

# WATER BUFFALOES

## 150 MILLION STRONG

*Long neglected, Asia's "living tractor" is now attracting much scientific interest*

MICHELLE HIBLER

Every Monday and Friday morning, in Chiang Mai, Thailand, the water buffaloes come to town. Amid the bellows of both beasts and owners, deals are struck and animals change hands. This is the water buffalo market, a busy place as farmers, spurred by soaring fuel costs, abandon motor-driven tillers in favour of the four-legged kind.

For more than 4000 years the water buffalo (*Bubalus bubalis*) has pulled ploughs through the rice fields of Asia, transported heavy loads, powered machinery of all kinds — from threshers to water pumps — and provided a host of products. In fact, all parts of the animal can be used, from its intimidating horns for buttons, utensils, and other implements, to the hair in its ears for surgical and other brushes.

Nor is the water buffalo confined to Asia. From its home in India, where half of the world's 150 million water buffaloes can be found, it has spread to 38 countries, including Australia, the Caribbean, Florida (U.S.A.), Italy, Mozambique, Tanzania, and the U.S.S.R. During the past 25 years, the world buffalo population has increased by almost 90 percent.

The popularity of water buffaloes can be attributed at least in part to their even temperament. Despite their formidable appearance, they are easily domesticated and trained. Throughout

Asia, in fact, they are usually cared for by children. Hardy, they adapt well to different conditions and resist infection, particularly insect-borne diseases, better than other ruminants. They are also long-lived — up to 80 years — with a useful life of about 20 years.

Water buffaloes thrive on vegetation not otherwise needed by man and seem to convert it into meat and milk more efficiently than other cattle. Buffaloes are the main milk producers in six countries — China, India, Nepal, Pakistan, the Philippines, and Thailand. The milk has a high fat content and is richer in protein, lactose, and milk solids than cows' milk.

The buffaloes' most important service is undoubtedly in the fields. Their wide, flattened hooves enable them to pull a plough through muddy rice paddies where oxen get bogged down. In Thailand, they work five hours a day on average, for up to 146 days a year. In China, one buffalo has been found sufficient to do all the work on 2.3 hectares of cultivated land.

The main source of traction in rural Asia, buffaloes can pull more than their weight. They are also used for riding, and as pack animals in remote rural areas.

The water buffaloes' greatest potential, however, is as a meat producer. Animals reared for meat are usually slaughtered at about 18 months and

dress out to about 50 percent live-weight. The meat is often undistinguishable from beef. As the demand for meat rises in protein-poor developing countries, buffalo rearing could contribute greatly to food supplies.

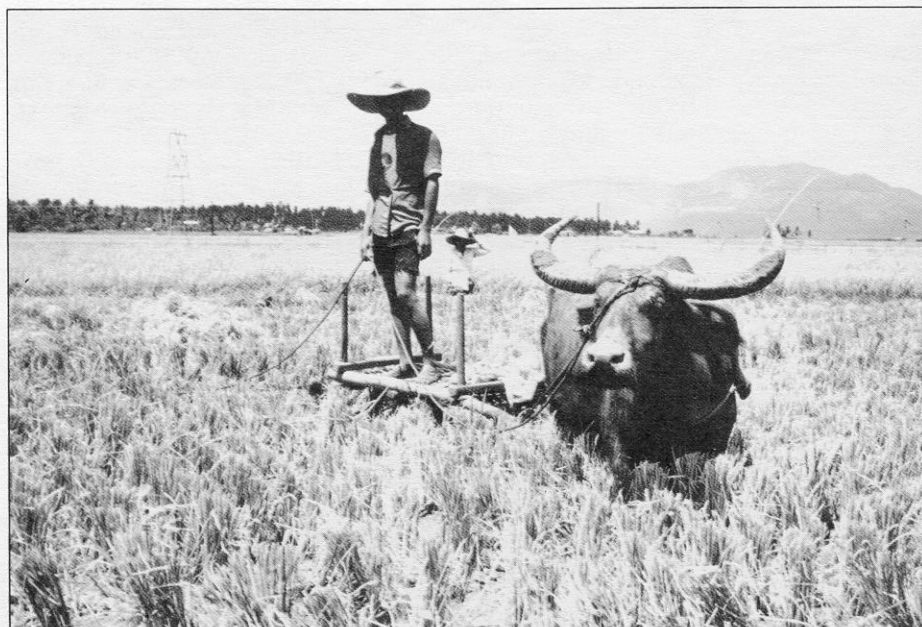
Water buffaloes do have a few drawbacks, however. Slow to mature, they only breed seasonally. It has proved difficult to improve stocks through artificial insemination. Their hide, while thick and widely used in the leather industry, is almost hairless. They therefore have difficulty in controlling their body temperature and are unprotected from insect bites. Thus, they need a good wallow in a muddy river each day.

Although the water buffalo has long been the animal of small farmers and is often their main capital asset after the farmhouse, to many it has been a symbol of resistance to progress. According to a 1979 report of the U.S. Agency for International Cooperation (AID), the water buffalo was ignored by scientists, despised by most agricultural advisors, and considered an embarrassment by government officials trying to modernize their countries.

Only recently have these attitudes changed and scientists begun to devote attention to the water buffalo. Some countries have now developed advanced capabilities in some key production areas. In 1976, the importance of the buffalo to much of the developing world was recognized by the Technical Advisory Group of the Consultative Group on International Agricultural Research (CGIAR), and in 1978, eight Asian countries agreed to share their research, setting aside some \$3 million to support this collaborative effort.

Buffalo research is hindered, however, by a lack of information. Although the literature on this animal has grown in the past two decades, and several countries have independently attempted to improve the situation by the production of bibliographies, the work has been uncoordinated, involved duplication, and relied heavily on published documents from industrialized countries which did not pick up much information generated in the developing world.

The need for a research and information network was recognized at a number of international meetings and Thailand was finally chosen to be the coordinating centre of the research network because of a strong national program with a National Buffalo Research and Development Centre. It was therefore



*A water buffalo in the Philippines — once and future king of Asia's rice fields.*



decided to establish the information centre there as well.

The International Buffalo Information Centre (IBIC), as it is called, will be located at Kasetsart University, Bangkok, not only because it is the lead institution in the Thai program, but also because of Kasetsart's library resources

and experience with the operation of other information activities such as AGRIS, the International Information System for Agricultural Sciences and Technology.

A clearinghouse for world literature on the buffalo, the centre will collect documents, particularly non-conven-

tional literature, and analyze and disseminate the information (see interview this page). It should benefit all countries seeking to introduce the water buffalo as a mainstay of their agricultural development programs. It promises a long and prosperous future for Chiang Mai's buffalo market. □

## DOCUMENTING THE BUFFALO

Ms Daruna Somboonkun, Librarian at Kasetsart University, and Dr Charan Chantalakha, of the Department of Animal Science, were interviewed for *Reports* by Mr Vivat Pratheepchaikul of the *Bangkok Post*.

**Reports:** Could you give us a brief history of the International Buffalo Information Centre and explain why it is needed?

**Charan:** As you might know, there are approximately 150 million water buffaloes in different coun-

tries of the world. Some 95 percent are in Asia. Two types of buffalo are of economic importance: the river buffalo is the milking type, found mainly in India, Pakistan, and the Middle East; the other is the swamp buffalo, concentrated in Southeast Asia and China.

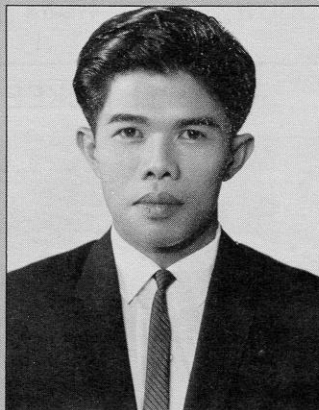
In the past, water buffaloes have been neglected by scientists except for work done in India, Egypt, and Pakistan on the river buffalo. Since 1970, however, many scientists in different Asian countries have become interested in the swamp buffalo because these animals are very important. For example, 95 percent of rice production in Thailand depends on the use of buffaloes and cattle in the fields, and although some mechanization has been adopted in some areas, most rain-fed agriculture still depends on the buffalo.

So far, no single organization has been set up to collect and distribute research and extension information on this animal. In the last decade, much research has been done in different countries and published in the local languages, so it is not available to researchers in other countries. Even within the country, the information is not well disseminated. As a result, much of the research funding is probably spent on seeking information that has already been obtained. So it is economically very important to set up an information centre to collect and disseminate the information to research and extension workers in different countries.

**Daruna:** One of our objectives is to gather information — from all over the world if possible — and, secondly, to disseminate the information —



Ms Daruna Somboonkun



Dr Charan Chantalakha

ranging from basic to the advanced — to researchers and all types of users throughout the world, in any language.

To start the project, we received financial assistance from IDRC for the first three years of operation. IDRC has sent Dr Leatherdale, who is on secondment from IDRC to FAO, to work on a thesaurus for the buffalo project. With this thesaurus we hope to provide a good service to users and we will be able to retrieve information from external data bases as well.

**Reports:** What are the functions of the information centre?

**Daruna:** First of all, we have to collect documents and articles on the buffalo from world sources and then analyze them. These will then be indexed and abstracted, and a microfiche will be made of the original document so it is readily available to everyone.

**Charan:** The indirect function will be the creation of regular communication or linkages among researchers.

**Reports:** How is the centre being set up?

**Daruna:** The organization of the information centre will be somewhat similar to that of other specialized information analysis centres in that we are going to provide a key to the literature on the buffalo. We are also going to publish a newsletter to use as a means of communication between institutes in different countries.

**Charan:** I would like to add that in different countries, such as Indonesia, the Philippines, Malaysia, and so on, there are also institutions interested in buffalo research that have at least a small collection of research information. Through these institutions we will obtain information for our centre. The Philippines, for example, have set up a national buffalo research and development centre.

According to the five-year plan, they will spend some \$5 million for buffalo research, so they will have a small unit to collect information. We will contact them and obtain their information for our centre.

**Reports:** Who can use the centre?

**Daruna:** Anyone can use it.

**Charan:** It will be very useful. For example, if extension workers want to know how to feed rice straw to buffaloes to make maximum use of the rice

crop they can obtain information from our centre on what should be added to the straw to make the buffalo grow best.

Anyone who is interested in buffalo production can use the information.

**Reports:** What are the prospects for the buffalo information centre?

**Daruna:** We hope that with the establishment of our centre, all types of information will flow more rapidly and regularly between users. For example, there may be an agricultural scientist in Thailand working on the same topic as a scientist in China. The inventory of on-going buffalo research which will be published will help solve this problem of duplication.

**Charan:** As a user of the buffalo information, I think that through the linkages — through the information exchange — the centre will not only facilitate the flow of information, but will promote cooperation among researchers in different countries. At present, many scientists in different countries are very interested in solving the problem of buffalo reproduction to increase the reproductive rate of the buffalo. The exchange of information is now based on personal communication. When we have the information centre, then the formal exchange of information will be quite efficient so we will know exactly who is doing what, and what they are getting from their work. This would then probably promote future communication among these people, so the centre will not only act in an information-gathering and dissemination capacity, but it should induce future cooperation as well.

As a result, we expect a great improvement in research capabilities.