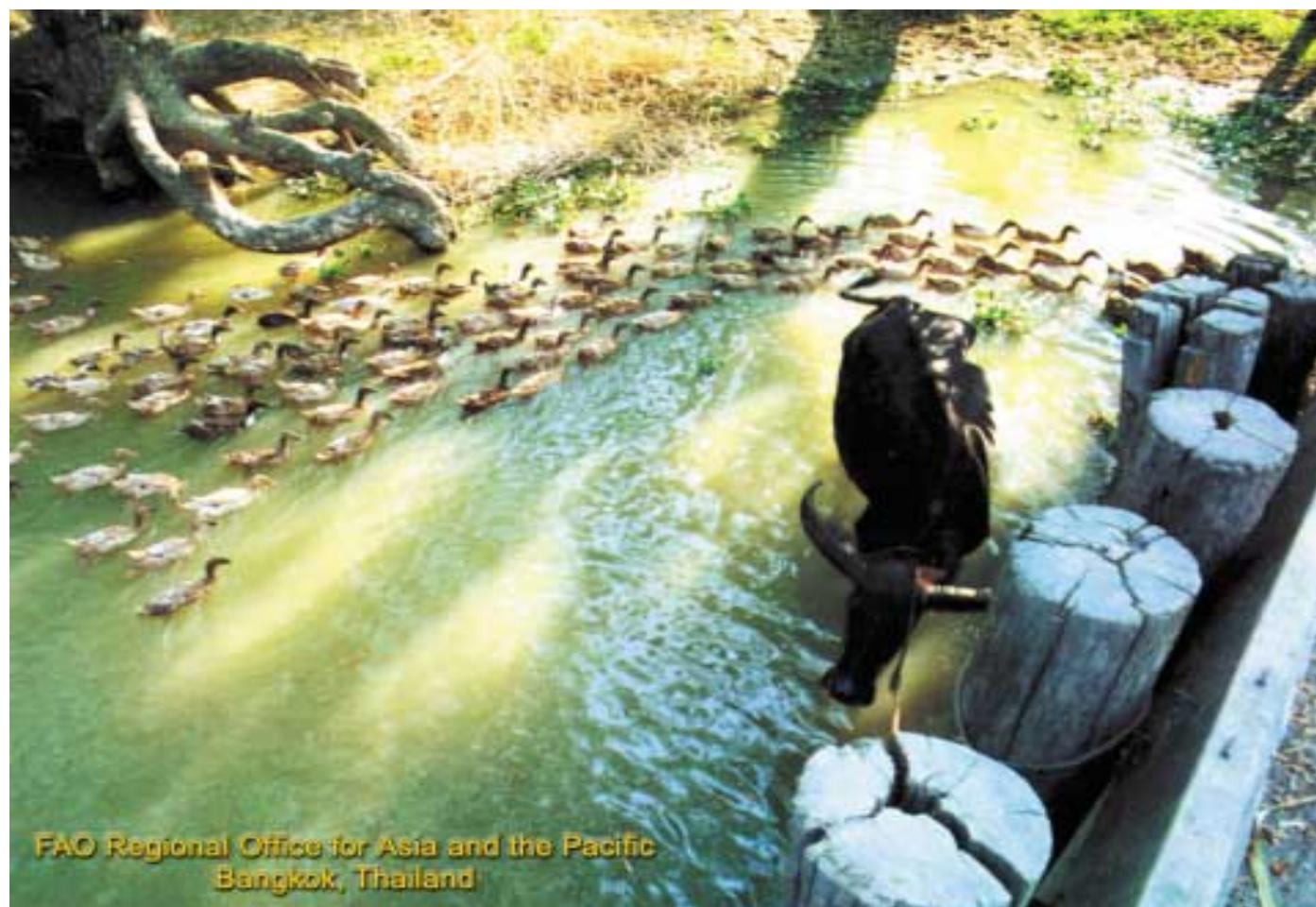




WATER BUFFALO:



FAO Regional Office for Asia and the Pacific
Bangkok, Thailand

(Published in October 2000)

An asset undervalued

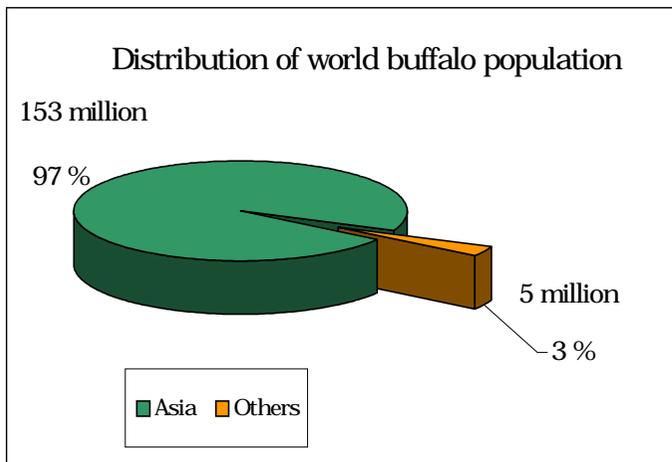
WATER BUFFALO:

AN ASSET UNDERVALUED

BUFFALOES - THEIR DISTRIBUTION

There are about 158 million buffaloes in the world (FAO Statistics). Roughly 97 percent of them or 153 million heads are water buffaloes essentially found in the Asian Region.

★★★ The overall buffalo numbers are increasing at about 1.3 percent annually, while on the contrary, in Thailand, the numbers are dropping dramatically.



THE DIFFERENT TYPES OF WATER BUFFALOES

The water buffaloes are of two types; the **RIVERINE** type and the **SWAMP** type.

FEATURES OF RIVERINE AND SWAMP BUFFALOES

Riverine buffaloes are usually black and have long curled horns. The Swamp buffaloes are usually dark grey but may also be black, black and white, or even all white. They have long, gently curved horns.



Riverine (above) and Swamp (below) buffaloes



Riverine buffaloes (about 70 percent of the total world population) are reared in high numbers in South Asia, especially in India and Pakistan. Swamp buffaloes are mainly found in South-east Asia and Southern China.

★★★ Riverine buffaloes are predominantly kept for milk production. They are also used for meat, fuel and fertilizer production (from manure), as well as for draught power. Swamp buffaloes are traditionally kept as draught animals. They provide manure for use as fuel and fertilizer, and are also (to a lesser recognition) used for meat production.

Within the Riverine type, there are several breeds that have been developed over the centuries to meet human's needs in different environments (eg. Murrah, Nili-Ravi, Surti, etc.). Whereas the Swamp buffaloes have not been differentiated, the entire population represents one and the same breed, even though the animals are geographically isolated.

Riverine and Swamp buffaloes can be crossbred. However, because their chromosome numbers are different, some of the offspring tend to be infertile.



Milking a Riverine buffalo



Wallowing



Providing draught power – ploughing paddy field

UNIQUE FEATURES OF BUFFALO CONTRIBUTIONS

Richer Milk: Buffalo milk contains higher Total Solids (protein, fat, minerals) of 18 – 23 percent as compared to 13 – 16 percent in cow milk. This confers advantage to the production of cheese and some other dairy products.

Leaner Meat: Buffalo meat is tasty and lean. It contains lower saturated fat than beef and pork, and hence is considered a meat of good dietary value.

Efficient Converter of Low Quality Feed: Buffaloes can utilize less digestible feeds (eg. rice straw, maize stovers, sugar-cane wastes, etc.) better than cattle to grow. This makes buffaloes easy to maintain using locally available roughage and crop residues.

★★★ Buffaloes' values increase day by day as they grow (in contrast to machinery!).
... They need no costly fuel, never rust, and they reproduce!

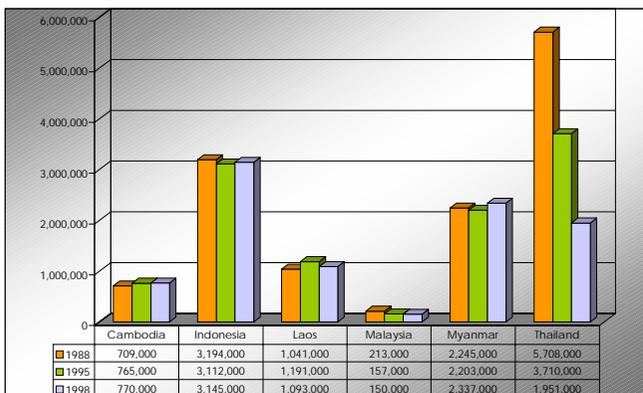
Best Draught Power for Wet Environments: Buffaloes are superior to other draught animals in wet or waterlogged conditions, such as in muddy paddy fields. They can also be used for cart haulage, carrying heavier loads than cattle.

Enrich Soil Fertility: Buffaloes improve soil structure and fertility while treading paddy fields. Each year, an adult buffalo produces 4 to 6 tonnes of wet manure plus additional urine as bio-fertilizer to the land. This reduces or eliminates the need for chemical fertilizers as well as provides essential soil humus which chemicals can not provide.

Secure Socio-Economic Status of Farmers: Buffaloes are often used as cash savings, can be

sold when needs arise (school fees, marriage, crop failure, debts, etc.). Thus, the animals ensure the farmers' socio-economic security.

THE DECLINE



Note: The 1988-1998 figures are based on FAO statistics, except the 1998 figure for Thailand which is based on the Thai Department of Livestock Development (DLD)'s estimate.

(The recent estimated number of buffaloes in Thailand, provided by the Thai DLD, is 1.2 million in 1999.)

CASE STUDY IN THAILAND

The above chart shows that the number of buffaloes in Thailand has declined dramatically during the past decade, in sharp contrast to its neighboring countries. **Why? Reasons are:**

Socio-economic changes in the country during the past two decades (1977-1997). During this period Thailand was fast moving towards industrialization. Large rice paddy areas were diverted to industries. Rural youth in large numbers moved from agriculture to industry for

employment. Therefore, the need for buffaloes to work in the fields declined.

b) Government programmes had increasingly promoted the use of machinery even for small farmers, especially two-wheeled tractors, through subsidies/credits to farmers for more than two decades. Also, tractors have been considered goods that would improve the social status of small farmers. Buffaloes do not receive similar recognition. On the contrary, they are considered as old-fashioned animals.

c) Demand for buffalo meat has expanded due to growth of the human population, and overall increase in income level. Demand for meat from other species such as pigs and poultry could be met by intensive production. Buffalo meat is not yet intensively produced but is still a "by-product" of the traditional Thai farming system. The decline in number occurs because there is not enough replacement for the slaughtered animals.

d) Laws and regulations prohibiting the slaughter of breeding and pregnant buffaloes have not been enforced effectively.

e) The use of chemical fertilizers is increasing, leading to less recognition and reliance on buffalo manure as bio-fertilizer.

f) The trend towards smaller farm families also contributed to the decrease in number of buffaloes as these animals, however, need attendance by family members.

g) Farming diversification, a result of availability of and information about other types of farm products and income generation plays a role in the decline of buffalo population.

WHAT SHOULD BE DONE? SHOULD BUFFALO REARING BE PROMOTED? OR SHOULD CATTLE SIMPLY REPLACE BUFFALOES?

Also in future there will be an important role for buffaloes in Asian farming systems. Buffaloes and cattle are complementary.

Buffaloes can utilize feeds, especially low-quality feeds, more efficiently than cattle. Buffaloes also have unique advantages over cattle: they are less susceptible to ticks and other ecto-parasites (due to their wallowing); they can better withstand wet conditions underfoot and are therefore more suitable in many areas; and they are more docile (children/old people can manage them relatively easily).



A docile animal

Resources, in particular at small farm level, must be used as efficiently as possible in order to be more competitive, self-sufficient and sustainable. For example, reserved water within the farmland can be used for aquaculture, rice, crop and fruit tree plantations; livestock can be raised in the backyard. In particular, buffaloes are efficient

converters of otherwise discarded farm by-products such as rice straw, leafy parts of some crops/trees, crop residues, dropped grains, etc. Buffalo and cattle, each species in its suitable environments, can continue to provide much needed draught power and manure for bio-fertilization of farmland. Larger animals in excess of farm needs can be sold for cash.

FUTURE STRATEGIES FOR SURVIVAL OF BUFFALOES

- Improve access of small farmers to buffaloes through the many “Royal Initiatives” of H.M. the King of Thailand such as provision of animals to small farmers through the “Buffalo Banks” scheme, boosting buffalo raising in line with the “New Theory” for self-sufficient and sustainable agricultural production (see the previous paragraph), etc.
- Collect and effectively disseminate more and better quality information on farming systems (particularly with regard to economical and sustainable production) to farmers and other concerned parties.
- Further develop “model buffalo raising villages” based on best-practices and promote the concept.
- Provide incentives for production of quality meat and meat products from buffaloes. Buffalo meat should not merely be regarded as a cheap source for meat products like meat balls, but should be valued as high quality meat, especially if derived from young animals.
- Develop breeding schemes to improve buffaloes for those traits of importance to the long-term sustainable use of the species.

The three main areas for buffalo R & D



- *Reproduction*



- *Feed and management*



- *Disease control*

- Develop appropriate biotechnology innovations specific to buffaloes. At present, developments in biotechnology occur in other species, and the same techniques may be tried with buffaloes. Possible areas are artificial insemination, embryo transfer, cloning, biotechnology to improve feed utilization and disease control.

ROLE OF FAO IN BUFFALO DEVELOPMENT

FAO has always emphasized the important role that buffaloes play in overall agricultural production in Asia. FAO has worked over the years on various aspects of buffalo production and draught animal power.

In the feed sector, as amply demonstrated through FAO projects, the development of systems to improve ruminant feed quality from straw (urea treatment) and the use of mineral feed blocks (urea-molasses blocks) can greatly assist in the improved efficiency of buffalo production.

FAO provides a forum for information about the importance of the species. Various FAO publications provide information and know-how on buffalo development. Workshops have been held addressing new technologies for buffalo production (e.g. multiple ovulation embryo transfer, nuclear techniques in buffalo breeding and disease diagnostic, etc.).

FAO was also instrumental in the establishment of the Asian Buffalo Association (ABA) formed to foster further scientific exchanges within the major buffalo-keeping countries. FAO also has linkage with the World Buffalo Federation (WBF) which attempts to involve other various regional associations.

The International Livestock Research Institute (ILRI), which has only recently assumed a global role, is involved in examining the genetic diversity found in buffaloes. FAO has close cooperation with ILRI.

Donor countries to international agricultural development have been involved in efforts to carry out crossbreeding strategies to improve productivity of buffaloes. FAO has been coordinating many of these efforts.

FAO has been developing a global strategy on Animal Genetic Resources and has established a global databank in which disappearing breeds are identified and the status designated as "risk of extinction". Two editions of the "World Watch List for Domestic Animal Diversity" have been produced (1993 and 1997) and updated information (provided by each country) is available on the World Wide Web (<http://www.fao.org/dad-is/>). Relevant database on buffaloes is available in the website.

★★★ FAO has whenever possible provided assistance to the global effort of buffalo promotion.

... It is feared that what's happening in Thailand may soon also take place in other countries (Cambodia, Indonesia, Laos, Myanmar, the Philippines) where the swamp buffalo population is still stable. Increased agricultural mechanization in these countries especially in the small farming sector may induce the decline of buffalo numbers similar to the situation witnessed in Thailand.

**Buffaloes for our next generations?
... A query to be answered**