimental doses („Avizyme 1500" – 1 kg/t; „BioPlus 2B" - 1 kg/t; „Biomin IMBO" - 0,5 kg/t; „Cylactin LBC ME 10" - 0,3 kg/t).

Also, we consider that it isn't indicated chicken broiler raising in shelters with exterior access