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**Boar growth traits and auction price related to sperm flow cytometry measurements**

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Pork has been the major item of domestic meat consumption in Taiwan with 34 kg per capita consumption accounting for about 46% of total meat (including red meat and poultry) consumption. About 85% of pigs are LYD hybrid hogs in which they are progeny from hybrid sows of Landrace and Yorkshire with Duroc terminal sire. Male related traits at 180–225 days of age for 7,455 grow-finish performance tested-off Duroc, Landrace and Yorkshire breed boars in Taiwan were measured from 2000 to 2018. Sperm flow cytometry measurements of semen collected at 270-300 days of age for 2,306 boars were conducted from 2011 to 2018. Sperm quality assay by flow cytometry measurements are to measure physiological functions of sperm for insights in the fertilization potential of liquid semen in breeding farms. Sperm viability, acrosome integrity, mitochondria integrity, calcium level, chromosomal DNA fragmentation, oxidation level, and bacterial counts of each semen sample with 5,000 sperm were detected by IMV Easycyte. The highest counts of total sperm per collection in Duroc, Landrace and Yorkshire boars were 155, 233 and 118 billion, respectively. Auction price of each boar was started from 15,000 TWD (30 TWD = 1 USD) for sale and ended with the highest price to call in an electronic push button auction system. Heritability estimates and genetic correlations among average daily gain, feed efficiency, back fat thickness, teat counts, mounting libido, leg locomotion, penile length, sperm motility, sperm concentration, total sperm counts, and sperm cytometry measurements were estimated by VCE software using multiple traits animal model in each breed. Growth tested-off boars had heritability estimates of male reproductive traits in 0.12~0.20 of libido, 0.08~0.12 of leg locomotion, 0.17~0.58 of penile length, 0.04~0.21 of sperm motility and concentration, 0.17~0.30 of total sperm counts and cytometry measurements. Total sperm counts and sperm mitochondria integrity were genetically positively correlated with penile length in all breeds. Boars with a higher total sperm counts and acrosome integrity had genetically better libido and locomotion. Auction price of young boar was correlated to growth traits more than male traits. Sperm quality assay on boar semen collected at hot and humid season had more chromosomal DNA fragmentation and higher oxidation level. Male reproductive traits and sperm flow cytometry measurements could be improved with care of the change of growth traits and seasonal depression especially in tropical region.

**Keywords**: boar, growth, male trait, sperm, tropics