1555 Effect of poultry litter applied as fertilizer on forage mineral concentrations. E. B. Rayburn, W. L. Shockey*, D. A. Seymour, B. D. Smith, T. J. Basden, and J. D. Lozier, *West Virginia University, Morgantown, WV.*

Mineral supplementation of grazing livestock is not precise because most pastures are not tested for mineral content, livestock are not fed individually, pasture fertilizer application varies, and pasture forage species are not constant. To improve the mineral supplementation for grazing livestock, an experiment was conducted at 4 locations to determine the effects of fertilizer treatment on pasture mineral content. Pastures received no fertilizer, commercial fertilizer applied at WV Soil Testing Laboratory recommendations, 4,480 kg poultry litter/ha, or 8,960 kg poultry litter/ha. Poultry litter increased (P<.05) P and K in grasses, legumes and broadleaf weeds; Ca and S in legumes; and Mo in grasses and legumes. Results suggest that phosphorus supplementation of cattle consuming forages fertilized with poultry litter could be reduced, but not eliminated. Copper concentration of forages fertilized with poultry litter did not increase (P>.05), even though poultry litter contained higher levels of Cu than standard commercial fertilizer. Increased concentrations of S and Mo indicate that Cu supplementation may be important for cattle that consume forage fertilized with poultry litter. Results show that poultry litter did not adversely affect forage mineral concentrations for grazing livestock and that mineral supplementation is a vital component of a pasture-based livestock production system.

Key Words: Pasture, Minerals, Livestock

1556 Forage pasture species selection and nitrogen fertilization rates. G. Cuomo, D.G. Johnson*, A. Singh, and M. Rudstrom, *University of Minnesota, Morris, MN.*

The objective was to identify forage species and dry urea nitrogen fertilization combinations for pastures to feed grazing dairy cows in the Midwest. Five species-fertilizer combinations were studied in a randomized complete block experiment with three replicates over three years. Combinations were Bromegrass with no N (B0N), Bromegrass with 56 kg/ha early N + 56 kg/ha late N (B56-56N), Bromegrass with 112 kg/ha early N (B112-0N), Bromegrass with 112 kg/ha late N (B0-112N), and Bromegrass with Legume and no nitrogen fertilization (BL). Early fertilization was before the first grazing of the year and late fertilization was after the second grazing. The pasture was organized in species strips 21m by 164 m with fertilization plots 21m by 14 m. Pastures were initially prepared by a glyphosate spray for weed control, fall moldboard plowing, spring disking and planting into a prepared seedbed. Bromegrass (Bounty) seeding rate was 667 seeds/m^2. Bromegrass-legume seeding rate (seeds/m^2) was Bromegrass (Bounty), 398; Alfalfa (Amerigraze421) , 108; Birdsfoot trefoil (Noreen), 215; and Kura Clover (Endura), 215. Pastures were grazed by lactating dairy cows 4-5 times per year for a 24 hr grazing period at a density of approximately 67 Mg/ha. Utilization of BL was approximately 50%, whereas utilization of B ranged from 29-35%. Intake was determined by difference of quantity of forage by clipping before and after grazing. Annual total intake varied by year (P=.02), and forage-fertilizer combination (P=.0001). Grazing pressure was restricted the first year to increase the probability of maintaining stand. Annual intakes (Mg/ha) were BON, 1.62; B56-56N, 2.02; B112-0N, 2.41; B0-112N, 2.29; and BL, 6.26. These results indicate that diverse mixes of legumes and bromegrass are more productive than bromegrass monoculture with or without supplemental nitrogen fertilization

Key Words: Pasture systems, Grass vs. legume pasture

International Animal Agriculture

1557 Transport of preimplantation embryos in the genitalia of buffalo heifers superovulated with pFSH and variable doses of LH. A.M. Osman* and S.H. Shehata, [1] *Dept. Theriogenology, Fac. Vet. Medicine, Assiut Univ. Assiut, Egypt.*

Twelve buffalo heifers of similar age (21-25 month) and body weight (325-385 kg) were superovulated during mid luteal phase using pFSH (total 65 NIH unit Super-Ov divided into 6 equal dose, 1.4 ml each, for 3 consecutive days) and lutalyse (25mg injected with the 5th injection). To improve ovarian response variable doses of LH(0,2,4,5,7 and 10 thousands USP unit, Steris, Lab. Inc Phoenix, Arizona) were injected at the morning of the 4th day of the treatment in 6 trials (n=2). Fertile bulls were allowed to mount heifers frequently after 24hour (h) from onset of estrus. Heifers were classified into 3 equal groups (2 trials/each) which slaughtered at various time intervals from the onset of estrus: 72-89, 100-106 and 118-120 (h). After slaughter, the intact genitalia were dissected free and transported to the lab in a thermos container at 4C. The number of newly formed corpora lutea (CL) and unovulated, >1cm,follicles (UF) in both ovaries were done. Flushings of the oviduct and uterine horn were performed separately using phosphate buffer saline to identify the numbers and locations of embryos. The duration of estrus(h),numbers of CL and UF were 41.5 11.2, 3.11.3 and 1.10.76 respectively. The overall ovulation and embryo recovery rates were 72.5 and 54% respectively. Group without LH gave low response (50 and 0% respectively). The higher ovulation rate(66-100%) were recorded for heifers supplemented with 4000 and more unit LH while the higher embryo recovery rates (50-100%) were associated with the doses of 4000-7000 unit LH. At 72-89h postoestrus (48-65h postinsemination) 6 embryos were collected from the oviducts and one embryo from the uterus. Some non-motile spermatozoa were observed in the oviduct. At 100-106 and 118-120 h postoestrus (76-82 and 94-96 h postinsemination)7 and 6 embryos were recovered respectively from the uterus. The rate of embryo transport in the oviduct of superovulated buffalo heifers appeared to be 30 h and more faster than in buffalo or bovine cows.

Key Words: buffalo heifer, superovulation, embryo

1558 Factors affecting the reproductive performance of Bali cattle in Manokwari, Papua, Indonesia. O.R. Faidban[1], J.B. Gaughan*[2], and R.S. Copland[2], [1] *The Papua State University, Manokwari, Papua Province, Indonesia,* [2] *The University of Queensland, Gatton, Australia.*

Poor reproductive performance of cattle is a problem in many developing countries. The major objective of this study was to characterize the reproductive performance of Bali cows (n=336) based upon nutritional management practices where the cattle were (i) grazing (G), (ii) were tethered in paddock during day, tethered at the farmers house at night with grass cut and carried at night (PZ), and (iii) had zero grazing, with all feed supplied to tethered animals via cut and carry (Z). A second objective was to determine the major factors which influence the reproductive performance of these animals. Cattle were identified using ear tags or neck collars (prior to the study most animals had no identification), aged (using their teeth) into groups (1.5 # 3 years of age; 3.5 # 5; 5.5 # 7; > 7 years of age), body condition scored (BCS; 1 # 5; 1 # emancipated, 2 # lean, 3 # medium, 4 # fat, 5 # very fat), and reproductive status assessed (lactating, pregnant or not pregnant, ovarian activity or no activity). The data were collected three times (March, July and October) over a 9-mo period. Data were analyzed using SAS. Over the period the mean pregnancy rate across all treatments was 57%. There were no measured seasonal effects on pregnancy rate. Cows that were over 7 years of age (n=25) had a higher (P<.01) pregnancy rate (74%) compared to those aged 1.5 # 3 years of age (37%) (n=25). The majority of cows had a BCS of either 2 (n=162) or 3 (n=128). Five cows had a BCS of 5 (very fat) and 10 cows had a BCS of 1 (emancipated). Pregnancy rates increased (P<.05) as BCS increased (37%, 50%, 64%, 73%, 63% respectively for BCS 1 # 5). Over the 9-mo period, 84% of the P cows, 92% of the PZ cows and 78% of the Z cows were either pregnant, lactating or cycling at one of the three data collections. However, the feeding system had a significant (P<.05) effect on pregnancy rate, with the Z cows averaging 30% pregnancy over the 9-mo period compared to 58% for the G group and 57% for the PZ cows.

Key Words: Beef cattle, Reproduction

1559 Survey of milking characteristics and milk quality of Brazilian dairy cows. D. A. Costa* and D.J. Reinemann, *University of Wisconsin, Madison, Wisconsin, USA.*

Brazil has the second largest dairy herd in the world and most Brazilian dairy herds are made up of crossbred cows (mainly Holstein crossed with Indian breeds such as Zebu and Gir). A survey tool was developed to gather information on current milking, breeding and general management practices and the decision-making framework used by Brazilian dairy farmers. This opinion survey was administered to 135 dairy producers at a major agricultural exposition in April 2001. Of the 52% of producers who wanted to increase the percentage of Holstein genetics of their herd the main reason given was to obtain higher production. For the producers who did not wish to increase their herd Holstein percentage the main reason was that crossbred cows were thought to be more resistant to diseases and more adapted to hot climate and pasture as principal source of food. About 2/3 of producers reported using calves for pre-milking stimulation. A field survey was carried out on 5 farms in Brazil between May and June of 2001 to study the milking characteristics of different crossbred cows (1/2, 3/4 and 7/8 Holsteins) and the effect of using calves for pre-milking stimulation of crossbred cows. During one morning milking, the milk yield of individual cows was recorded in one-minute intervals using milk meters. Total yield, average flow rate, peak flow rate, milking time and occurrence of overmilking were recorded. Other characteristics were also observed such as milking practices, cleanliness of the teats and teat score of some cows. Milk samples were collected and Somatic Cell Count (SCC) measured. Our results suggest that the influence of calf suckling on milking performance is minimal. The peak milk flow rate of typical crossbred Brazilian cows is substantially lower than for purebred Holstein cows in the USA and Europe. Increasing Holstein genetics from 1/2 to 3/4 showed a moderate increase in milk production and increase in SCC. The differences in milk production and SCC between 3/4 and 7/8 Holstein were not significant. The farmers? perception that crossbred cows have lower production and more resistance to mastitis appears justified.

Key Words: Brazilian dairy cows, milking characteristics, crossbred cows

1560 Ectoparasite control in lactating cows using aqueous extracts of Neem (*Azadirachta Indica* A. Juss) leaves. S. Pietrosemoli*, R. Olavez, and K. Noriega, *Facultad de Agronomia. La Universidad del Zulia. Maracaibo/Venezuela.*

Twenty-four crossbreed Brahman, Brown Swiss and Holstein cows (avg BW: 475 ± 75 kg) from a commercial production unit located in the tropical dry forest of the state Zulia, Venezuela were used to determine the potential of aqueous extracts of neem (*Azadirachta indica* A. Juss) leaves to control ectoparasites. Four treatment were evaluated (**T0**) Control, (**T1**) 150 g of leaves of Neem/L water, (**T2**) 300 g of leaves of Neem/L water; (**T3**) 25 g of Deltamethrin. Aqueous extracts were prepared with freshlyground leaves and soaked in water for 12 h before being filtered. The experimental design was a split plot, with treatments as main plots, and day of parasite counts as split plots. Treatments were applied topically in a single application. The number of ticks (*Boophilus microplus*) was determined using a 10 x 7 cm plastic pattern placed in the perineal area of the animal. A videocamera was used to calculate fly (*Hamaetobia irritans*) counts in a defined rectangle located on the right side of the animal. Ticks and fly counts were determined before, and 7, 14, 21 and 28 d after the application of the treatments. Data were Log transformed as **Log (n+1)** and initial infestation (20.8 ticks/cow and 17.2 flies/cow) was used as a covariable. Differences were observed for ticks among treatments ($P < .001$) and days ($P < .001$). Treatment **T2** (300 g/L), differed from others treatments ($P < .001$, $P < .001$ and $P < .001$,), for **T0, T1** and **T3** respectively; and caused a 64.8% reduction of the number of ticks compared to **T0**. Fly counts did not differ among treatments. Nevertheless, **T2** had a tendency to reduce fly infestation. The use of 300 g/L aqueous extracts of Neem leaves reduced tick infestation in grazing cows.

Percentage reduction of number of ticks, compared to control in lactating cows treated with aqueous extract of neem, *Azadirachta indica* A. Juss, Leaves.

Treatment	g/L water	% Reduction
T1	150	- 6.6
T2	300	64.8
T3	25	-22.6

Key Words: *Azadirachta indica*, Ectoparasites, Bovine

1561 Coccidiosis (*Eimeria* sp) control in calves using aqueous extract of neem (*Azadirachta indica* A. Juss) Seeds. S. Pietrosemoli*[1], R. Olavez[1], C. Plaza[1], and Z. Valera[2], [1]*Facultad de Agronomia., [2]Facultad de Ciencias Veterinarias. La Universidad del Zulia. Maracaibo/Venezuela.*

Sixteen crossbreed Brahman, Brown Swiss and Holstein calves (22 ± 9 d old, avg BW of 38 ± 8 kg) from a commercial production unit located in the tropical dry forest of the state Zulia, Venezuela, were used. The objective was to evaluate the effect of different doses of an aqueous extract of Neem (*Azadirachta indica* A Juss) seeds, (**AENS**), on the number of oocyst per gram of faeces (**OPG**) in grazing calves. Calves were fed 2 L of milk and 2 kg of a commercial concentrate (16 % CP) daily. The **AENS** was prepared with 60 g of ground dry neem seed/L of water soaked for 12 h before being filtered. Four doses of the aqueous extract were tested: 0 (**T0**), 10 (**T1**), 20 (**T2**) and 30 (**T3**) cc/kg calf BW. The treatments were drenched orally in a single application. No adverse reaction was observed. The **OPG** was determined using a modified McMaster procedure. Coccidia counts were made before drenching the calves with **AENS** and 7, 14, 21 and 28 d thereafter. The experimental design was a split plot, with treatments as main plots and days of parasite counts as split plot. Data were Log transformed as Log (n+1). Initial infestation was used as covariable. Differences were observed between **T0** and **T1** ($P < .01$), and **T0** and **T2** ($P < .002$). Differences between **T2** and **T3** ($P < .0353$) were also observed. The greatest reduction in **OPG** values were observed with **T2**. Treating calves with 20 cc/kg BW of **AENS** decreased coccidia infestation.

Percentage reduction of number of oocyst g^{-1} of faeces, compared to control in calves treated with aqueous extract of neem, *Azadirachta indica*, seeds.

Treatment	cc AENS/kg BW	% Reduction
T1	10	36.6
T2	20	97.3
T3	30	48.8

Key Words: *Azadirachta indica*, Coccidiosis, Calves

1562 Coccidiosis (*Eimeria* sp) control in grazing calves using aqueous extract of neem (*Azadirachta indica* A. Juss) leaves. S. Pietrosemoli*[1], R. Olavez[1], C. Plaza[1], and Z. Valera[2], [1]*Facultad de Agronomia., [2]Facultad de Ciencias Veterinarias. La Universidad del Zulia. Maracaibo/Venezuela.*

Sixteen crossbreed Brahman, Brown Swiss and Holstein calves (43 ± 8 d old, avg BW of 47 ± 6 kg) from a commercial production unit located in the tropical dry forest of the state Zulia, Venezuela, were used. The objective was to evaluate the effect of different doses of an aqueous extract of neem (*Azadirachta indica* A Juss) leaves (**AENL**), on the number of oocyst per gram of faeces (**OPG**), in calves grazing *Brachiaria humidicola*. Animals were fed 2 L of milk and 1 kg of a commercial concentrated (16 %CP) daily. The **AENL** was prepared with 150 g of freshly ground leaves of neem/L of water soaked for 12 h before being filtered. Four doses of the aqueous extract were tested: 0 (**T0**), 10 (**T1**), 20 (**T2**) and 30 (**T3**) cc/kg calf BW. The treatments were drenched orally in a single application. No adverse reaction was observed. The **OPG** was determined using a modified McMaster procedure. Coccidia counts were made before drenching the calves with **AENL** and 7, 14, 21 and 28 d thereafter. The experimental design was a split plot, with treatments as main plots and days of parasite counts as split plot. Data were Log transformed as Log (n+1). Initial infestation, 5462 oocyst g^{-1}, was used as covariable. Differences among treatments ($P < .014$) and days ($P < .031$) were observed; **T0** control, differed from other treatments ($P < .092$; $P < .002$ and $P < .031$) for **T1**, **T2** and **T3** respectevely. **T2** and **T3** presented differences ($P < .035$). The greatest reduction in **OPG** values were found with **T2**. Treating calves with 20 cc/kg BW of **AENL** decreased coccidia infestation.

Percentage reduction of number of oocyst g^{-1} of faeces, compared to control in calves treated with Aqueous Extract of Neem, *Azadirachta indica*, Leaves.

Treatment	cc/kg BW	% Reduction
T1	10	64.2
T2	20	83.7
T3	30	57.2

Key Words: *Azadirachta indica*, Coccidiosis, Calves

1563 Use of Prickly Pear forage in sheep diets. I. Mejia-Haro*[1], I.B. Camarillo-Solis[1], J. Mejia-Haro[2], and J.T. Frias-Hernandez[2], [1]*CIGA ITA de Aguascalientes, Mexico,* [2]*Universidad de Guanajuato, Mexico.*

In Mexico, the use of grains in sheep diets is expensive, an alternative is the use of native forages in combination with grain byproducts. Prickly pear forage used in sheep diets may be useful. Prickly pear forage is found in native and cultivated arid and semiarid regions of Mexico. Although the protein and phosphorus content of this forage is low, the energy value is acceptable (2.6 Mcal/ kg of DE) and the calcium content and DMD are high. The objective of this study was to evaluate the inclusion of prickly pear forage in sheep diets. This study was carried out in the CIGA-ITA of Aguascalientes, Mexico in 2001. Twenty-four male sheep (BW 29.9 kg) of mixed crossed breed (Dorset, Suffolk and Rambouillet) were completely randomized and assigned to one of four treatments (inclusion of dehydrated Prickly pear in diet) ; T0, inclusion of 0% ; T20, 20%; T30, 30% and T40, 40%. The diets were formulated with 14 % of CP. Sheep were adapted to diets for 14 d, fed ad libitum during an experimental period of 62 d and weighed twice. Feed intake, feed efficiency and ADG were recorded. Feed samples were processed for DM, CP, NDF, ADF, and in situ DMD. Data were analyzed by ANOVA and Tukey tests by using the GLM procedure of SAS (1996). No significant differences ($P > .05$) were observed among treatments in ADG, the values were: T0 (222g), T20 (236 g), T30 (213 g), and T40 (253 g). Also no differences were found in values of DMD among treatments (T0,86%; T20,86%; T30,85%; T40,85%). The values of feed efficiency were: 4.6, 4.7. 5.7 and 4.6 for T0, T20, T30, and T40, respectively. In this study it was demonstrated that using 20, 30 and 40% of prickly pear in sheep diets the ADG obtained is similar to those using grains. It is important to consider the nutrient requirements of sheep for weight gain when prickly pear diets are fed although this forage most of the times is used for maintenance. Using diets with 20, 30 and 40% of prickly pear in sheep the average daily gains are like to those using grains.

Key Words: Forage, Diets, Sheep

1564 Effects of fibrolytic enzymes on degradation of Prickly pear forage (Opuntia ficus-indica L.(Mill). M. A. Medina-Romo[1], C. R. Cruz-Vazquez[1], I. Mejia-Haro[1], G. Tirado-Estrada*[1], and G. D. Mendoza-Martinez[2], [1]*CIGA ITA de Aguascalientes, Mexico,* [2]*Colegio de Posgraduados, Texcoco, Mexico.*

The objective of this study was to evaluate the effects of Prickly pear forage (PPF) treatment with exogenous fibrolytic enzymes (fibrozyme) on processes *in vitro* and *in situ* digestion and ruminal fermentation. Three experimental phases were conducted: Phase I. Previous digestion (pre-digestion; 24 h) and *in vitro* digestibility (48 h). Phase II. *In situ* digestibility (24 h). Phase III. Ruminal fermentation patterns. In phase I the effects of the level of the enzyme (E) were evaluated: 0 (control), 1.5 and 3 g /kg DM, with three application methods of the enzyme: 1) dry (DE); 2) dry + 250 ml of water (DE+W); 3) in a solution of 500 ml of water (SE). In Phase II, four E levels were used: 0, 1, 2 and 3 g /kg of DM, two treatment times of the PPF (0 h = T0 h and 24 h = T24 h), and two forage:concentrate ratios, one with 82:18 (DI), and the other with 73:27 (DII) (4x2x2). In Phase III, the effects of the four enzyme levels on digestibility were evaluated on six sampling times 0, 3, 6, 9, 12 and 24 h (4x6) after the application of the enzyme. During the pre-digestion phase the treatments affected neither the NDF nor the ADF disappearance. Treatments did not affect *in vitro* digestibility of DM (IVDMD). No effects were observed ($P > .05$) on the E levels on *in situ* DM digestibility and NDF, but DI surpassed to DII and T0 h surpassed to the T24 h in both variables ($P < .05$). The greatest concentrations of total VFA, acetate, propionate, and butyrate were obtained with 1 and 3 g of E at 3 and 9 h of sampling ($P < 0.05$). The highest concentrations of N-NH4 were reached with 1 and 2 g of E at 3 h ($P < 0.05$). Results indicate that exogenous fibrolytic enzymes promote intra-ruminal changes in the fermentation process of PPF, but a more complete study is required.

Key Words: Fibrolytic enzymes, Forage, Prickly pear

Nonruminant Nutrition
Antimicrobial Agents, Additives, and Fermentation Modulators

1565 Zinc oxide and avilamycin enhance pig performance. L. J. Broom[1], H. M. Miller*[1], K. G. Kerr[1], and P. Toplis[2], [1]*University of Leeds, Leeds, UK,* [2]*Primary Diets Ltd, Melmerby, UK.*

Concern regarding antibiotic resistance and environmental pollution is likely to result in the elimination of antibiotic growth promoters (AGPs) and zinc oxide from EU pig diets. This experiment aimed to investigate what effect removing both avilamycin (AGP) and zinc oxide from the post-weaning diet would have on weaned piglet growth performance. Fifty two piglets (62.5% Large White, 25% Landrace, 12.5% Duroc) were weaned, at 21.2 0.30 days of age (SEM) and 6.9 0.16 kg BW, into commercial flatdeck accommodation. Six or 7 piglets were allocated to each pen (1.99 m^2) on the basis of weight, litter and sex. Four pens were randomly allocated to one of 2 treatments. Treatments were: 1) Control - no supplementation, and 2) ZnO+ - supplemented with 0.31% ZnO and .004% avilamycin. Diets were formulated to contain 4,167 kcal DE/kg, 1.75% total lysine in Wk1, and 3,810 kcal DE/kg, 1.6% total lysine in Wk2 and 3. Thereafter, pigs received the same diets. Feed and water were provided *ad libitum*. From d20 pigs were housed in conventional grower-finisher accommodation. Piglets were weighed on d0, 20 and 118 post-weaning. Daily FI per pen was recorded from d0 to 20. Faecal samples were taken on d0 and 19 to determine total bacterial count. Data were analysed using the GLM procedure of Minitab 12.2. From d1-20, ZnO+ piglets ate more ($P < 0.01$), grew faster ($P < 0.001$) and had better FCR ($P < 0.05$) than Control piglets. ZnO+ piglets were heavier than Control pigs by d20 post-weaning (13.0 vs 11.7 kg, $P < 0.001$) and numerically heavier at slaughter (82.4 vs 79.3 kg). ZnO+ pigs had a lower total faecal bacterial count than the Control pigs on d19 (4.43×10^7 vs 1.69×10^8 colony forming units/g, $P < 0.05$). Omission of ZnO and avilamycin from the post-weaning diet reduced pig performance and increased days to slaughter at a specific weight.

Key Words: Zinc oxide, Avilamycin, Piglet growth

1566 Effect of dietary supplementation of probiotcs (Calsporin^{TM}) on sow and litter performance. Q. Yang*[1], S.K. Baidoo[1], R.D. Walker[1], T. Marubashi[2], and T. Imabayashi[2], [1]*Southern Research and Outreach Center, University of Minnesota, MN 56093,* [2]*Calpis USA Inc., Torrance, CA 90503.*

The study was designed to determine the effects of dietary supplementation of Calsporin^{TM} (probiotic) on sow, litter performance and microflora changes in the feces of sows. Fifty-two cross-bred sows were divided into 2 groups that were fed either a corn-soybean meal based diet or the basal diet supplemented with 0.1% Calsporin from d 80 of gestation until farrowing. After farrowing the concentration of Calsporin was reduced to 0.01% in lactation diets. The sows were on the same dietary treatments in lactation as in gestation. The sows were restricted fed (1%BW+500gms) and ad lib fed during lactation of a corn-soybean meal based diet. The results indicated that Calsporin had no effect ($P > 0.05$) on sow body weight changes and backfat thickness during gestation, litter size, average feed intake, and body weight changes during lactation. The total number of pigs born and weaned was not influenced by dietary treatment. The average daily gain (ADG) of piglets from sows fed Calsprorin diet during gestation and lactation was 214.0g, which was significantly greater ($P < 0.05$) than 200.4g of the piglets from sows fed control diet. The number of Clostridium perfringens in the feces of Calsporin fed sows was less ($P < 0.05$) than in the feces of the control fed sows (6.13 log vs 7.13 log, CFU/g feces). The number of Bifidobacterium in the feces of Calsporin fed sows was higher ($P < 0.05$) than that of control the group fed sows (8.56 log vs 7.27 log, CFU/g feces). The number of total anaerobic bacteria in the feces of piglets from the sows fed Calsporin diet was less ($P < 0.058$) than in the feces of piglets from the sows fed control diet (9.54 log vs 10.22 log, CFU/g feces). In summary, Calsporin could improve body weight gain of the sulking piglets and increase the number of Bifidobacterium in sows during gestation and lactation.

Key Words: Sow and pigs, Probiotic, Performance and microflora