SOME RESEARCH ACHIEVEMENTS ON BUFFALO PRODUCTION IN VIETNAM

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GOOD MORNING

INTRODUCTION

The important role of buffalo in agriculture and in life:

+ supply main source of draught power

+ supply organic manure for cultivation

INTRODUCTION

+ well adapted to use of local feed resources

+ a means of saving money (source of credit)

+ a means of using sub-labors in family

INTRODUCTION

+ supply a part of red meat for human consumption

INTRODUCTION

buffalo fighting is a cultural activity

INTRODUCTION

Buffalo competition

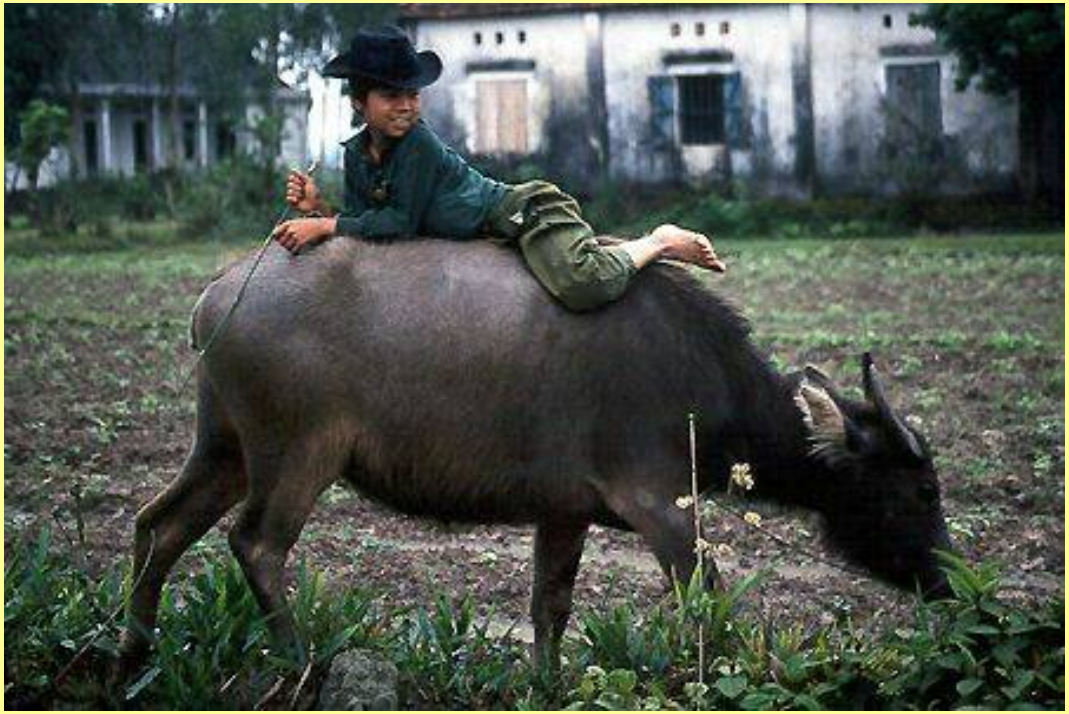
INTRODUCTION

Other activities

Vietnamese Swamp buffaloes have adapted very well with our ecological conditions and good disease resistance

The limitations:

- **+ small body size**
- **+ slow growth rate**



+ late maturity

+ long calving interval

+ low meat percentages

+ low milk yield

CURRENT SITUATION OF BUFFALO PRODUCTION IN VIETNAM

Buffalo population and distribution in 2008 ***(thousand head)***

Ecological zone	Population	Rate (%)
Whole country	2,897.7	100
North Mountain and Middle land	1,634.4	56.1
Red River Delta	171.6	5.9
Central Coastline	908.9	31.4
Central Hightland	88.6	3.1
South East	61.1	2.1
Mekong River Delta	43.1	1.5

** Source: Ministry of Agriculture and Rural Development, 2009*

Feed resources and feeding systems

Buffaloes have been mainly kept extensively by small scale farmers

The main feed resources of buffaloes are natural grasses and by-products from crop cultivation.

Feed resources and feeding systems

The quality of by-products is low when they are fed to animals without treatment.

Body size of Vietnamese Swamp buffalo

Body weight (kg) of Vietnamese Swamp buffalo

Age (month)	*Male*	*Female*
At birth	18.9	18.8
3	57.0	52.0
6	98.1	95.1
12	147.3	140.4
24	234.3	183.3

** Source: Vu Duy Giang et al., 1999.*

Meat percentages of local Swamp buffalo

Items	Culled buffalo *(old)*	Young buff. *(24 months)*
Body weight (kg)	327	194
Dressing weight (kg)	127.8	85.8
Dressing percentage (%)	39	44.3
Lean meat weight (kg)	93.6	67.9
Lean percentage (%)	28.6	35.0

** Source: Vu Duy Giang et al., 1999.*

Milk yield and fat percentage of best selected local Swamp buffaloes

Items	Unit	Average value
Length of lactation	day	270
Milk yield/lactation	kg	591
Fat percentage	%	10.4

** Source: Nguyen Duc Thac, 1983*

Working capacity of local Swamp buffaloes in swamp rice field

Items	Male	Female
Ploughing speed (m/s)	0.43	0.40
Ploughed area (in one morning) (m^2)	602	595
Recovery time (minute)	170	170

** Source: Nguyen Duc Thac, 1983.*

SOME ACHIEVEMENTS OF RESEARCH ON BUFFALO PRODUCTION FOR BEEF IN VIETNAM

- Selection of cows and use of big size bulls to improve body size of local buffaloes
- Feeding high nutrient level to improve growth rate
- Fattening young buffaloes to improve meat percentages
- Supplementation of concentrate to improve working capacity
- Crossing with Murrah buffalo bulls to improve body size, meat percentage, milk yield and working capacity

Selection of cows and use of big size bulls to improve body size of local buffaloes

Eight Swamp buffalo bulls (4 large and 4 local small sized) and 240 buffalo cows (120 selected and 120 non-selected) were used.

Experimental animals were allocated into 4 groups:

T1- big sized bulls x selected cows (BB+SC);

T2 - big sized bulls x non-selected cows (BB+NSC);

T3 – local small sized bulls x selected cows (SB+SC)

CT – local small sized bulls x non-selected cows (SB+NSC).

Selection of good cows

Selection of good big size bulls

Body size of buffaloes was improved

Body weight (kg) of improved buffaloes from birth to 24 months of age

Age (m)	Sex	BB+SC		BB+NSC		SB+SC		SB+NSC	
		n	X	n	X	n	X	n	X
At birth	Male	33	24.2[a]	30	23.0[b]	28	21.4[bc]	30	20.9[c]
	Female	28	23.3[ab]	30	22.6[a]	31	20.9[b]	30	20.3[b]
3 m	Male	33	56.6[a]	29	54.4[ab]	24	50.6[b]	23	48.7[c]
	Female	28	56.0[a]	28	52.6[b]	27	50.0[c]	24	48.4[c]
6 m	Male	32	88.9[a]	28	84.2[ab]	24	80.8[bc]	23	77.6[c]
	Female	26	87.4[a]	28	82.8[ab]	25	78.6[bc]	23	77.3[c]
12 m	Male	24	154.6[a]	22	148.9[a]	19	139.1[b]	22	135.9[b]
	Female	22	151.0[a]	22	147.2[a]	21	136.9[b]	18	132.5[b]
24 m	Male	11	254.8[a]	7	246.6[a]	8	234.6[b]	6	229.7[b]
	Female	8	248.4[a]	8	244.9[a]	6	230.2[b]	5	227.8[b]

Feeding high nutrient level to improve growth rate

Eighteen growing buffaloes 6 months of age with body weight of 73-76 kg were used.

Three nutrient levels were 100% (control); 110% (T1) and 120% (T2) according to Kearl standard for growing buffaloes (1982).

Feeding high nutrient level to improve growth rate

Feeding high nutrient level to improve growth rate

Body weight of buffaloes fed different nutrient levels

Items	100%	110%	120%
6 months (kg)	73.9	75.6	73.0
18 months (kg)	247.0	276.3	281.3
Total gain (kg)	173.1	200.7	208.3
ADG (g/day)	481.1	557.4	578.7
Compared to control (%)	100	115.8	120.2
FCR (kg DM/kg BW gain)	9.95	9.35	9.44

** Source: Trinh Van Trung et al., 2009*

Fattening young buffaloes to improve meat percentage

Twelve buffaloes 18 months of age were used.

Control animals (CT): fed only green grass *ad libitum*.

Treatment 1 (T1) were given 20 kg green grass, 2 kg rice bran and 0.5 kg molasses.

Treatment 2 (T2) were given 15 kg green grass, 2 kg urea treated rice straw, 1 kg cassava root meal, 1 kg cassava leaf meal and 0,5 kg molasses.

Fattening young buffaloes to improve meat percentage

Meat percentages of fattened young buffaloes were increased

Fattening young buffaloes to improve meat percentage

Meat percentages of fattened young buffaloes

Items	Control	T1	T2
Live weight (kg)	203	218	220
Dressing weight (kg)	88.5	98.9	100.3
Dressing percentage (%)	43.6	45.4	45.6
Lean meat weight (kg)	73.1	82.2	83.1
Lean percentage (%)	36.0	37.7	37.8

** Source: Nguyen Cong Dinh et al., 2007.*

Supplementation of concentrate to improve working capacity

- The experiment was conducted with 12 adult male buffaloes in two seasons (wet and dry) at the irrigation rice field.
- The control group (CT) was not supplemented
- The second group was supplemented 1 kg of cassava root meal (CRM)
- The third group was supplemented 0.5 kg cassava root meal plus 0.5 kg cassava leaf meal (CRLM).
- The supplementation was started 1 month before and continuously during ploughing period of 2 weeks.

Working capacity was improved

Supplementation concentrate to improve working capacity

Speed and ploughed area in 120 minutes continuously

Items	Control	CRM	CRLM
- Wet season			
+ Speed of ploughing (m/s)	0.67	0.76	0.79
+ Ploughed area (m^2)	610	662	678
- Dry season			
+ Speed of ploughing (m/s)	0.56	0.67	0.69
+ Ploughed area (m^2)	524	592	606

** Source: Mai Van Sanh, 2005.*

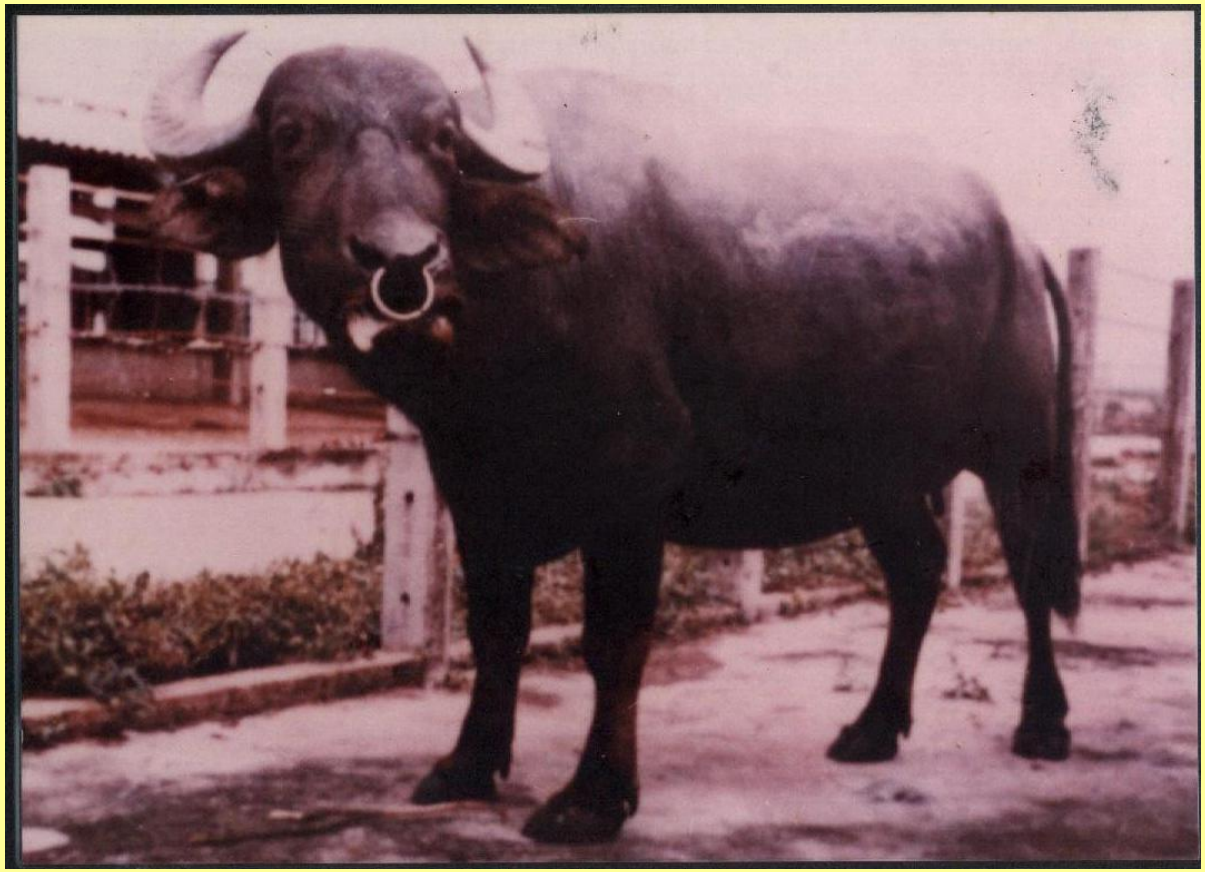
Crossing between Murrah and Swamp buffalo

In the 70s decade of the last century, dairy Murrah buffaloes were imported from China, Bulgaria, and India to improve productivity of local buffaloes.

Murrah buffaloes were well adapted and raised in many places in Vietnam from the North to the South

Crossing between Murrah bulls and Swamp buffalo cows

Crossbred F1 (Murrah X Swamp) was improved in body weight, meat percentages, milk yield and working capacity



Improved body size

Body weight (kg) of crossbred F1 (Murrah x Swamp)

Age (month)	***Male***	***Female***
At birth	28.6	27.6
3	76.0	70.4
6	118.3	113.4
12	187.6	173.9
24	282.3	266.5

** Source: Mai Van Sanh, 1995.*

Improved meat percentages

Meat percentages of young crossbred F1 (Murrah x Swamp)

Items	*Unit*	*Mean value*
Body weight	kg	323
Dressing weight	kg	164
Dressing percentage	%	50.7
Lean meat weight	kg	133
Lean percentage	%	41.1

** Source: Mai Van Sanh, 1995.*

Improved milk yield

Milk yield and composition of crossbred F1

Items	Unit	Average value
Length of lactation	day	299
Milk yield/lactation	kg	1,114.4
DM percentage	%	17.15
Protein percentage	%	4.2
Fat percentage	%	7.3

** Source: Mai Van Sanh, 1995*

Improved working capacity

Working capacity of crossbred F1 buffaloes in swamp rice field

Items	Male	Female
Ploughing speed (m/s)	0.48	0.45
Ploughed area (in one morning) (m^2)	766.8	748.8
Recovery time (minute)	150	160

** Source: Mai Van Sanh, 1995.*

ORIENTATION OF BUFFALO PRODUCTION

- Selecting the good breeding stocks with good cows and big size bulls to improve body size and productivities of buffaloes
- Improving feeding system: high level, supplementation, processing by-products, planting high yield and good quality forages
- Improving reproductive performance: balance rate and creating opportunity for cows and bulls, good management, using bio-products etc...
- Crossing with Murrah buffalo

Select the good breeding stock with large size bulls to improve body size and productivities of swamp buffaloes.

Improving feeding system: high level, supplementation, processing by-products, planting high yield and good quality forages

Increasing calving rate of buffalo: balance the rate and creating better opportunities for cows and bulls

Crossing between Murrah buffalo bulls and Swamp buffalo cows to improve body size, growth rate, meat percentages, milk yield and working capacity

CONCLUSION AND RECOMMENDATION

Vietnam has a stable population of buffaloes.

The North mountainous zone and North Central Coastline - have good ecological conditions for development of buffalo population.

Natural grass almost around the year and a huge amount of crop by-products are good resources of feeds for buffaloes.

The mechanization process has developed steadily and the need of buffaloes for draught purpose will gradually decrease.

Buffaloes have good potential to use local feed resources and can be used as a multi purpose animal: Working, meat and also milk production

Traditional and cultural symbol of Vietnamese village

Promoting buffalo production will contribute greatly to agriculture, farmer life and rural development

GOOD-BYE

and

SEE YOU AGAIN

THANK YOU VERY MUCH FOR YOUR ATTENTION