Evaluation of water spinach as a protein source for Ba Xuyen and Large White sows

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Determination of the intake and the apparent digestibility of fresh chopped and whole water spinach (WS) by pregnant sows

Abstract

Two on-station trials and a feeding experiment were conducted at the experimental pig farm, Can Tho University, to determine the intake and the apparent digestibility of fresh chopped and whole water spinach (WS) by pregnant sows. The effect on reproductive performance of feeding WS to local Ba Xuyen and Large White sows was also evaluated. The first (intake) trial included 6 multi-parity local Ba Xuyen and 6 Large White sows. The sows were mated by AI with the same Large White boar. The trial was designed as 3 multiple Latin Squares with two diets for each breed as follows: 1 kg DM concentrate/day plus whole water spinach (WWS) *ad libitum* ; 1 kg DM concentrate/day plus chopped water spinach (CWS) *ad libitum* .

For the Large White and Ba Xuyen sows, respectively, results were: fresh WS intake per sow/day, 7.3 and 6.1 kg (604 and 504 g DM) and % of DM intake from WS 37.6 and 33.4 % (P<0.01). Consumption of fresh CWS and WWS by pregnant sows was 6.9 and 6.4 kg/sow/day, respectively (DM intake 575 and 533 g/sow/day, respectively) and % of DM intake from WS 36.4 and 34.7 % (P<0.01) for CWS and WWS, respectively.

The digestibility trial included 3 local Ba Xuyen and 3 Large White sows in the first month of pregnancy, kept in individual cages and was a two-way random complete design with breed of sow as one factor and diet as the other factor. Each breed was given 3 diets in a 3*3 Latin Square design. The experimental diets were as follows: Ba Xuyen sows: 1.7 kg DM/day of a control diet (a concentrate based on local feed resources); 1.1 kg DM/day of the control diet plus 0.5 kg DM whole water spinach (WWS); 1.1 kg DM/day of the control diet plus 0.5 kg DM chopped water spinach (CWS). Large White sows: 2 kg DM/day of the control diet; 1.3 kg DM/day of the control diet plus 0.6 kg DM WWS; 1.3 kg DM/day of the control diet plus 0.6 kg DM CWS.

Apparent digestibility (%) of WS was calculated by the difference method, and for pregnant Large White and Ba Xuyen sows of fresh CWS and WWS , respectively, was 77.7 and 65.1% for DM and 77.9 and 73.8 % for CP (P<0.01). The apparent digestibility (%) for CWS and WWS diets, respectively, was for dry matter (DM) 68.4 and 60.0, organic matter (OM) 76.0 and 71.5, crude fibre (CF) 71.6 and 70.8 and for nitrogen free extract (NFE) 91.3 and 85.6 (P<0.01).

The reproduction experiment included 6 Large White and 6 Ba Xuyen sows, and was designed as a 2*2 factorial with two breeds and two diets: Gestation period for Ba Xuyen: 1.7 kg DM daily of a control diet based on local feed resources; 1.1 kg DM/day of the control diet plus 0.5kg DM of CWS; Gestation period for Large White: 2 kg DM/day of the control diet; 1.3 kg

DM/day of the control diet plus 0.6kg DM of CWS. In lactation the same concentrate was given as in gestation, the daily amounts depending on litter size. Between 4-6 kg (fresh weight) of WS was given to the sows on the experimental diet.

The total litter weights at birth and at weaning were higher (P<0.05) for CWS sows. Total feed DM/kg piglet at birth, at 21 days and at 35 days were lower (P<0.05) for the CWS sows. The gross weight gain of the sows in pregnancy for the control group was lower (P<0.05) than for the CWS diet. The weight loss during the lactation period was 10.3 % for the control diet and 12.0 % (NS) for the CWS diet. Mean piglet live weight at birth was 1.4 vs 1.0 kg, total litter weight 14.0 vs 9.5 kg and total feed DM/kg piglet 13.3 vs 16.8 (P<0.01) for the Large White and Ba Xuyen sows, respectively. The average gross gain in gestation of Large White sows was higher (P<0.01), but weight loss in lactation was higher (P<0.01) compared with the Ba Xuyen sows.

Key words:
 Apparent digestibility, intake, piglet, reproductive performance, water spinach, sow breed

Le Thi Men, Brian Ogle*, Vo Van Son and T R Preston**

Department of Animal Science, College of Agriculture, Can Tho University, Vietnam

  ltmen@ctu.edu.vn

 * Swedish University of Agricultural Sciences, Department of Animal Nutrition and Management, PO Box 7024, 750 07 Uppsala, Sweden

 ** TOSOLY, AA48 Socorro, Colombia

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