

# International Animal Agriculture 1

**1099 Challenges for the Mexican animal industry.** M. Huerta-Bravo\*, R. Núñez-Domínguez, and R. Ramírez-Valverde, *Universidad Autónoma Chapingo, Chapingo, México.*

Livestock production challenges have worldwide impact due to globalized economies. The objective is to identify these challenges for the Mexican animal industry and to propose specific tasks for government, producers, and researchers to solve them. Statistical data and information about Mexican livestock was analyzed to identify challenges and define tasks. We must recognize that animals play an important and changing role for humankind since their domestication, and that they are providers of the most nutritive foods. Mexico faces a deficit in most animal products coupled with food consumption pattern favoring health problems such as iron and zinc deficiencies, obesity, and chronic-degenerative diseases. Population growth and income improvement will increase food deficit. Future animal production increases have several challenges: less agricultural land per capita, climate change, high economical and technological dependence on supplies for animal production, food security at risk due to poverty and low food sovereignty, conservation and sustainability of genetic diversity, use of arable land and grains to produce biogas, and low or less federal funds for animal production, research, and technological development. Government tasks include strategies to achieve food security and sovereignty, to provide healthier and nutritive foods from livestock, to increase efficiency of agricultural production systems, to convert animal wastes to products, to restore environment and to increase support for research and development. Producers should recognize that their well-being is a priority but depends on an efficient farm with animal welfare and minimum environmental impact. Researcher's tasks should focus on key elements that insure sustainability of production systems. Human values, faithful application of laws, and efficient administrators are key elements to achieve the well-being of our families.

**Key Words:** Mexico, animal industry, food security

**1100 Effect of varying dietary energy levels during last trimester of pregnancy on the performance of Sahiwal heifers.** M. Abdullah\*, M. Fiaz, M. E. Babar, J. A. Bhatti, T. N. Pasha, and M. A. Jabbar, *University of Veterinary and Animal Sciences, Lahore, Pakistan.*

To study the effect of feeding diets with different energy levels during the last trimester of pregnancy on the performance of Sahiwal heifers, 5-6 mo pregnant Sahiwal heifers (n=16) were assigned to four dietary treatments having 4 heifers on each treatment. Iso-nitrogenous (CP=14.1%) diets having varying energy, viz; A=100% (Control), B=88%, C=112% and D=124% of NRC recommended levels for pregnant heifers were fed to the respective groups until calving. After calving, all heifers were fed a similar diet having CP and energy level as recommended by NRC for lactating animals. Data were analyzed using ANOVA. Pre-calving weight gain was higher ( $P \leq 0.05$ ) in treatment C and D ( $486 \pm 13$  and  $497 \pm 05$  g/d, respectively) as compared to A and B. Heifers fed control diet (A) also had greater ADG ( $P \leq 0.05$ ) than those fed diet B ( $444 \pm 07$  vs.  $397 \pm 08$  g/d, respectively). A similar trend was observed in feed efficiency. Body condition score at calving in heifers fed diet-D ( $3.87 \pm 0.07$ ) was greater ( $P \leq 0.05$ ) than that of diets A ( $3.60 \pm 0.09$ ) and B ( $3.50 \pm 0.04$ ) whereas it was also greater ( $P \leq 0.05$ ) in heifers fed diet C ( $3.75 \pm 0.03$ ) than that of diet B. Birth weight of calves born from heifers fed different experimental diets did not differ. Daily milk yield

in heifers fed control diet was greater ( $5.87 \pm 0.06$  kg) than that of other diets, whereas, it was similar among diet C ( $4.68 \pm 0.10$  kg) and diet D ( $4.72 \pm 0.14$  kg) but lower in diet B ( $4.2 \pm 0.07$  kg) as compared to other experimental diets, whereas milk composition among animals fed different experimental diets did not differ ( $P \leq 0.05$ ). The performance of heifers fed only ad libitum green fodder kept under farm management in terms of weight gain ( $300 \pm 0.09$  g/d), BCS ( $3.12 \pm 0.12$ ) and milk yield ( $2.56 \pm 0.28$  kg/d) was lower than that of those fed experimental diets. It is concluded that feeding extra energy during the last trimester of pregnancy improved weight gain and body condition score but first lactation yield was optimum in heifers fed a diet having an energy level as per recommendations of NRC.

**Key Words:** dietary energy, milk yield, Sahiwal heifers

**1101 Development of the organic beef foodchain in the Mexican tropics—Eight years of experience.** P. Fajersson\*<sup>1</sup> and P. Parada<sup>2</sup>, <sup>1</sup>*Colegio de Postgraduados, Campus Veracruz, Veracruz, Veracruz, Mexico,* <sup>2</sup>*Carnes La Rumorosa, Poza Rica, Veracruz, Mexico.*

The global organic market, recently a niche market, is currently the fastest growing segment of the mainstream market. Mexico has a law for organic production and also regulations based on the European norms adapted to local conditions. Despite a 25% growth rate of the domestic organic food market during 2009, the products are mainly sold within the captured market, due to inadequate information to consumers and lack of marketing. In the state of Veracruz, a pioneer effort to develop the organic beef food chain, based on a strategic alliance between academia, cattle ranchers and an organic certification agency started in 2002. It was incorporated into The Gulf of Mexico States Accord in order to extend the project regionally. Twenty producers began their organic certification in 2002, guided by the academics and the certification agent. Two producers had previously conditioned their ranches to organic production and in 2003 obtained the certification of their foodchains. Mexico lack political backing of organic agriculture, but even so organic beef producers have managed to achieve a 15% added value to their products. After eight years, technical difficulties and increasing costs of production and postharvest processing have been overcome and the quality of the organic beef is excellent. An upscale restaurant in Veracruz organized a gourmet dinner with 50 invited expert guests, who gave the beef highest marks. The beef is sold to organic markets and stores, some with restaurants, in seven states. Producers have been slow to conclude their certification, which has led to the loss of three important international market opportunities; upscale restaurants and hotels in Scandinavia, Hong Kong and participation in a 12 million dollar beef business in Florida. This due to inability to comply with the quantities required on time. Producers and university students are the principal participants in training courses organized. The state of Chiapas has earmarked 130 000 dollars for an organic beef project, and in Campeche 130 producers are lined up to begin organic beef projects like the one in Veracruz. In conclusion, the impact of the project is growing steadily, but political endorsement and promotion are required to detonate the organic beef food chain in Mexico.

**Key Words:** organic beef, tropics, foodchain

**1102 Wool comfort factor variation in Australian crossbred sheep.** A. E. O. Malau-Aduli\* and D. J. Deng Akuoch, *School of Agricultural Science/TIAR, University of Tasmania, Hobart, Tasmania 7001, Australia.*

Comfort factor (CF) is defined as the percentage of wool fibers with diameter less than 30 microns. Our objective was to investigate the effects of sire genetics, nutrition, level of supplementation and gender and their interactions on CF in crossbred sheep either grazing or supplemented with dietary protein. Correlations between CF and other wool traits were also investigated. Texel, Coopworth, White Suffolk, East-Friesian and Dorset sires were mated with 500 Merino ewes at a ratio of 1:100 in individual paddocks. Five hundred of the crossbreds were raised on pasture until weaning at 12 weeks of age. Forty of the weaners with initial BW range of 23-31 kg (average of  $27 \pm 3.2$  kg) were fed with lupins or canola at 1 or 2% BW for 6 weeks in a  $5 \times 2 \times 2 \times 2$  factorial experimental design. CF and other wool quality traits were commercially measured at the Australian Wool Testing Authority. Data were analyzed in SAS using MIXED models procedures with sire fitted as a random effect, whereas sire breed, nutrition, supplement, level of supplementation and gender and their interactions were fitted as fixed effects. We found that neither supplement ( $P > 0.14$ ) nor level of supplementation ( $P > 0.16$ ) influenced CF which did not differ between pasture-fed and supplemented sheep. However, highly significant effects of sire breed ( $P < 0.01$ ), gender ( $P < 0.01$ ) and interactions between sire breed  $\times$  level of supplementation ( $P < 0.01$ ), sire breed  $\times$  gender ( $P < 0.03$ ) and supplement  $\times$  level of supplementation ( $P < 0.01$ ) on CF were detected. White Suffolk crosses had the highest CF ( $90.1 \pm 8.7\%$ ) and East-Friesian crosses the least ( $81.5 \pm 10.1\%$ ). Males fed canola at 1%BW had the highest CF ( $90.8 \pm 7.0\%$ ), while females fed lupins at 1%BW had the least ( $81.1 \pm 10.8$ ). White Suffolk sired males ranked the highest ( $91.1 \pm 10.5\%$ ) and East Friesian females the least ( $74.7 \pm 7.9\%$ ). CF was significantly correlated with fiber diameter ( $-0.89$ ), spinning fineness ( $-0.95$ ) and wool curvature (0.33). Our findings provide useful information to sheep farmers in crossbreeding dual purpose sheep that will also deliver desirable wool comfort outcomes to the fabric industry.

**Key Words:** wool comfort factor, pasture-fed sheep, protein supplements

**1103 Supplementation of Starbio probiotic and yeast on milk production and nutrient digestibility of lactating Holstein cows fed a ration containing cassava meal.** E. Sulistyowati\*, I. Badarina, and E. Soetrisno, *Animal Science Dept., College of Agriculture, University of Bengkulu (UNIB), Bengkulu, Indonesia.*

The aim of this research was to evaluate the effects of Starbio probiotic and yeast on milk production and nutrient digestibility of lactating Holstein fed a ration containing cassava meal in a rural area farm in Bengkulu, Indonesia. There were eight lactating Holstein Cows which were assigned in a replicated Latin Square ( $2 \times 4 \times 4$ ) to receive four treatments: basal diet of 65% field grass and 35% concentrate containing cassava meal, as control (SR0); basal diet + Starbio 1% of concentrate (SR1); basal diet + 20 g yeast (SR2); and basal diet + Starbio 1% of concentrate + 20 g yeast (SR3). The application was run for four 3-wk periods. Yeast supplementation (SR2) increased milk production ( $P < 0.05$ ) for as much as 2.13 kg/d, equivalent to 24.85%. The highest milk fat content (4.10%) was found with the combination of these probiotics (SR3). Nutrient (dry matter, organic matter, crude protein, fiber, and ether extract) consumptions and nutrient digestibility were not different ( $P > 0.05$ ) among treatments. However, digestibilities were relatively high, ranging from 80.93 to 85.55%. The most efficient ratio between dry matter intake and milk production was found in SR2 (1.64). In conclusion, yeast supplementation for as much as 20 g/d into a basal diet with 35% concentrate containing cassava meal resulted in the highest increase in milk production (2.13 kg/d) with slightly lower milk fat (4.05%), combined with the most efficient ratio of milk production and dry matter intake (1.64) in lactating Holstein cows.

**Key Words:** Starbio, yeast, milk production, nutrient digestibility, Holstein cows