

# The potential use of the Belgian Landrace and Pietrain breeds in Thailand.

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## Summary

*Pig breeding is an important sector of the Thai Agriculture and Thailand could become a leading exporter of pigs and pork products. Large scale units are numerous; they grow pigs, sell the feed and piglets to small farms. To improve the productive and reproductive traits, crossbreeding is a common practice and due to the development of a conformation scale, a financial advantage is observed for pigs of higher quality. Due to their frequency of high conformation grades, Piétrain and Belgian Landrace are to be recommended in a national pig breeding program in Thailand.*

## Sommaire

*L'élevage du porc est un des secteurs les plus importants de l'Agriculture thaïlandaise et ce pays pourrait devenir un des plus grands exportateurs de porcs.*

*Pour améliorer les caractères de production et de reproduction, le croisement est la technique d'élevage la plus répandue et, en raison de la présence d'une échelle de conformation, un avantage financier est observé pour les porcs de qualité. Pour cette raison, le Piétrain et le Landrace Belge doivent être pris en considération dans le programme national de l'élevage en Thaïlande.*

## Pig breeding in Thailand

Pig production is an important sector of the Thai Agriculture. During the 1970's and the 1980's pig production performances increased significantly. In 1984 with more than 4.5 million pigs, the country could become a leading exporter of pork products.

Most of pig farms are concentrated in the central part of Thailand and mainly in the Nakhorn Pathom province (1 million animals). If on average there are 200 sows per farm, large scale units with thousands sows are numerous. These big farms benefiting from modern management, feeding and breeding practices sell both the feed and the piglets to small farms.

Landrace, Duroc, Large White, Hybrids (Seghers(B), Hypor(N-L)) and, more recently, Belgian Landrace and Piétrain have completely replaced the native breeds.

Crossbreeding is common practice: hybrid female x terminal sire line, 3-Way and 4-Way cross have been developed; they tend to combine different characters: prolificacy, feed efficiency, conformation and meat quality (tenderness, colour, lean content).

Conformation and quality of the meat are two important traits since 1 prices are given according to conformation (scale) and 2 the breeders, with the

opportunity of modern slaughterhouses, try to export to Singapore and Japan. Exportation of pork and pork products, as well as building of modern slaughterhouses are two main projects supported by the Royal Government of Thailand.

## Conformation and origin of the pigs.

According to the National Swine Research and Training Center (NSRTC) the main recognized categories of fattening pigs are:

### a-FARM PIGS

These animals are commercialized by the large farms of by farmers growing pigs bought in these farms; in March 84 the price by kilo live weight was 25 Bahts(\*) (21 to 28 Bahts according to the hog cycle). (\* 1 Baht = 2.6 BF).

### b-HOME PIGS

Pigs with meat of lower quality (more fat and less conformation) are sold 2 Bahts cheaper per kilo, live weight.

### c-WATER PIGS

Animals fed with rice bran and raised in poorer conditions.

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The Thai butchers favour pigs with higher meat quality, raised in good conditions, slaughtered at a weight of 95-100 kilos.

At present, Thai breeders try to sell pigs with uniformity of size, shape, decreasing backfat thickness and increase in conformation. These two last conditions are required for export markets.

### The introduction of Belgian breeds in Thailand

Belgian and Piétrain breeds are currently used as terminal sire lines in a lot of countries.

In Germany, where the Belgian genes have been injected into the pig population since the 1970's, the two breeds represent an important part of the pigs with registered pedigree and especially those of the lines used for breeding (1).

In Thailand, imports from Belgium have been increasing since 1978. They concern Hybrids (Seghers) and the Belgian breeds; some breeders succeed using the crossbreeding: Hybrid female x Piétrain or Landrace boar.

### Potential use of Piétrain and Belgian Landrace in crossbreeding.

Performances of the purebred animals are given in table 1. (recent study from Kintaba and al. (4,5) illustrates the superiority of the Piétrain breed for meat and killing-out percentage but a less favourable value for average daily gain (A.D.G.) and feed conversion.

Both breeds have more than 60% of meat in the carcass and a killing out percentage of 80%.

The frequency of high conformation grade is always higher for the Piétrain (EE-61%, E-27%, AA-12%) than for the Landrace (AA-22%, 1A-60%, 1B-18%); the overlap concerns the middle class only (AA); for the percentage of meat and the average of backfat thickness (objective results) this overlap is greater (4,5).

**TABLE 1. Belgian Landrace - Piétrain Productive traits (station data).**

	Belgian Landrace	Piétrain
	n=1366	n=1033
Final weight	99.5	89.8
Feed conversion	2.80	2.92
A.D.G. (gr)	708.5	574.7
Daily consumption	1.97	1.66
Killing-out %	79.7	80.7
Meat tot.	66.0	69.47
Fat tot.	26.98	23.31
Length (cm)	80.9	75.8
Backfat thickness (cm) loin	1.77	1.03
back	2.32	2.0
shoulder	3.23	2.65

(differences all signific.)

from Kintaba and al. (4,5)

In a comparison between Piétrain and Large White as sires of crossbred females, Howard and Smith (2) found some advantages in using the Belgian breed. The main results of their experiments indicate that Piétrain crossbred piglets were heavier at 42 days (+7.5%) and had higher postweaning performances. This was true for the carcass weight, shoulder and loin fat, width, depth and area of the eye muscle; the carcass length was shorter.

The frequency of high carcass grades was higher for visual and for objective appraisal as well.

In a comparison with British Landrace, Piétrain and their crosses, Lean and al. (6) have also found that crossbreeding with the Piétrain breed was advantageous to improve conformation (table 2.); these authors have also mentioned that quality of the meat was inferior for the Piétrain (purebred), a situation which is not critical for the fresh-meat market.

In a recent study on performance characteristics of crossbred pigs with graded percentage of Piétrain, McKay and al. (7) found that Piétrain crosses were shorter and that, with increased Piétrain percentage, a linear increase was observed for loin weight, loin eye area, ham and loin percentage, and a quadratic increase for dressing out percentage and lean gain/Kg feed.

A significant heterosis effect was also found for carcass length (2.72%); mean backfat (10.76%), dressing out percentage (1.18%) and lean gain/Kg feed (9.81%).

As far as the meat quality is concerned, in a further study Howard and al. (3) gave the butcher, and consumers reactions. In that study, consisting of panel, household and shop testing it appeared that the first reason for preference of Piétrain was the higher lean/fat ratio and the authors concluded that "the muscle quality was satisfactory in Piétrain cross carcasses".

In conclusion, due to development of conformation scale, a financial advantage is observed in Thailand for pigs of higher quality.

This is also true for other Far East countries where pigs and pork products are expected to be paid according to lean (and fat) content and not only to body weight.

Belgian Landrace and particularly the Piétrain are two leading breeds in pig conformation improvement.

If there are objections to the importation of the Belgian pigs, for pure breeding, in countries like Thailand, the only objection formulated in the case of purchase of purebred boars used as terminal sires is the "sudden death syndrome" especially for young boars.

Possible stress of purebred animals raised in tropical environment can be avoided by artificial insemination using imported semen or fresh semen from boars bought at a young age and reared in special conditions (NSRTC or government stations, large scale units).

In all cases, the Belgian breeds would be a guarantee of increased conformation and thus are to be considered favourably in a national pig breeding program.

**TABLE 2. Results of the crossbreeding British Landrace x Piétrain slaughtered at approx. 91 Kg.**  
*The reciprocal crosses are equally represented.*

	Piétrain	Landrace	Piétrain x Landrace	Signif.
Live weight gain	620	640	650	*
Killing-out %	80.8	72.3	80.1	*
Feed conversion	3.2	3.2	3.1	*
Carcass length	74.7	83.6	79.0	*
Backfat shoulder	37.0	36.2	37.2	
mid back	25.2	21.9	23.5	*
loin	20.4	21.1	21.4	
Eye muscle cm <sup>2</sup>	36.9	27.8	32.8	*
Bone Kg	2.5	3.1	2.7	*
Lean	18.0	15.7	16.7	*
Fat	9.0	9.2	9.5	
Back Kg	6.7	6.6	6.8	
Streak	4.2	4.4	4.3	
Ham	10.4	9.4	10.1	*
Shoulder	9.1	8.3	8.8	*
Chine	1.5	1.8	1.7	*
Head	5.6	5.5	5.6	

from Lean and al. (6)

## Bibliography

1. GLODEK P. 1982. Entwicklung der Leistungsprüfung und datennutzung für die Schweinezucht. Zuchtungskunde. **54**, 430-438
2. HOWARD A.N., SMITH W.C. 1976a. The Belgian Piétrain as sire of crossbred pigs slaughtered at 64 kg live weight. 1-Performance and carcass characteristics. Anim. Prod., **23**, 389-393
3. HOWARD A.N., SMITH W.C., LESSER D., CARPENTER E.M. 1976b. The Belgian Piétrain as a sire of crossbred pigs slaughtered at 64 Kg live weight. 2-Butcher and consumer reactions to meat from the crosses. Anim. Prod. **23**, 395-401
4. KINTABA K.N., HANSET R., LEROY P., MICHAUX Ch. 1981, Paramètres génétiques des caractères d'engraissement et de carcasse chez le porc de Piétrain et le porc Landrace Belge. Ann. Méd. Vét., **125**, 123-142
5. KINTABA K.N., HANSET R., MICHAUX Ch. 1981, Composition de la carcasse et classement commercial chez le porc de Piétrain et le Landrace Belge. Ann. Méd. Vét., **125**, 215-228
6. LEAN I.J., CURRAN M.K., DUCKWORTH J.E., HOLMES W. 1972, Studies on belgian Piétrain pigs. Anim. Prod., **15**, 1-9
7. McKAY R.M., REMPEL W.E., McGRATH C.J., ADDIS P.B., BOYLAN W. 1982, Performance characteristics of crossbred pigs with graded percentages of Piétrain. J. Anim. Sci. **55**, 274-279

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