ASAS/ADSA International Animal Agriculture

938   Constraints on reproductive performance of indigenous cows under small holder village farming system in Bangladesh. M. Samad Khan*, *Bangladesh Agricultural University, Mymensingh.*

Indigenous cows were studied to find out the reproductive constraints under village condition of Bangladesh. Sixty seven postpartum cows were taken from 65 small holder farmers. Selected animals were used for dairy/draught purpose. Cows were supplied with rice straw based diet. Calves were allowed to free access for suckling cows during day and were tied up at night. Cows were milked once a day in the morning. Metabolic kits supplied by the Food and Agriculture Organization of the United Nations/ International Atomic Energy Agency (FAO/IAEA) were used for metabolic profile study and FAO/IAEA Radioimmunoassay (RIA) kits were used for progesterone (P4) measurement. Calving to first ovulation were calculated on the basis of first P4 rise in milk. Reproductive events were measured. Data were analyzed by 4 seasons to find out the reproductive constraints of indigenous cows. The plasma urea values (mmol/L) of the cows were 4.5, 7.2, 5.5 and 3.2 for the seasons Summer, Autumn, Winter and Spring respectively. The calving to first ovulation were 66, 67, 187 and 51 days; to first service were 272, 120 191 and 216 days; to first conception were 263, 136, 197 and 223 days; and calving interval were 544, 419, 489 and 501 days for the seasons Summer, Autumn, Winter and Spring respectively. Among the blood metabolites studied, a considerable change in urea values were noticed. It represents an important nutritional constraints on reproduction. The Spring values were lower enough to suggest a shortage of Rumen Degradable Protein (RDP) in the ration. The calving to first service was higher than that of calving to first ovulation, that means farmers were unable to detect heat of their cows. So, heat detection was a constraint to the reproduction of indigenous cows. The calving to first service in the Autumn was much better than that in the other 3 seasons. It would be tempting to relate to the urea levels that were the highest in the Autumn. From this study two important constraints of reproduction has been identified for the indigenous cows where interventions are needed, (1) Nutritional constraints in general, mainly protein, during the Spring season and (2) Lack of knowledge of estrus detection by the farmers during the early part of lactation.

Key Words: Indigenous, Progesterone, Protein

939   True estrus determination through evaluation of serum-progesterone levels at the time of insemination of dairy cows from semi-intensive dairies in north-central Mexico. EF Ricoy[1], C Acua, RM Rincon, DF Cortes, R Bauelos-Valenzuela, and CF Arechiga*, [1] *Universidad Autonoma de Zacatecas. Zacatecas, Mexico..*

The purpose of this study was to determine which proportion of cows bred by artificial insemination (n=103), at semi-intensive dairies from north-central Mexico (La Fresnillense, Zacatecas, Mexico), presented a true estrus at the time of insemination. Criteria for detection of a true estrus was based on serum-progesterone levels measured by radioimmunoassay. A blood sample was collected from tail-vein via venipuncture and serum was separated. Serum-progesterone levels lower than 1 ng/ml indicated the presence of the follicular phase of the estrous cycle and possibly the presence of a true estrus (i.e., heat); and, serum-progesterone levels greater than 1 ng/ml confirmed the presence of a luteal phase of the estrous cycle and a total absence of estrus. Results have shown that 23.3% (24/103) of inseminated cows had serum-progesterone levels above 1 ng/ml indicating the total absence of estrus (P<0.001). Thus, only 76.7% (79/103) had a chance to be in estrus or around it. Cows with serum-progesterone levels above 1 ng/ml (follicular phase) had an average of 0.092 ng/ml; whereas, cows with serum-progesterone levels above 1 ng/ml (luteal phase) had an average of 1.070 ng/ml. These results confirmed serious management problems at those dairies on estrous detection and insemination criteria that could compromise fertility, semen costs, and genetic improvement at the dairy.

Key Words: estrus, dairy cow, Mexico

940   Effect of a reduced dose of GnRH (50 μg) in a timed AI protocol used for Holstein cows from an intensive dairy at north-central Mexico. Ol Gutierrez[1], RD Gonzalez[1], RR Lozano[2], F de la Colina[1], R Bauelos[1], E Gonzalez-Padilla[2], and CF Arechiga*[1], [1] *Universidad Autonoma de Zacatecas. Zacatecas, Mexico., [2] Universidad Nacional Autonoma de Mexico. Mexico..*

Present study try to determine whether a reduced dose of GnRH (i.e., 50 vs. 100 μg) in a timed AI protocol (TAI) [d 0, GnRH; d 7, PGF2α; d 9, GnRH; d 10, TAI] was effective increasing pregnancy rates of dairy cows (Aguascalientes, Mexico). Dairy cows (n=120), 45 to 90 d postpartum (PP), from 1 to 7 parities, an average body condition score of 3.28, an milk yield of 25-28 kg/d (3x), were randomly assigned into two groups: 1) Control (100 μg GnRH in a TAI protocol). 2) Treated (50 μg GnRH in a TAI protocol). There were no differences in pregnancy rates to first service [19.17% (23/120) vs. 25.00% (30/120)], neither at 150 d PP [28.33% (34/120) vs. 27.50% (33/120)] or intermediate periods (60, 90, 120 d PP). There were no differences in the intervals from calving to first service and to conception; neither in services per conception. A greater proportion of cows tended to become pregnant when a medium or large follicle (10 and 15 mm, respectively), was present in the ovary at the beginning of the TAI protocol or with cows of lower milk yield (3,500-7,500 kg). A reduced dose of GnRH, reduces cost of TAI by $5.3 dollars, and cost of TAI for pregnant cows at first service by $17.1 dollars. In conclusion, a reduced dose of GnRH was effective to synchronize ovulation without affecting reproductive parameters. Such a lower input will allow to diseminate the use of timed AI protocols in dairy cows from developing countries.

Key Words: dairy cow, timed AI, Mexico

941   Serum-progesterone measurements to determine age at puberty and luteal function in hair sheep from a semi-arid region in north-central Mexico. A Gutierrez, W Gonzalez, RM Rincon, O Perez-Veyna, R Bauelos-Valenzuela, and CF Arechiga*, [1] *Universidad Autonoma de Zacatecas. Zacatecas, Mexico..*

Serum-progesterone measurements were performed by radioimmunoassay to determine luteal activity (i.e., greater than 1 ng/ml), maintenance of luteal function and age at the onset of puberty in hair sheep (n=17; Pelibuey Sheep) exposed to a semi-arid environment. Ewes had an average weight of 1.98 ± 0.03 at birth, and just before the six-months of age (175-185 d), they were transported to a semi-arid environment where the experiment took place, which included twice weekly determinations of serum-progesterone levels throughout 110 d. By the end of the experiment when ewes had 285 d of age and an average bodyweight of 18.87 ± 0.17 kg, results have shown that 53% (i.e., 9 of 17 ewes) had serum-progesterone levels greater than 1 ng/ml at least once throughout the experimental period. But only 29% (i.e., 5 of 17 ewes) maintained luteal activity similar to an estrous-cycle pattern of progesterone secretion. Serum-progesterone levels increased significantly by the end of the experiment (P<0.05) and were correlated with body-weight increases throughout the experiment and decreased light-hours during the day (P<0.05). Average progesterone levels were 0.29 ± 0.05 ng/ml. Average daily gain was 0.080-0.150 kg/d from 0 to 285 d of age; and 0.050-0.057 kg/d from 175 to 285 d of age. In conclusion, onset of puberty in hair sheep at semi-arid regions seems to be influenced by increases in body weight and a reduction in light-hours during the day (i.e., below 12 light-hours during the day).

Key Words: Hair Sheep, Photoperiod, Mexico

942   Nutrient digestibility and nitrogen balance of growing Zimbabwean Mukota, Large White and their F1 crosses fed on diets containing graded levels of maize cobs. A.T. Kanengoni, K. Dzama*, M. Chimonyo, J. Kusina, and E. Bhebhe, *University of Zimbabwe, Harare, Zimbabwe.*

A study was conducted to compare the digestibility of organic matter (OM), neutral detergent fibre (NDF), acid detergent fibre (ADF), nitrogen (N) and hemicellulose and nitrogen balance in Zimbabwean Mukota, Large White (LW)and their F1 crosses. Four male pigs of each breed, selected at 30 percent of their mature live weights, were sequentially allocated to each of four diets. The diets, which were formulated to contain similar levels of protein (ca. 160g CP/kg) and energy (ca. 9MJ ME/kg),

contained 0, 100, 200 and 300g maize cobs/kg. There was a negative correlation (P<0.001) between the digestibility of the nutrients and the level of NDF in the diet. There was a linear decrease (P<0.05)in the digestibility of OM, ADF and hemicellulose with increase in the level of fibre among all the breeds. The OM, ADF and hemicellulose digestibilities, however, decreased faster (P<0.05)in the LW than in the Mukota and F1 crosses as the level of maize cobs increased. Both breed and level of maize cobs had no effect on N digestibility, N retained per metabolic body weight and N retained per nitrogen intake (P>0.05). The findings showed that the Mukota and the F1 crosses were better able to digest the fibrous components than the LW. In addition, the Mukota and F1 crosses displayed an ability to retain protein to the same extent as the LW.

Key Words: Zimbabwean Mukota, Nitrogen balance, Digestibility

943   Present Status of the Heifer Project International-Cameroon Rabbit Program. S. D. Lukefahr*[1], H. I. Nkwocha[2], H. Njakoi[2], E. Tawah[2], J. M. Akob[2], F. A. Kongyu[2], and D. Gudahl[3], [1]*Texas A&M Univ.-Kingsville,* [2]*Heifer Project International, Bamenda, Cameroon,* [3]*Heifer Project International, Little Rock, AR.*

In the past five years, Heifer Project International (HPI) has distributed a minimum of 2,119 rabbits to 1,410 limited-resource families in 66 villages primarily located in the northwest province of Cameroon. However, these figures exclude thousands of additional farmers who received either direct or indirect assistance by HPI since project inception in 1982. HPI's approach towards poverty alleviation is to financially support a new rabbit project for farm families in a selected village for a period of three years. Technical follow-up support is then extended for an additional two years, after which time the anticipated self-sufficient project is formally phased-out. In 1999, accompanied by HPI field staff, the consultant (the first author of this abstract) visited a total of 48 farmers from 9 villages in the northwest province. On each farm, notes were taken which identified poor to good management-level practices, housing and feeding systems, as well as socio-economic aspects of the project. HPI progress reports and case studies conducted by student interns from University of Dschang were made available to supplement the consultant's notes in developing an evaluation report. Overall, production level of rabbit fryers presently appears to be low on farms (approximately 2.45 fryers are consumed and 2.61 fryers are sold per month). Further, income generation is a critical determinant of whether rabbits will continue to be regarded by farmers as a backyard livestock species for domestic use or as a commodity species for supplemental income. HPI could play a pivotal role in developing either local or formal market outlets for their surplus fryers. To date, the HPI-CAM rabbit program has improved family nutrition, enhanced community development and gender status in villages.

Key Words: Rabbits, International Programs, Development

944   Effects of World Bank prescribed economic structural adjustment on poultry production in Nigeria and policy suggestions for the improvement of the sector. A. A. Onifade*[1], F. A. Nasiru[2], O.T.F. Abanikannda[1], and F. Kudayah[2], [1]*Department of Animal Science, University of Ibadan,* [2]*Michael Stevens & Associates, 1 Tokan Street, Western Avenue, Surulere, P. O. Box 528, Apapa, Lagos.*

The World Bank advised the Nigerian Government to undertake structural adjustment (SAP) of the economy, and this was commenced in June 1986 and remained until early 1990. The economic reforms involved policy reforms such as exchange rate deregulation, trade reforms, tariffs restructuring, all of which affected the macroeconomic variables such

as inflation, interest rate, employment. A nationwide study was carried out to obtain primary data using stratified random questionnaire administration and structured interviews of small-scale and organized poultry farmers, and officials of Government livestock Departments. Additional data were sourced from secondary sources. The depreciation of the Nigerian currency caused spiraling inflation and volatile interest rates, which made cost of livestock inputs especially the imported components such as feed ingredients and medicaments to soar, access to credits became difficult, producer prices rose significantly, capacity utilization and demand for animal products fell drastically, and a general decline in poultry production was noticed from 1986. The ban on importation of corn and barley caused distortion in animal feed production and led to widespread closures of poultry production facilities. There was intra-sectoral shift with more farmers moved into egg production and meat-type poultry production was targeted at festivals. There was increased utilization of alternative feedstuffs especially by-products of oil mills and tuber processing. The establishment of private veterinary services increased, but farmers complained of low-quality services and products. Quality of feedstuffs and finished feeds in the market decreased forcing most medium producers to integrate feedmilling into their production. In conclusion, the economic adjustment in the main negatively impacts on poultry production, there was policy misjudgment in banning of corn, but increased utilization of alternative feedstuffs; increased custom feedmilling, vertical integration and intra-sectoral shifts and increased accessibility to veterinary services were recorded. Policy suggestions favored concretization of national policies on poultry production, nutrition, health, research and extension.

Key Words: Economic Adjustment Program, Poultry Production, Policy Suggestions

945   Comparing the economic power of the populations of European Community (EC) and North American Treaty Countries (NAT)-1999-2010, using per adult human unit (PAHU) versus per capita (PC). S. Hasimoglu*[1], [1]*Continental Analytical Services Inc., Salina, KS.*

At the beginning of the new millenium EC and NAT countries became strong economic competitors. As the 15-nation EC expands during the next 10 years, competition will continue to increase. The data gathered to evaluate food production and consumption has traditionally been presented on PC basis. The use of "per capita" rarely has been challenged. Presentation of the alternative PAHU system will, however, show "per capita" as inherently erroneous. The PAHU calculation method and obtained conversion factors for the age groups showed a 21.76 percentage units (PU)difference from PC calculations in the under 20-year-old age group in equally populated developed and developing countries. PC evaluation disregards not only the younger, but also the older portions of populations. The calculated, unintended, fault level is not less than 15.86 PU when compared to PAHU. In 1999, three NAT countries had 405 million PC population, calculated as 329 million PAHU. These three countries will reach 451 million PC,or 374 million PAHU in the year 2010. In 1999 NAT had 31 and 12 million higher PC and PAHU than EC countries respectively. EC (15-nation) during same time of period will have 374 million PC, or 317 million PAHU. Since EC going to expand in the next ten years to include 11 new applicant countries (an addition of 159 million PC, or 134 million PAHU), it will reach 533 million PC, or 445 million PAHU inhabitants. Planned as an integrated economic area with a single currency, it will be the largest organized agricultural trading, production and consumption power in the world. Since PAHU replaces the word "predict" with "measure", it will not only help better redesign economic relationships throughout the world, it will influence national and international direction of obtaining precise food consumption/production measurements aimed to create a nutrition monitoring system that will standardize all nutrition intake reporting done by various agencies of both developed and developing countries.

ASAS/ADSA Physiology: Male Physiology/Conceptus Development and Survival

946   The History of Artificial Insemination: Founders and Facts. R.H. Foote*, *Cornell University.*

This overview will cover briefly the relevant knowledge existing when intensive studies on artificial insemination (AI) began, the problems faced, and how these were overcome. Also, some of the people who made it happen will be identified. Emphasis will be on dairy cattle, but also

beef cattle, swine, horses, sheep, goats, poultry, laboratory animals, and endangered species will be included. There are many steps that are important in AI so that maximal fertility will result when sperm are transferred from the male at one time and place to a female in estrus elsewhere. These steps include: 1) understanding and exploiting each bull's sexual behavior; 2) providing an optimal schedule and place