

litter (42%); some farms used both. Wastewater concerns led to water restriction on 12% of farms. In conclusion, parasites and suboptimal feeding are constraints on pig growth and performance. Management recommendations to improve production should address these, in addition to improving health and genetics.

**Key Words:** Swine Health, Swine Management, American Samoa

---

**PSXIII-23 Facilitating Smallholder Dairy Farmers entry into the Value Chain.** J. McCormack, *Winrock International, Leesburg, VA, United States*

This paper examines a case study in Uzbekistan in facilitating linkage of smallholder dairy farmers into the market system. With the breakup of the former Soviet Union, a transition from a central planned economy to a more open free market economy and the subsequent transfer of state ownership of Agricultural enterprises (Kolkhozy, Sovkhozy) to the private sector, which resulted in the formation of many smallholder farmers (Dehkan farmers). Many households who were former employees of these state-run enterprises, now found themselves as smallholder farmers, allocated with small land plots. Frequently these land plots were highly fragmented and not conducive to mechanization. Smallholders struggled to enter the commercial market system, finding themselves operating between marginal producers and transitioning to commercial orientated production. They struggled to procure reliable input supply, gain market access, achieve economy of scale of production. Yet in many of the former Soviet satellite states these new smallholders account for majority of dairy livestock owners and a significant volume of dairy production. In Uzbekistan, the livestock sector contributes about 40% of the Agriculture GDP mostly from 4.7 million Dehkan farms (2015), who on average own's 95% of cattle and 83% of small ruminants and account for 96% of milk production. Milk yields average 1800kg per lactation. Dairy processing, both small scale and large scale have struggled to secure adequate supply of quality milk. This paper examines a case study in which smallholders have undergone transition, through cooperation, leveraging private sector investment and public and private sector service delivery and achieving greater economy of scale by collaborating in the establishment of village level milk collection centers, adoption of technology, utilization and uptake of advisory and extension services and adoption of small scale cottage industry development in added value of milk and milk products and gaining entrance into the market system.

**Key Words:** dairy, central planned economy, open market economy, dehkan farms, small-holder, milk collection centers, advisory and extension services, case study

---

**PSXIII-31 Effects of protein levels on guinea pig on growth performance, nitrogen utilization, and nutritional composition of meat by guinea pigs.** M. Araujo<sup>1</sup>, A. Molina<sup>1</sup>, P. Falconi<sup>1</sup>, C. Ponce<sup>2</sup>, <sup>1</sup>*Universidad de las Fuerzas Armadas-ESPE, Latacunga, Ecuador*, <sup>2</sup>*Universidad San Francisco de Quito, Quito, Ecuador*

The objective of this study was to evaluate the effects of crude protein level on growth performance, nitrogen utilization, and nutritional composition of meat by guinea pigs. Ninety-one guinea pigs (BW= 499.6 ± 52.9 g) were randomly distributed on 32 pens (2 to 4 animals/pen), creating 8 weighing blocks. Animals were fed during 56 d, 1 of 4 experimental diets containing 15, 16, 17 or 18% crude protein (Source: Soybean meal). Performance variables were recorded on a weekly intervals. At d 50, total fecal samples were collected during 5-d to determine N digestibility. At the end of the feeding period animals were slaughtered and muscle samples were collected to evaluate amino-acid content. Data were analyzed using the mixed procedures of SAS as completely randomized block design. Performance parameters (i.e. ADG, feed intake and feed efficiency) were not affected by the level of protein (P>0.170). Similarly, final BW, carcass weight, and dressing percent were not altered by protein level (P>0.147). Nitrogen intake increased as protein level increased on the diet (Linear: P=0.035). However, Protein digestibility was not affected by dietary treatment (P=0.149). True Protein and Lysine concentrations on muscle were increased as protein increased on the diet (Linear: P < 0.05). Results from this experiment suggest limited effect of protein level at the range studied on performance and Nutrient digestibility. Increased value of Protein and amino acid suggested greater accretion of amino acids by the animal, however, further validation and research are required.

**Key Words:** Guinea pig, Performance, Protein level

---

**PSXIII-32 Effects of implementing a semi-stall-fed production system on goat kid survival and farmer adoption in Western Odisha.** M. Valentine<sup>1</sup>, K. McRoberts<sup>2</sup>, M. Thonney<sup>2</sup>, D. Cherney<sup>2</sup>, <sup>1</sup>*Cornell University, Freeville, NY, United States*, <sup>2</sup>*Cornell University, Ithaca, NY, United States*

Reproduced with permission of copyright owner. Further reproduction prohibited without permission.