



SYMPOSIUM ON BUFFALO PRODUCTS

As announced in issue n.2 of the 'Buffalo Newsletter', from 1st to 4th December 1994 an International Symposium on Buffalo Products took place at Paestum (Italy). It was organized by the Working Group 'Products' of the Inter-regional Cooperative research Network on Buffalo.

It was more successful than expected due to the many participants and to the quality of the presented papers. It is here impossible to summarize all discussed topics, which in any case will be soon fully published, but it is important to refer some general impressions.

All papers concerned river buffalo: in fact the Network includes European and Middle-Eastern countries, where only this buffalo is reared. Therefore, the majority of papers dealt with milk and dairy products, in particular 'mozzarella' and yoghurt. But beyond these two well known products, J. Renaud (EAAP, Rome) evidenced that many other local ones exist, having a very ancient tradition,

and the technology of which is in most cases extremely simple and directly dependent on the environment. It is important that these ancient traditions be not lost, as far as the basic sanitary conditions are fulfilled.

Many papers presented all aspects of mozzarella cheese: technological legal (S. Mariani, G. Coroneo, Italy), assignment of quality (F. Falessi, A. Brandi, Italy) and trade (F. De Stefano, Italy). This product valorizes at the best buffalo milk.

Detailed researches are in course on 'starters' and protective cultures of lactic acid bacteria for technological valorization of buffalo milk (A. Coppola and R. Villani, Italy). Innovative technology in 'mozzarella' processing (F. Addeo and M. Smaldi, Italy): primary grades of buffalo milk, proteolysis (G. Scialoja, F. Chianese and F. Addeo, Italy) and on buffalo rennet (A. Cavaliere et al., Italy). The Egyptian, also, are carrying on interesting research projects on yoghurt technology, aiming to select a variety of products, satisfying nutritional requirements, mainly for chil-

dren (G.A. Mahran, Y.A. El-Samragy, M.A. Khorshid and N.S. Abd-Rabou).

A.M. Pilla
follows page 14

ISSUE THIS ISSUE

- Symposium on Buffalo Products
- Raising Buffalo calves in outdoor pastures. 2/3
- Buffalo in glass. 4/5
- A Poem. 5
- Buffalo Population and Production in Syria. 6
- Genetics in Buffalo and Production in Egypt. 7/8
- International Symposium on Buffalo Reproduction. 9
- Prevalence, pathology and some serum biochemical parameters of repeat breeding syndrome in buffaloes. 10
- Recording of milk performances in buffaloes. 11

RAISING BUFFALO CALVES IN OUTDOOR HUTCHES

M. A. M. Salama

Animal Production Research Institute - Agriculture Research Center - Ministry of Agriculture.
Nadi El-Seid Street, Box 470, Dokki, Giza 12311, Egypt

Housing facilities for calves should be planned to accommodate each developing stage of the calf from its birth until it is ready to enter the milking herd. The first four months of a calf's life are very critical. It is estimated that 75 % of the calves that die do so before they reach two weeks of age. The environment of calves affects their mortality rate. To lower the death rate, dairy farmers should plan young-stock housing carefully. Generally, there are three basic types of housing facilities for calves up to weaning age, warm barn, cold barn and individual hutch. The hutch is most common in warm climates, although it is also becoming popular in cold

climates. Most hutches provide an open doorway in the front, have provision for feeding and have no bottom so they can be cleaned easily by picking them up and moving them. Calves are tied in the hutch or kept inside by small fence put across the door. Diseases do not spread easily among calves housed in hutches. Other advantages are that hutches can be cleaned easily, can be low in cost, can provide year-round housing, and can be moved simply (Brevik et al, 1977; Quinn, 1980).

The Animal Production Research Institute, Ministry of Agriculture, Egypt, initiated a study in 1991 to investigate

the effect of raising Egyptian buffalo calves in outdoor hutches on their performance throughout the year. Calves were fed whole buffalo milk as a percentage of birth weight (10%) and weaned when they consumed 700 grams dry feed/head/day (Salama and Mohy El-Deen, 1993). Hutch-raised buffalo calves showed more favorable physiological and productive performance through preweaning or postweaning period than others raised in traditional housing type (interior pens used inside calf housing) as shown in the following table:

ITEMS	INDOOR PEN	OUTDOOR HUTCH
N° of calves	16	16
Birth weight (kg)	37	37
Age at first ingestion (day)	19	17
Age at first drinking (day)	15	14
Weaning age (day)	62	56
Milk intake (kg)	174	165
Weaning weight (kg)	70	71
Prewaning ruminal pH	6.6	6.8
Prewaning body temperature	39.5	39.0
Prewaning daily gain (g)	500	600
Prewaning feed efficiency kg DM/ kg gain	1.4	1.3
Age at 450 kg body weight (day)	803	743

It seems feasible to recommend raising buffalo calves in hutches with some consideration for achieving good results:

- Calves must be placed in the hutch soon after birth so that they quickly become accustomed to the temperature.
- Hutches must be well bedded in cold weather.
- Only one calf should be placed in each hutch.
- The opening should be located downwind in the winter.
- Hutches should be moved several times a year and cleaned regularly.
- Hutches should be located on well-drained soil.
- Hutches should be spaced at least 150 cm apart.

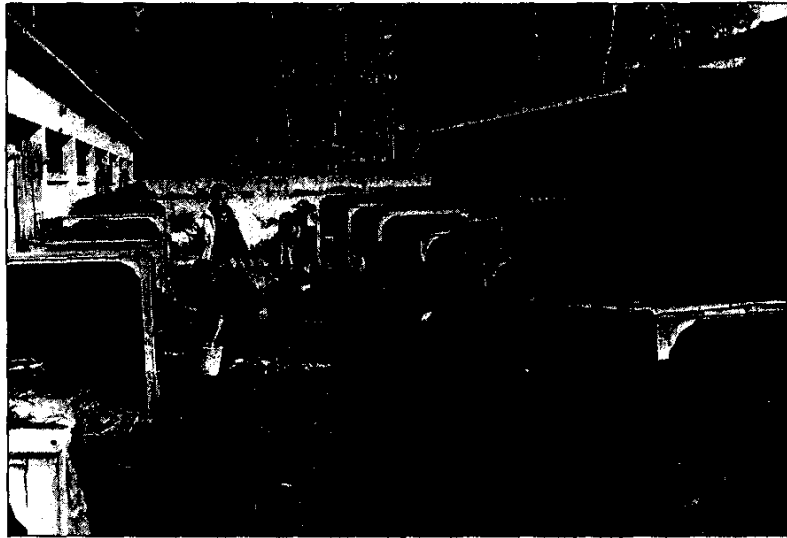


Figure 1 (top) and 2 (bottom) show the calf hutches and the indoor pens (traditional) used in the experiment and their spacing.

MATERIAL NEEDED FOR BUILDING HUTCHES

- Four sheets 2 cm x 120 cm x 120 cm ply or pannel wood, twelve pieces 5 cm x 5 cm x 120 cm stakes, collar, 60 cm chain, three iron straps and three galvanized buckets.
- Instead of tying calves by collar and 60 cm chain, a high welded wire fencing could be used across the front.

R E F E R E N C E S

BREVIK, T. J., LARSEN, H. J.; BRINGE, A. N.; VILSTRUP, R. H.; KRUEGER, G. L., (1977). The calf hutch-building and using, ZA2823 Publication, Cooperative Extension Programs, University of Wisconsin-Extension, p.8.

SALAMA, M. A. M. and MOHY EL-DEEN, M. M. (1993). Feeding buffalo calves on whole milk as a percentage of birth weight. Prospects of buffalo production in the Mediterranean and the Middle East. Pudoc Scientific Publishers, EAAP Publication No. 62, 336-339.

QUINN, T. (1980). Dairy Farm Management, Van Nostrand Reinhold Company, 135 West 50th Street, New York, NY 10020, U.S A.

BUFFALO IN CHINA

A. M. Pilla

Invited by the Chinese Ministry of Research and Technological Development, thanks to prof. Youchun Chen of the Institute of Animal Science of the University of Peking, I spent a couple of weeks in China, visiting a few buffalo farms, as well as University and Research Institutes working on buffaloes. The purpose was to discuss with technicians and political officers about the problems of buffalo farming and to find out eventual developing issues.

Hoping that the reader is interested to my report, I need to point out that he might find some inaccuracies both in the description of present farming and in the forecast of future development, due to the short visit and to the huge and highly variable conditions in which buffalo farming is practiced in China, in addition to the poor information that it was possible to collect.

According to FAO estimates (1993), 22 million buffaloes are reared in China, concentrated in southern tropical and subtropical districts, land of rice fields in which buffalo is closely linked. The number of buffaloes is high for which the benefits of an eventual improvement programme will be produced by a large area and by a considerable number of farmers.

The majority of buffaloes are 'swamp' type. Pure 'river' and crossbred are irrelevant, all concentrated close to cities, where milk can be sold at higher prices. The most important breeds for pure breeding but mainly for crossbreeding are the Nili-Ravi from Pakistan and the Murrah from India. Differences between 'swamp' and 'river' type are well known: the first are smaller and with a clear attitude to draught, and produce little milk. 'River' buffaloes are heavier - averagely 100 kg over the 'swamp' - have a bigger body size but less muscles, and their milk yield is four times the one from 'swamp'.

Usually, there is one 'swamp' buffalo cow kept in the family, helping in the rice fields, in transports, producing some dung for the family vegetable and some milk. It is in fact impossible to rear more animals when each family has a piece of land no bigger than 1200-3000 square meters. For a family, to have a young, healthy and well trained buffalo is like having a fortune: its value corresponds either to six months of a very good wage, or to a couple of motor-bikes, or to 6-7 new bicycles, the most popular mean of transport.

Due to the way of keeping buffaloes, it is wrong to say 'farming'. They are fed crop and vegetable residues, bamboo leaves, and they graze on roads, paths, ditches. But they look in good nutritional condition, being the owner very careful in trying to satisfy their needs, themselves or being the animal themselves very frugal. Buffalo efficiency is low due to farm efficiency/low animal gains given to reproduction, being draught the buffalo main purpose, also for females. The average lactating is four to five months with intervals higher than one year. Male animals are used as draft animals, regular calving, sanitary measures are not considered. However animals look very healthy.

It is possible only contrary to consider farming the rearing of the few 'river' buffaloes. In fact each owner has 3 to 10 animals, living either in the house or in a close room, or sometimes they are kept in real dairy sheds, with feeding racks, lying boxes, dunging gutter and a nearby room for keeping feedstuff, milk and pails. No machine milking at all, neither milk refrigerating system. Plentiful of manpower is found, the cost of which, I imagine, is extremely low, otherwise the owner of a few buffaloes who sells

its milk directly, could never afford to employ so many people. The filtration of milk consists simply in allowing milk to pass through a rough canvas which keeps away foam and dirt. In no case there was litter bedding in the sheds, absorbing dung and liquid manure, probably because such precious organic products looked spoiled if used for bedding. All rooms in which the animals were kept were always extremely clean. I do not think due to the foreign visitors, but to the large amount of manpower and the high value of the animal. Imagine that a small, well educated couple owning a few dozen of buffalo cows, not thinking of producing methane gas, through a primitive and efficient plant, possibly present in India: we could direct the waste to fire in a gas range and in a lamp, both fuelled by the

feeding of 'river' buffaloes is not as usual as in the 'swamp'. Some waste is used to produce Lohum, a manure, of which the daily ration is accurately cut by hand, then collected into two baskets which are hung at the two sides of a bamboo cane, carried on the shoulders, to the animals, making them lie on the narrow path (30-40 cm) which divide the small states. Fermented and mixed up in a ditch manioc flour was sometimes found; some concentrates and salts are also given, and buffalo cows are allowed to graze for a while, when it is possible.

Sanitary care did not seem excellent, although big differences were seen from one farm to another. In some of them animals looked really bad, and some disease was to be suspected even by non medical staff.

Surprisingly, in several of the visited farms oxytocin boxes were found, but it was impossible to know whether it was used regu-

larly and on all or only part of the cows. They said that they do not buy oxytocin. They are given also streptomycin, which they use when ever they think necessary. Is this a way to help the developing countries?

The morphology of the animals we saw was not bad at all; it was evident that they did all efforts in order to keep in good form, despite of the poor feeding conditions, even if the welfare was not always acceptable: in fact animals were kept by a rope making a ring passing through the nostril, and tied to the floor. The distance from the floor to the nostril was no longer than one meter, for which the cow was only allowed to move the back side, but often not even this movement was possible being the room too small.

Buffalo cows do not calve before the age of four years, also the dairy ones, and calving interval is long too. Artificial insemination is getting popular used for the 'river' and crossbred buffaloes. Results are still contradictory, going from the excellent success and the total ease in heat detection, to cases of six or more inseminations per pregnancy, each practiced twice, at a distance of 24 hours, and finally using the bull in natural service after all trials were unsuccessful. Milk yield ranges from 800 to 1200 litres per lactation, averagely 4-6 litres per day. Fat content is about 7-7.5%. Protein content is slightly over 4%. Milk price is very high compared to the cost of life. Usually three litres are sold at 1 US dollar, but some farmers succeed in earning twice as much. The value of the milk produced by a good buffalo cow is the same as the wage of a University researcher. Milk is not sold directly but collected by dairies, of which we visited two. In the first, 300-400 litres milk were daily processed. Part of it was sold, after thermal treatment, in glass bottles of half litre, the remaining part was processed into yoghurt. Half of the processed milk was produced by two brothers owners of 40 cows.

The dairy plant appointed 39 (thirty-nine) staff. The second dairy was different, having the half of the staff for processing the same amount of milk; moreover, all milk was diluted with water (1 to 4) in order to get a product having over 1% protein, as required by the law, to be used as baby food.

We also visited the Water Buffalo Institute, the Breed Improvement Station and the Guangxi Agricultural University at Nanning, in the South-West of China. Many buffalo breeds are reared there, as well as their crossbred with 'swamp'. An Artificial Insemination Centre is also active in the station.

The forecast of the potential for the development of buffalo production in China, without drastically change the present conditions, is based on the fact that milk price is very high and milk consumption might be highly implemented. People say that milk consumption in China is only 3 litres per person per year, but we believe that it is still lower. People say also that the low consumption is due to the fact that the Chinese do not tolerate milk. But being the population huge and concentrated in big cities, the opening of the borders to foreign companies has determined a fast development and change of habits and attitudes. Implementation of tourism and creation of many new hotels will contribute to increasing the demand for milk and dairy products. Buffalo milk price is likely to remain high, but it is absolutely important that buffalo products might fulfil sanitary and high quality requirements, being addressed at the beginning to foreign customers.

It is also possible to forecast that in China industry and trade will develop in the next few years, absorbing manpower from the countryside. Therefore the amount of land available for each family will increase: of the 800 million Chinese living on agriculture, only one fourth should remain. The number of animals per farm will

consequently increase. If Chinese want to produce milk they have to rear 'river' buffaloes, therefore they should increase the use of A.I., either producing themselves semen in China, or importing breeding bulls. In this case, Guanxi Experimental Station and the the A.I. centre will play a fundamental role, and they need to keep scientifically and technically updated and improved. Local centres for distributing the semen will also be created. The focal point for the development of buffalo milk production in China is a re-organization of the whole system: it is in fact impossible to succeed with dispersed and small production units as they at present are. Technological improvement will involve both animals (breeds, feeding, health), milk processing and distribution. A big potential exists and success will be possible if a correct organization of the different production stages will be planned and followed.

A poem

Following our invitation (n.2 Buffalo Newsletter, p. 13) of sending poems, sayings or idioms, concerning buffaloes, used in the readers' countries, we have received from Mr. Rik Rastosi, Trinidad, that we thank very much, the poem hereunder published.

Buffalo: The Black Gold

S.S. Blalaru⁽¹⁾

If a buffalo could talk, it would be heard saying that:

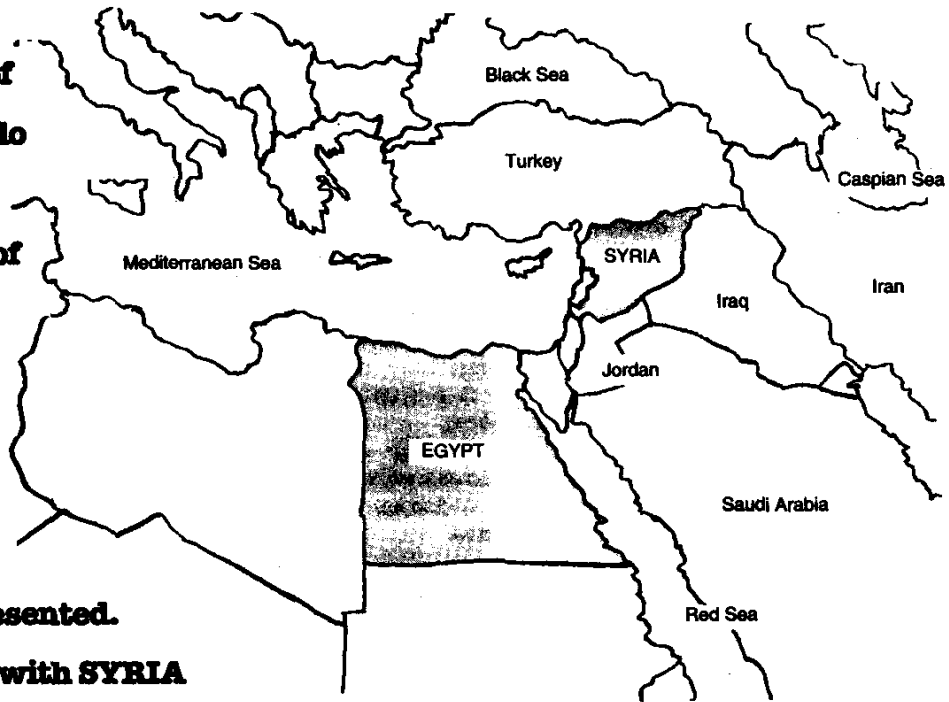
Though I am black
 my milk is white,
 People feed me poorly
 I improve their diet,
 They also raise me
 for meat and traction,
 Their satisfaction
 is my satisfaction,
 Please love me
 and don't hate,
 My milk is rich
 in SNF and fat,
 Improve me more
 as I have told
 As you know that
 I am black gold

⁽¹⁾ Assistant Professor in Animal Breeding, 620/1, Kundan Puri, Ludhiana 141001, Punjab, India.

In each of the next issues of the Buffalo Newsletter a description of Buffalo farming in every member country will

be presented.

We start with SYRIA and EGYPT



BUFFALO POPULATION AND PRODUCTION IN SYRIA

1 - ORIGIN:

Indian Origin.

- Types:

Two types could be distinguished:

1. The Mediterranean type.
2. The Indian type.

- Breed:

Not clear

- Crossings:

No crossing even between the two types.

2 - GEOGRAPHICAL AREAS:

1. The middle part of the country (Ghab plane)
2. The north eastern part of the country (Kamishly)

3 - NUMBER:

ADULT FEMALES 1800

ADULT MALES 70 } approx.

YOUNG STOCK 2700

The population of buffaloes was decreasing for the last decade, but due to the government efforts the number is preserved during last two years.

4 - NUMBER OF HERDS:

about 80

PRIVATE HERDS 80 (n. adults

1850, n. young 2695)

RESEARCH HERDS 1 (n. adults

20, n. young 8)

5 - DESCRIPTION:

(see table)

6 - PRODUCTIVITY:

N. DAYS LACTATION/YEAR:

210 - 270 days

LACTATION MILK YIELD (K.G.):

1200 - 1600

AGE AT FIRST CALVING (YEARS):

3 - 3.5

AVERAGE LACTATION NUMBER:

10 - 12

AGE AT SLAUGHTER FOR YOUNG STOCK:

male 15 - 18 month, female not slaughtered usually (6 - 7) years)

- WEIGHT AT SLAUGHTER FOR YOUNG STOCK:

male 200 kg. female 500 kg.

- IS THE CALF SUCKLING? **Yes.**

- HOW MANY MONTH? **4.**

- IN ALL HERDS ? **Yes.**

- ARE COWS MILKED ONCE A DAY?

No.

- ARE COWS MILKED TWICE A DAY?

Yes.

- WHERE?

They are milked on the

	ADULT MALE	ADULT FEMALE
Height at withers (cm)	155	155
Weight (kg)	536	499
color	Ghab type: entirely black Kamishly: black with white patches on the forehead, legs & tail	
Horns	Heavy and curved back wards, down wards in a slight reverse arch	

pasture while grazing or in the pen.

- ARE COWS MILKED BY HAND?

Yes

- ARE COWS MACHINE MILKED?

No.

7 - FERTILITY:

N. CALVE/YEAR: 1

SEASON OF CALVING: Sept - Nov.

8 - HOUSING:

Paddock.

9 - ARE BUFFALOES USED FOR DRAUGHT? No.

CART? No. PLOUGH? No.

10 - SOURCE OF FEEDING:

Mostly grazing on natural grasslands and agricultural by-products during March to October. Between Nov. and Feb. some farmers offer straw and other concentrates like maize, dry bread and wheat bran.

11 - TOTAL ANNUAL PRODUCTION BY SPECIES.

(see table)

N.B. Statistics of buffalo for the year 1994.

Statistics for other livestock for the year 1990.

OTHER PRODUCTS FROM BUFFALO:
Leather Horns.

12 - MILK RECORDING:

Recently started with limited number of farmers.

13 - REPRODUCTION:

HAS EACH FARMER HIS OWN BULL?



Generally yes.

ARE THERE BULLS FOR NATURAL SERVICE AVAILABLE IN VILLAGES?

Yes.

HOW MANY? Few.

ARTIFICIAL INSEMINATION:

No A. I for buffalo.

14 - DISEASES:

Fever, abscesses on jaw and mouth, liver flukes, viral diarrhoea, F & M, parasites: tikes.

15 - SOCIAL POSITION OF BUFFALO FARMERS.

Buffalo farmers in Syria are specialized farmers; they don't practice other activities of agriculture. In Ghab area, they live in close villages, while in Kamishly they are basically settled bedouin.

16 - PERSPECTIVES OF BUFFALO PRODUCTION:

The Syrian government has already provided some funds

for establishing a buffalo centre in the Ghab region. This centre will be established on nearly 10 ha. to have ultimately 100 adult female buffaloes with offspring. This centre will be for buffalo research and development, which should not only carry out research on various aspects of the Syrian buffalo, but also initiate steps for buffalo development through the relevant provincial

Directorate of Agriculture. Also free veterinary services are already extended to all buffalo farmers; in addition a subsidized concentrated feed is being provided. The buffalo farmers want to continue with buffalo keeping as they feel that:

- A) It is their traditional occupation;
- B) Buffalo are more docil and are generally looked after by women;
- C) Buffalo needs less care and less elaborate sheds to keep;
- D) They do not require expensive costly feeds tuff;
- E) Their milk is rich in fat and appreciated by all;
- F) Buffalo cream and cheese have no rivals for their taste and quality;
- G) Buffalo are closer to farmers' family members than cattle.

Buffalo Network National co-ordinator
Dr. Adnan Swaid

	ADULT FEMALES #	TOTAL MILK MT	CONDENSED FAT%K	CHESSE	FRESHWATER MILK & YOGHOURT	OTHER DAIRY	MEAT MT
Buffalo	1800	2041	5%	60%	10%	25% butter+cream	500
Cow	551954	770686	595085	19457	160092	4420	22610
Sheep	14506606	497127	69222	42045	46544	11253	113805
Goat	999677	62619	19111	4056	8422	691	5976

BUFFALO POPULATION AND PRODUCTION IN EGYPT

1 - ORIGIN, TYPE, BREEDS, GROUPS AND CROSSING:

Asiatic (River!)

2 - GEOGRAPHICAL AREAS:

Nile valley + delta

3 - NUMBER:

ADULT FEMALES 1366736
ADULT MALES 95424
YOUNG STOCK 1360894

4 - NUMBER OF HERDS:

PRIVATE HERDS 90%
RESEARCH HERDS 5%
INDUSTRIAL HERDS 5%

5 - DESCRIPTION:

(see table, top)

6 - PRODUCTIVITY:

N. DAYS LACTATION/YEAR:
210 - 280 days
LACTATION MILK YIELD (K.G.):
1600
AGE AT FIRST CALVING (MONTHS):
34 - 41
AVERAGE LACTATION NUMBER:
7
AGE AT SLAUGHTER FOR YOUNG STOCK:

male 12

WEIGHT AT SLAUGHTER FOR YOUNG STOCK:

male 200 kg.

- IS THE CALF SOCKLING? **Yes, (mainly females).**

- HOW MANY MONTH? **3.**

- IN ALL HERDS? **Yes.**

- ARE COWS MILKED ONCE A DAY? **No.**

- ARE COWS MILKED TWICE A DAY? **Yes.**

- WHERE?

Every where.

- ARE COWS MILKED BY HAND?

Yes

- ARE COWS MACHINE MILKED?

Only under intensive systems.

- TYPE OF MILKING MACHINES:
Single or double.

7 - FERTILITY:

N. CALVES/YEAR: **1/2**
SEASON OF CALVING:
Autumn and Winter

8 - HOUSING:

Loose housing, shed, tied, paddocks.

9 - ARE BUFFALOES USED

FOR DRAUGHT? No.

CART? No.

PLOUGH? Occasionally.

WHICH ANIMALS ARE USED FOR DRAUGHT?

Females 2 yrs. old.

10 - SOURCE OF FEEDING:

Grazing + indoor feeding + cut and carry.

11 - TOTAL ANNUAL PRODUCTION BY SPECIES.

(see table, bottom)

MOST RECENT YEAR: **1995**

OTHER PRODUCTS FROM BUFFALO:
Leather Horns.

12 - MILK RECORDING:

Little.

13 - REPRODUCTION:

HAS EACH FARMER HIS OWN BULL? **No.**

ARE THERE BULLS FOR NATURAL SERVICE AVAILABLE IN VILLAGES?

Yes.

HOW MANY? **1-3.**

ARTIFICIAL INSEMINATION:

(n. buffalo cows inseminated/year: **5000**)

14 - DISEASES:

Foot and Mouth Disease, Haemorrhagic septicaemia.

PARASITES:

Blood parasites (thielarisis).

15 - SOCIAL POSITION OF BUFFALO FARMERS.

Moderate.

16 - PERSPECTIVES

OF BUFFALO PRODUCTION:

Buffalo is the dairy animal in Egypt. Buffalo numbers are increasing but their contribution to national milk yield is decreasing due to the spread of dairy breeds, mainly Holstein and its crosses.

Fikri El-Kirabi,
Buffalo Network Co-ordination Board

	ADULT MALE	ADULT FEMALE
Height at withers (cm)	150	125
Weight (kg)	300	250
color	dark greyish	
Horns	strong	stickle shape extending backwards smaller + thinner

	ADULT FEMALES	TOTAL MILK MT	CONSUMED FRESH	CHEESE	FERMENTED MILK & YOGHURT	BUTTER & GREASE	MEAT MT
Buffalo	1366736	476070	┌	┌	┌	┌	591702
Cow	660755	1561510	┌	┌	┌	┌	461277
			1067000	484000	55000	126500	
Sheep	1590895		┌	┌	┌	┌	212192
Goat	1049175	12245	┌	┌	┌	┌	69855

INTERNATIONAL SYMPOSIUM ON BUFFALO REPRODUCTION

SCIENTIFIC PROGRAM

Thursday, October 5, 1995
 2:00 pm Registration
 7:00 pm Get-together cocktail party

Friday, October 6, 1995
 8:30 am Opening
 9:15 am Keynote Speaker:
 Male Reproductive Performance
 10:00 am Coffee
 10:30 am Poster Session
 11:00 am Poster discussion
 1:00 pm Lunch
 2:00 pm Keynote Speaker:
 Physiology and Endocrinology of Reproduction
 2:45 pm Poster Session
 3:30 pm Coffee
 4:00 pm Poster discussion

Saturday, October 7, 1995
 9:00 am Keynote Speaker:
 Improving the Use and Efficiency of AI
 9:45 am Poster Session
 10:30 am Poster discussion
 1:00 pm Lunch
 2:00 pm Keynote Speaker:
 Biotechnology of Reproduction
 2:45 pm Poster Session
 4:00 pm Coffee
 4:30 pm Closing Session
 6:00 pm Dinner

Sunday, October 8, 1995
 9:00 am Trip to Buffalo Farm (The time of return will be considered with those wishing earlier depart).



Institute of Biology and Immunology of Reproduction

First Announcement... First Announcement...



INTERNATIONAL SYMPOSIUM ON BUFFALO REPRODUCTION

October 06-08, 1995
 Institute of Biology and Immunology of
 Reproduction
 Sofia 1113, Bulgaria



Inter-regional Cooperative
 Research Network on Buffalo
 FAO

OBJECTIVES:

The objectives of this Symposium are to provide information on recent developments in the rapidly advancing field of buffalo reproduction and to promote the lively exchange of current concepts. A Keynote Lecture will be presented in four areas and will be followed immediately by poster presentations. The Lecturers will accompany the participants around posters. Presenters will stand by their Posters and be given 5 minutes to explain very concisely its content (please note, it will be important to prepare your poster and key points you want people to remember before going to this Symposium). Afterwards time will be given for general discussion. During discussion slides/projector, overhead/projector and a video (VHS - PAL) will be available at the theatre and you will have a chance to stress on what you consider important.

SPONSORS:

Food and Agricultural Organization
 Agroholding ANGORA - Earmenery J.-S.C. - Sofia

FURTHER INFORMATION FROM:

L. N. Kanchev
 Inst. Biol. Immunol. Reprod.
 73, Tsarigradsko Shosse
 Sofia 1113, Bulgaria
 tel. ++3592-720608, ++ 3592-722381
 fax ++3592-720022
 E-mail: BIRBAS@BOICCT.BITNET

REGISTRATION INFORMATION:

The registration fee for the Symposium on Buffalo Reproduction is 95 dollars. This fee includes:
 - all Sessions
 - refreshments during breaks
 - lunches (buffet - 3 courses)
 - get-together cocktail
 - dinner (last evening)
 - one day trip to Buffalo Farm - Javoren
 - final programme and proceedings

Please complete the registration form and return no later than June 19, 1995. Registration fee is to be paid at Registration Desk, preferably, made by cash. The second announcement will reach you no later than middle of July.

OFFICIAL LANGUAGE:

English will be the official language of the Symposium.

TRAVEL AND ACCOMMODATION:

Sofia is serviced by air from major cities in Europe, Africa and some U.S. cities. Participants should contact their local Airline office for full information. From Sofia Airport, the Institute of Biology and Immunology of Reproduction can be reached by bus N 84. The 7th stop is the place you should get off. It is just in front of Piteks Hotel. The Institute is located three hundred meters down on the same road. Room rates at Piteks Hotel (three stars) are about 39 dollars/25 dollars - single/double per night/per bed (including breakfast). Alternates housing (private rooms, other hotels) also have been considered for reservations.

International Scientific Committee	National Organizing Committee
A. Ptila	Chairman - Tz. Hinkovaki
D. Chaplin	Sci. Secretary - L. Kanchev
D. Masetico	
F. El-Kerabi	A. Alekolev
J. Boyazoglu	A. Danov
L. Kanchev	K. Vlahov
S. Galal	S. Pavlova
	Tz. Pevce

PUBLICATIONS:

Key-lectures (max 8 pages), posters as a written communication (max 4 pages) and the concluding remarks of the Chairmen will be published in Proceedings of the Symposium. Instructions for preparation of the papers will be sent with the Second Announcement.

INSTRUCTIONS FOR THE PREPARATION OF POSTERS

1. Posters must be written in English.
2. Please follow the order:
 - * Title (in bold). Capital letter only. Please center.
 - * Author's initials before surname.
 - * Full postal address. Please give tel. and fax N.
3. Poster place available: 100 cm/90 cm.

PREVALENCE, PATHOLOGY AND SOME SERUM BIOCHEMICAL PARAMETERS OF REPEAT BREEDING SYNDROME IN BUFFALOES

N. Shahzada A. Khan and M. Ahmad ⁽¹⁾

Department of Veterinary Pathology - ⁽¹⁾Department of Animal Reproduction
University of Agriculture, Faisalabad-38040, Pakistan

This study was carried out on 200 Nili-Ravi buffaloes artificially inseminated in the Clinic, Department of Animal Reproduction, University of Agriculture Faisalabad, in order to know the incidence of repeat breeding and to evidence some haematological, biochemical and histopathological parameters in repeat breeding buffaloes. Overall incidence of repeat breeding in buffaloes was found to be 15.5 per cent. A relationship was found existing between parity number and repeat breeding. Of the 31 (15.5 %) repeat breeding buffaloes, highest percentage of repeat breeding was observed in 3rd parity ones (29.03 %), followed by 4th (19.36 %), heifers (16.13 %) 2nd (12.90 %) and 5th (9.68 %) parities. Whereas 1st and 6th parities showed lowest (6.45 %) incidence of repeat breeding. T-test revealed significant ($P < 0.01$) differences in between different parities of buffaloes.

Haematological studies revealed that red blood cell counts haemoglobin concentration, packed cell volume and erythrocyte sedimentation rate were significantly ($P < 0.01$) lowered in repeat breeding buffaloes as compared to healthy buffaloes. Rouleaux formation in blood smears from all buffaloes was a consistent feature. Crenated erythrocytes and few erythrocytes with paler areas

in the center in most of the blood smears from repeat breeding buffaloes were observed. Results of mean corpuscular volume and mean corpuscular haemoglobin concentration revealed that repeat breeding buffaloes were suffering from macrocytic normochromic anaemia.

Relatively increased total leukocyte counts along with neutrophilia and lymphocytopenia were observed in repeat breeding buffaloes as compared to apparently healthy buffaloes. Immature cells of neutrophilic series like megakaryoblasts and megakarocytes were also seen. Eosinophils though differed non significantly in between apparently healthy and repeat breeding buffaloes but were relatively higher in the second group.

Non-significant differences were found in the values of total proteins, glucose and cholesterol in between apparently healthy and repeat breeding buffaloes. Total proteins and glucose concentrations were comparatively higher in apparently healthy buffaloes as compared to repeat breeding buffaloes, whereas cholesterol concentration was the opposite.

Endometrial biopsies from repeat breeding buffaloes showed inflammatory condition characterized by the infiltra-

tion of neutrophils lymphocyte aggregations and plasma cells in the lamina propria interglandular lamina propria as well as in uterine glands. Proliferation of fibrous connective tissue was also observed.

Hydropic degeneration in zona spongiosum and compactum was an other feature recorded in the endometrial biopsies from repeat breeding buffaloes. Atrophy of uterine glands was also observed. Blood vessels showed arteriosclerosis. Necrosis in the stratum functionalis and basalis including necrosis of uterine glands interglandular lamina propria, and even of fibrous connective tissue was observed.

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A. M. Pilla

Assistant Editor
R. Motil

Network Co-ordination Centre, to which
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INSTITUTE OF ANIMAL REPRODUCTION
VIA SELATA, 51

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RECORDING OF MILK PERFORMANCES IN BUFFALOES

The International Committee for Animal Recording (ICAR) has the purpose to set up rules and agreements on the recording of animal performances in the member countries. Official rules, common among different countries, are fundamental for the genetic evaluation of dams and sires, both at farm level and at national level.

In the ICAR member countries there is an increasing need to record dairy animals other than cattle: in fact in some countries milk produced by sheep, goat and buffaloes is very important in the human diet.

The majority of the countries producing buffalo milk are not member of ICAR. In some of these countries - Italy, Egypt, Bulgaria, India, Venezuela, etc. - local rules for the milk recording of buffaloes are already in force. However, the need of

common guidelines for the recording system is felt, without which no comparison is possible between animals of different countries and therefore no exchange of breeding animals. These countries might be interested in becoming members of ICAR, in case they are not yet.

On the occasion of last ICAR session (Ottawa, August, 1994) the creation of a working group studying the opportunity of setting up common rules for buffalo milk recording was proposed. The coordination centre of the 'Buffalo Network' was charged to contact eventual interested people in order to:

- inquire about the dairy buffalo production systems in the world, and about eventually existing milk recording systems;
- prepare a report on the present situation of milk recording

of buffaloes in the world, to be presented during the next ICAR session (June 1996).

The co-ordination board has therefore prepared a detailed questionnaire which was sent to the officers of the Ministry of Agriculture or National Veterinary Services, in the countries where buffaloes are important, with the purpose of collecting information on milk recording. Answers are expected before the end of the summer 1995.

In case any of the readers has information of buffalo milk recording in his country, but was not contacted by the coordination board, we invite him to write to:

B. Mololi
Buffalo Network Co-ordination Centre
Istituto Sperimentale per la Zootecnia
Via Salaria 31,
00016 Monterotondo - Italy



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FROM PAGE 1 / A.M. PILLA

Meat production (S. Gigli, Italy) is not as important as milk, except in Egypt where more buffalo than cattle meat is produced (16% more). In some countries (Italy) if a male calf will not be breeding animal it is often killed at birth: in fact daily gain and feed conversion are much poorer than in cattle. On the contrary, taste and composition of buffalo meat are fully similar to cattle: it is often sold as if it were beef. It is in general freshly cooked and eaten, but in Bulgaria various types of sausages are made: Gabrovska Kaiser Pastarma, Sniadovska Lukan-ka, Flat Sausage Shumen (T. Peeva). Meat products in Asia were also described (T.B. Thapa, Nepal).

Genetic improvement of buffaloes must be pursued (D. Matassino and B. Miotoli, Italy), considering not only milk quantity, but quality, regards to technological characteristics of milk related to the type of proteins. A. Georgoudis (Greece) referred on environment and quality of buffalo products, while E. Villa and G. Fabbri on the results of artificial insemination in Italy.

A representative of buffalo breeders of Venezuela (J. Reggeti) collected information on buffalo production in Latin America and together with the paper of G. Vale (Brazil) evidenced that buffalo farming will greatly develop in this continent, both for milk and meat production.

A very interesting poster session was also presented.

Buffalo is already a useful animal for mankind, but due to adaptability and tolerance to extreme climates, and thanks to the peculiarity of the products, it will be more and more exploited. Think of leather, which is very soft, elastic and strong but needs still to be valorized.

Research on buffaloes has recently become widespread, and the Buffalo Network itself aims to emphasize links and exchange among technical and research institutions of different countries.

We warmly thank all lecturers, the FAO representatives (M. Zijalic, J. Boyazoglu, D. Chupin, E.S. Galal), the chairmen and rapporteurs of the Symposium, as well as the organizers (D. Matassino, S. Gigli and F. Grasso).

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Istituto Sperimentale per la Zootecnia
via Salaria, 31
00016 Monterotondo, Italy