

Buffal Newsletter

Number 1 November 1993

EUROPE - NEAR EAST

INFORMATION BULLETIN OF THE FAO INTER-REGIONAL COOPERATIVE RESEARCH NETWORK ON BUFFALO

The FAO Inter-regional Cooperative Research Network on Buffalo was established during the special Round Table held in Cairo (Egypt) on 11 November 1992. This was organized by the FAO Regional Office for Europe (REUR) and the Regional Office for the Near East (RNEA) in cooperation with the Animal Production and Health Division (AHDI). In May 1993 the Network's Coordination Board Meeting held in Monterotondo (Rome, Italy) decided that the Coordination Centre of the Network should publish a Network Newsletter at least once a year.

It was decided that the Newsletter will be mainly oriented towards reporting on buffalo research, development and production activities in the region, but also take into consideration information on relevant international matters.

We trust that this venture will help develop the communication among the members of the REUR/RNEA Network and also create a bridge with our colleagues of the FAO Asian Buffalo Network and those in Latin America. The Newsletter can enhance the necessary interaction between the various basic and applied fields involving buffalo.

The Newsletter will have various sections: short scientific articles, notes and reports, various news items on meetings, technical and technological developments and innovations, bibliographic reviews and, last but not least, specific information relating to past, present and future activities of the Network.

The material and information to be published will thus relate to the activities of the FAO Network, its mem-

bers and other related organizations in the field of buffalo production, research and products.

We would greatly appreciate it if the Network members, but also other interested parties, would collaborate actively, sending to the Editor (Name, Address, Fax, No., Tel. No.) all information and material for publication in future issues.

Many thanks to our members and contributors.

The Editor

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THE BUFFALO RESEARCH NETWORK

An inter-regional cooperative network for research on buffalo was created among European and Middle-East countries in November 1992.

It is one of the eleven networks sponsored by FAO, involving European and non-European countries.

Italy, Bulgaria, Egypt, Albania, Rumania, Greece, Turkey, Azerbaijan, Syria and Iraq have joined the network.

The network has the following purposes:

- a) to promote the exchange of information and data on research concerning buffaloes;
- b) to undertake collaborative research projects, facilitate documentation and organize joint meetings, training courses and exchange of scientists and technicians.

It is formed by the following bodies:

1)

The Network Coordination Centre, established at the Italian Animal Production Research Institute.

Coordinator: Prof. A.M. Pilla, Istituto Sperimentale per la Zootecnia, Via Salaria 31 - 00016 Monterotondo, Italy.

2)

Three Working Groups, each with a defined research area:

WG1: Reproduction; Coordinator: Prof. L. Kanchev, Institute of Biology and Immunology of reproduction, 73 Trakia Blvd, Sofia 1113, Bulgaria;

WG2: Livestock Systems; Coordinator: Mr. H.El-Nouby, Animal Production Research Institute, Nadi El-Seid St. Dokki, Cairo, Egypt;

WG3: Products; Coordinator: Prof. D. Matassino;

Dipartimento Scienze delle Produzioni Animali, Via Università 100, 80055 Portici, Italy.

3)

A Coordination Board, composed of members of the Network Coordination Centre, the coordinators of the three WGs and FAO officers.

4)

National Liaison Centres, one for each country which has joined the network. They favour links among the institutions of their country, the coordinators of the WGs and the Network Coordination Centre. They will also organize the activities hosted by the country. The following liaison centres were proposed:

Italy

Istituto Sperimentale per la Zootecnia, Via Salaria 31 - 00016 Monterotondo (Prof. A.M. Pilla)

Bulgaria

Institute of Biology and Immunology of Reproduction, 73, Trakia Blvd., Sofia 1113 (Prof. L. Kanchev)

Egypt

Animal Production Research Institute, Nadi El Seid St., Dokki, Cairo (Mr. H. El-Nouby)

Albania

Directorate of Animal Production, Ministry of Agriculture and Food, Tirana (Dr. Y. Bicoku)

Rumania

Research and Production Station for Bovine Breeding, P.O.B. 4328, Str. Principala

102, Tg.Mures (Dr. I.Popovici)

Greece

Dept. of Animal Production, Faculty of Agriculture, Aristotle University, Box 257, 54006 Thessaloniki (Prof. A. Georgoudis)

Turkey

Animal Science Dept., Ziraat Facultesi Zootecni Bolumu 06100 Ankara (Dr. S.M. Yener)

Azerbaijan

Breeding Council for Zebu and Zebulike cattle, Gyandjatup I. House 9, Gyandia (Prof. Z.K. Verdiev)

Syria

Directorate of Agricultural Research, Ministry of Agriculture Dowar Al-Matar, Damascus (Dr. Adnan Swaid)

Iraq

Dept. of Animal Resources and Health Research, State Board of Agriculture Research, Ministry of Agriculture and Irrigation, Bagdad (Dr. S.A. Magid)

The first meeting of the Coordination Board was held on May 6th and 7th 1993 at the Animal Production Research Institute, Monterotondo (Rome).

During the meeting the first topics of interest for each Working Group were defined:

For WG1:

oestrous cycle;

For WG2:

1- calf rearing systems;

2- study of a methodology

for recording the productivity

of buffalo cows;

For WG3:

THE BUFFALO RESEARCH NETWORK

typical regional buffalo products.

The above topics were selected on the basis of the following considerations:

1)

Oestrous cycle: it is the object of many ongoing research projects in Italy and Bulgaria; it involves seasonality, puberty, ovarian disorders, etc., therefore it is very much directed to buffalo productivity.

2.1)

Calf rearing systems: mortality is an urgent problem in the countries with intensive buffalo farming; a lot of research work is going on in Egypt about modernization of housing, weaning techniques and formulation of milk replacers.

2.2)

Recording of the productivity of dairy buffaloes. ICAR (International Committee for Animal Recording) has shown interest to giving guidelines for milk recording in buffaloes. Italy is a member of ICAR and has been recording buffaloes for more than 15 years by establishing national regulations. Guidelines for an international common methodology of milk recording are a necessary requirement for animal evaluation, before any exchange of genetic material can be effected.

3)

Define, characterize and improve typical regional buffalo products. In the Cairo Symposium emphasis was given to buffalo typical

products which might obtain high prices; legislation is ready to protect them. Furthermore, such products and their technology are very little known.

Each coordinator of Working Group will contact institutions and people in all the countries of the network and collect information on ongoing research, future research projects, still open problems, as far as his topic is concerned.

Contacts will be taken through the National Liaison Centres.

Contacts will also be favoured by the FAO libraries where a list of institutions working on special subjects can be obtained.

During the meeting of the Coordination Board, the future activity of the network was planned.

The Products WG has prepared a detailed questionnaire forwarded to institutions of all countries, in order to collect information on typical products and their technology. In Autumn 1994 there will be a workshop with a main paper reporting the results of the questionnaire, plus several short papers concerning products. All institutions interested will take part to the workshop. The workshop will be the starting point for setting up future plans for the valorization of typical products. Probable venue: Salerno, Italy.

In the meantime, WG 1 and 2 will be active in contacting the research Institutes interested in the defined topics and in collecting data and information from them.

Eventually, cooperative research projects might be envisaged or started.

Attention has to be paid to

the potential sponsoring organizations - EEC or others.

In Autumn 1995 there will be a technical consultation of all the members of the network, divided in sessions corresponding to the WGs.

In Autumn 1996 a general meeting of the network will take place, reporting the conclusions of 3 years of activity.

Buffalo Newsletter

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RUMEN DEGRADATION OF FEEDSTUFFS AND BY-PRODUCTS WITH DIFFERENT FIBRE CONCENTRATIONS IN BUFFALOES AND CATTLE

Settineri D., Pace V., Marzoli C.

The hypothesis that the buffalo degrades fibrous feeds and by-products better than other ruminants is very debatable (Mudgal, 1991). The literature, very rich as far as cattle and sheep are concerned, still offers little and contradictory information about buffaloes.

Devendra (1983) found that buffaloes have a greater ability to digest high fibre feeds; Moran *et al.*, (1979) and Moran (1983) reported a greater dry matter intake by buffaloes for fibrous feeds. In a recent review (Wanapat, 1989) some parameters of digestive physiology and nutrition are compared for buffaloes and cattle. Some differences in favour of the buffalo were confirmed, such as a greater amplitude of the reticulo-rumen contraction and a greater efficiency of the cellulolytic bacterial population and the digestion and utilisation of nitrogen. Numerous authors (Homma, 1986; Chanthai *et*

al., 1987; Abdullah *et al.*, 1990; Trufchev *et al.*, 1991) have found higher rumen NH_3 concentrations in buffaloes, and Trufchev *et al.*, (1991) in particular reported a higher rumen digestion of the cellulose, always associated with a larger protozoal population.

In contrast, Valdares *et al.*, (1990) did not find differences between species in terms of NH_3 levels, dry matter digestibility of the diet and rumen outflow rate, while Abdullah *et al.*, (1990) reported a faster *in situ* degradation of dietary dry matter in buffaloes.

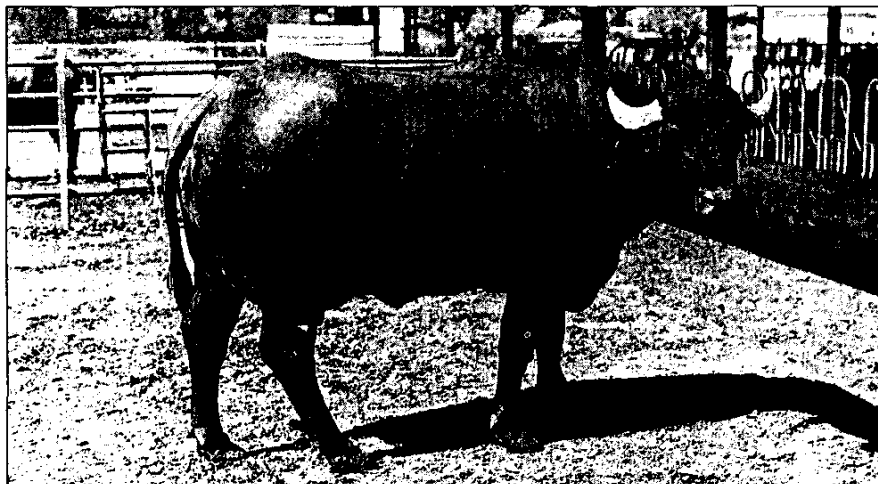
Punia and Sharma (1990) reported a greater VFA production in buffaloes, associated with a lower rumen outflow rate, and they deduced a greater degradability of feeds by buffaloes than by cattle.

However, as most of the data reported in the literature refer to Asian buffalo populations, it was considered worthwhile to confirm any eventual differences in degradative capacity between Friesian cows and

Mediterranean buffaloes.

In the last 3 years two series of trials were carried out in the Animal Production Research Institute (Rome): in the first one, kinetics of ruminal degradation patterns of organic matter and cell wall constituents (NDF, ADF and ADL) of several feedstuffs and by-products, easily available in Mediterranean Countries, were compared in fistulated buffalo and Friesian cows fed on the same diet; in the second one, degradation patterns of cell wall constituents and organic matter of hay, wheat straw and of the two different diets, composed of hay + concentrate and wheat straw + concentrate respectively, were compared in fistulated buffalo and Friesian steers.

Another interesting aspect of the physiological digestive process is connected with the presence of microbial strains that could be different in buffaloes and cows. In order to investigate this problem the rumen fluid cellulase activity of the



3 yr. old cow, 1th lactation in course (Animal Production Research Institute, Tor Mancina, Rome).



6 yr. old cow, 4th lactation:
2,600 kg milk, 7.31 % fat, 4.81
% protein, in 270 days (Animal
Production Research Institute,
Tor Mancina, Rome).

two species, fed on the previous described diets, has been determined by measuring the enzyme activity at different times after the meal.

The first trial was carried out using three Mediterranean buffalo cows (630 kg of live weight) and 3 Friesian cows (560 kg), 6 years old and rumen cannulated, fed on the same diet: 75% of *Dactylis* hay + 25% concentrate at 13.1% of crude protein on dry matter. Subjects were used to determine organic matter, and fibrous fractions, (ADF, ADL and NDF), *in vitro* and *in situ* degradability of 8 feedstuffs and by-products with different quality and content of fiber: *Dactylis* hay, (also used to feed the animals of the trial), first cut lucerne hay, dried sugar-beet pulp, barley grains, wheat straw, vine shoots, olive prunings, olive cake, and two standards: pure cellulose and milled wood.

In the second trial 4 Mediterranean buffaloes and 4 Friesian steers (live weight about 500 kg) were divided according to a factorial scheme with change-over (2 animals of each species for each diet) and were fed on 2 different diets, at 11.5% of protein on dry matter, given twice a day: diet A - 75.5% of wheat straw + 24.5% of concentrate at 36% of crude protein; diet B - 75.1%

of natural grassland hay + 24.9 of concentrate at 24% of crude protein; the subjects were used to determine the degradability of organic matter and fibrous fractions (ADF, ADL and NDF) of wheat straw, grassland hay and two diets (A and B), following the same methods of the first *in situ* trial.

Results

In all the experiments, the pH of cow rumen fluid was significantly lower than the buffalo one, although in absolute terms the differences were modest. Particularly in the second trial the pH values (figure 2), varied with the hours after meal and with the diets of animals but values for cows are constantly lower respect than of buffalo ones. The pH data are partly in contrast with those reported by Trufchev *et al.*, (1991) who found pH values, at time 0, of rumen fluid from buffalo calves equal or lower than those of liquor from bovine calves fed diets based on meadow hay and concentrates (51%: 49% and 75%: 25%). The same authors also observed that the ammonia concentration was always higher in buffalo rumen fluid, and that VFA production was similar. Chanthai *et al.* (1987) also found higher NH₃-N levels in buffaloes, no differences in pH and

higher concentrations of VFA in cattle. In *in vitro* experiments, Punia and Sharma (1985) reported higher VFA concentration in buffalo rumen liquor, and pH values depending more on incubation time than on the source of the liquor.

The degradability of the different feeds was, as expected, very variable but the work had the aim to point out the possible differences between species within feed sample.

The initial solubility of organic matter, closely related to the physical structure of the feeds, was always higher in buffaloes than in cattle (12.02% of organic matter vs 6.56% respectively); this result is probably due to a constantly lower initial bacterial contamination of the bags by the buffalo rumen liquid. In fact, in the contemporary *in vitro* degradability trial, it was also noted that there was a lower residual dry matter in the buffalo rumen liquor (13.80 mg/ml vs 14.10 mg/ml), which could indicate a lower number of microorganisms present per unit of volume and a more abundant salivary secretion by the buffaloes, with a consequent dilution of the rumen fluid (Setia *et al.*, 1972). In the second trial the differences between species of initial solubility are overcome by the



Buffalo herd of the Animal Production Research Institute, Tor Mancina, Rome

influence of the diets received by the animals.

The bacterial contamination extended over the early hours of incubation and concerned the crude fibre in particular, so that the degradability of the fibre fractions resulted sometimes negative for high fibre feeds: the ADF and ADL degradability of vine shoots was: -2.4% vs -1.0% and -3.6% vs -8.0; of olive prunings: -3.8% vs -2.3% and -14.9 vs -10.3 and of olive cake: -3.5% vs -4.4 and -14.2 vs -5.6, for cattle and buffaloes respectively. The pure cellulose, completely lacking in crude protein, resulted heavily contaminated with protein (figure 1) certainly derived from rumen bacteria. In fact, in the case of low protein feeds such as cellulose and

straw, bacterial contamination can significantly increase the quantity of protein nitrogen recovered in the residues (Varvikko and Lindberg, 1985; Teller and Vanbelle, 1990).

In the first trials the maximum degradation of organic matter and NDF reached after about 96 h of incubation, was always significantly higher in buffaloes for most of the feed samples. The pure cellulose was completely degraded after 72 h in both species while in *in vitro* experiment the difference at 72 h still resulted about 20% (49.1% vs 61.6% of organic matter for cattle and buffaloes respectively), indicating a greater *in vitro* cellulolytic bacterial activity for the buffalo rumen liquor in the presence of a poor substrate such as the

cellulose.

The degradation of the NDF and ADF fractions was similar to the organic matter one, but, of course, the values were slightly lower.

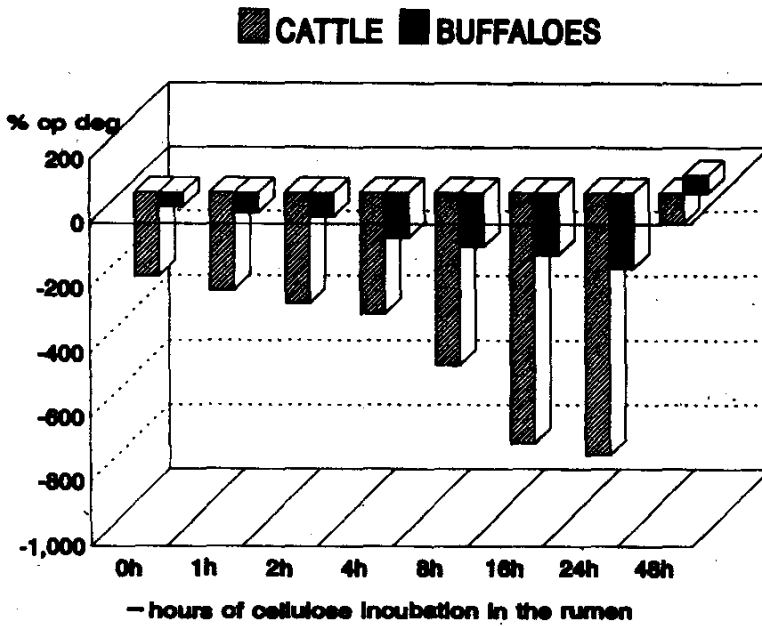
The maximum degradation values of ADL resulted always higher in buffaloes particularly for *Dactylis* hay (18.3 vs 44.2%) and vine shoots (13.9 vs 18.6%) for cattle and buffaloes respectively. These values are not comparable in absolute terms with the data of maximum degradation of organic matter indicating the resistance to rumen degradation of this fraction.

In the second trial the differences in the maximum degradability of organic matter and NDF were modest either between diets or between spe-

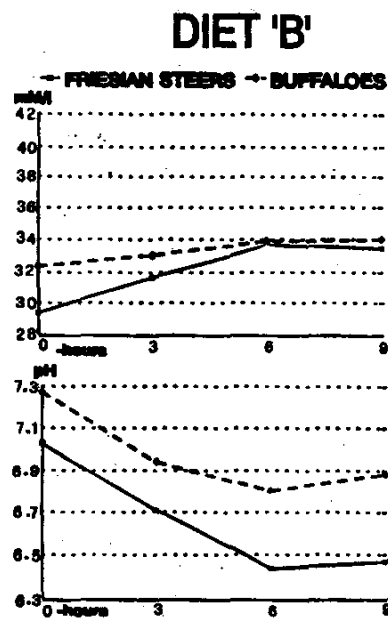
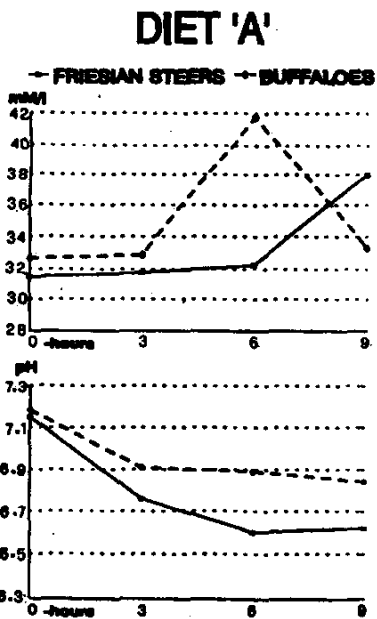
MAXIMUM DEGRADATION OF ADLIGNIN (% ON INITIAL CONTENT)

ANIMAL FEEDS SAMPLES	DIET A		DIET B		RMSE*
	BUFFALOES	FRIESIAN STEERS	BUFFALOES	FRIESIAN STEERS	
Wheat straw	23.50 a	24.64 a	20.78 c	21.17 b	4.174
Diet A	28.89 ab	28.85 ab	30.50 a	27.43 b	5.567
Grassland hay	30.14 b	24.84 c	33.63 a	29.02 b	6.302
Diet B	39.86 b	37.16 c	42.32 a	39.22 bc	4.778

* RMSE: Root means square error. a, b, c: P ≤ 0.05



% of undegraded crude protein recovered in the bag residues of pure cellulose incubated in buffaloes and cattle with respect to the initial content of cellulose crude protein (0.56%).



Reducing sugars (mM/l) produced by cellulolytic enzymes in rumen fluid samples drawn from buffaloes and Friesian steers fed on diet A or diet B at different times (hours after the meal).

cies, but, generally, the hay and the wheat straw were digested better by the animals fed on the diet containing hay or wheat straw respectively. ADF degradability followed the same trends of NDF and organic matter.

Differences more noticeable, in spite of the greater variability of data, were pointed out from the ADL degradability

values; buffaloes degraded the hay and the two diets better than cattle; furthermore the degradation was dependent upon the diet received by the subjects: the ADL of grassland hay, wheat straw, diet B and, at lower extent, diet A was better utilised by the animals which had received the same feedstuffs in the ration.

A further trial in order to

verify the presumed different attitude of buffaloes and cattle to degrade high-fiber feeds has been made by determining the rumen cellulase activity of the two species.

For this purpose samples of rumen fluid were drawn after 0, 3, 6 and 9 hours from the meal and incubated anaerobically under CO₂, with a substrate of carboxymethylcello-



Buffalo herd of the Animal Production Research Institute, Tor Mancina, Rome

se for 24 h. At the end of incubation the cellulase activity was calculated by determining the amount of the reducing sugars in the mixture after filtration. The trend of the cellulase activity (figure 2) seemed affected both by the different diets and the species.

The straw based diet A caused a higher cellulase activity both in buffaloes and cattle; in the buffaloes fed on diet A, probably because of the higher content in fiber and the smaller amount of sugars, a strong increase of cellulase activity was measured 6 hours after the meal, whereas in the cattle fed on the same diet the differences appeared quantitatively moderate and the maximum is reached after about 9 hours.

Conclusions

In the feedstuffs examined, the buffalo rumen fluid degraded the organic matter *in vitro* more than the cattle fluid, and, even though the differences were very small in absolute terms, for almost all the samples this result was consistent, indicating a greater efficiency of the buffalo microflora.

In the *in situ* trial maximum degradation also resulted higher in buffaloes than in cattle; although this value derives from a series of parameters

(and one of them is the ruminal out-flow rate, which could be different between the two species depending on rumen peculiar characteristics such as the volume and the motility or the liquid-solid phase ratio), the effective degradability calculated from the kinetics parameters of the trials resulted in agreement with the *in vitro* degradability values obtained from the same feedstuffs (Settineri *et al.*, 1993).

Maximum degradation also resulted higher in buffaloes than in cattle: the more noticeable differences were found in the feedstuffs with the higher fiber contents, like the hays and the by-products, while the concentrates were almost completely degraded in both species.

The trials generally confirmed, in spite of some discrepancies, that the rumen of buffaloes has a greater capacity to degrade feedstuffs than the rumen of cattle and that this peculiarity is however dependent upon chemical composition of the examined feedstuffs.

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6 yr. old cow, 4th lactation:
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"BEETELLO" - A BUFFALO CALF REARING/FATTENING PROJECT TO HELP THE MEAT GAP IN EGYPT

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Egypt has one of the largest buffalo population in the world and the largest in the Mediterranean and Europe, estimated at approximately 2.9 million producing about 350,000 male slaughter calves a year. Traditionally male calves have been slaughtered as veal, often at a weight less than 100 kg to save the expensive milk for sale and due to the fact that because of their ferocity, mature male buffaloes had not been used for farm work.

Egypt has a great meat gap. It imported 148,400 m. tons of red meat of different sorts in 1991 (FAO, 1992).

It has been on the mind of researchers and developers in Egypt that "if calves slaughtered at the immature weight of < 100 kg were raised and fattened to a weight of > 400,

this could greatly alleviate the problem of meat supply in Egypt". The realization of such idea requires the development of techniques to raise calves (including milk replacers) fattening diets and most importantly devising a financial and marketing system that will make the whole venture economically viable for the farmer (calf producer), feed-lot operator and the meat industry.

Thus, in the early sixties a project just to do the above was devised and called "Beetello Project", the word Beetello being a degenerate of the Italian word vitello, meaning calf. The Project was designed to work on two stages (Fig. 1) as follows:

Stage 1:

Producers (generally farmers and often small holders)

are encouraged to raise their male calves until the weight of about 200 kg. Producers are offered, through contracts, an advance equivalent to 175 kg per calf at current prices free of interest as well as an insurance against calf death and subsidized feed. When the producer delivers his calf(ves) he will get the remaining quarter of the calves value at delivery.

Stage 2:

Feed-lot operators, individuals or companies, fatten calves produced from stage 1 to a slaughter weight of about 450 kg. They also get 75% of the final price as an interest free advance. Insurance and subsidized feed are also offered. This project had the potent-



Egyptian Mature Buffalo Cow
Curtsey of E. S. E. Galal
FAO/RNEA

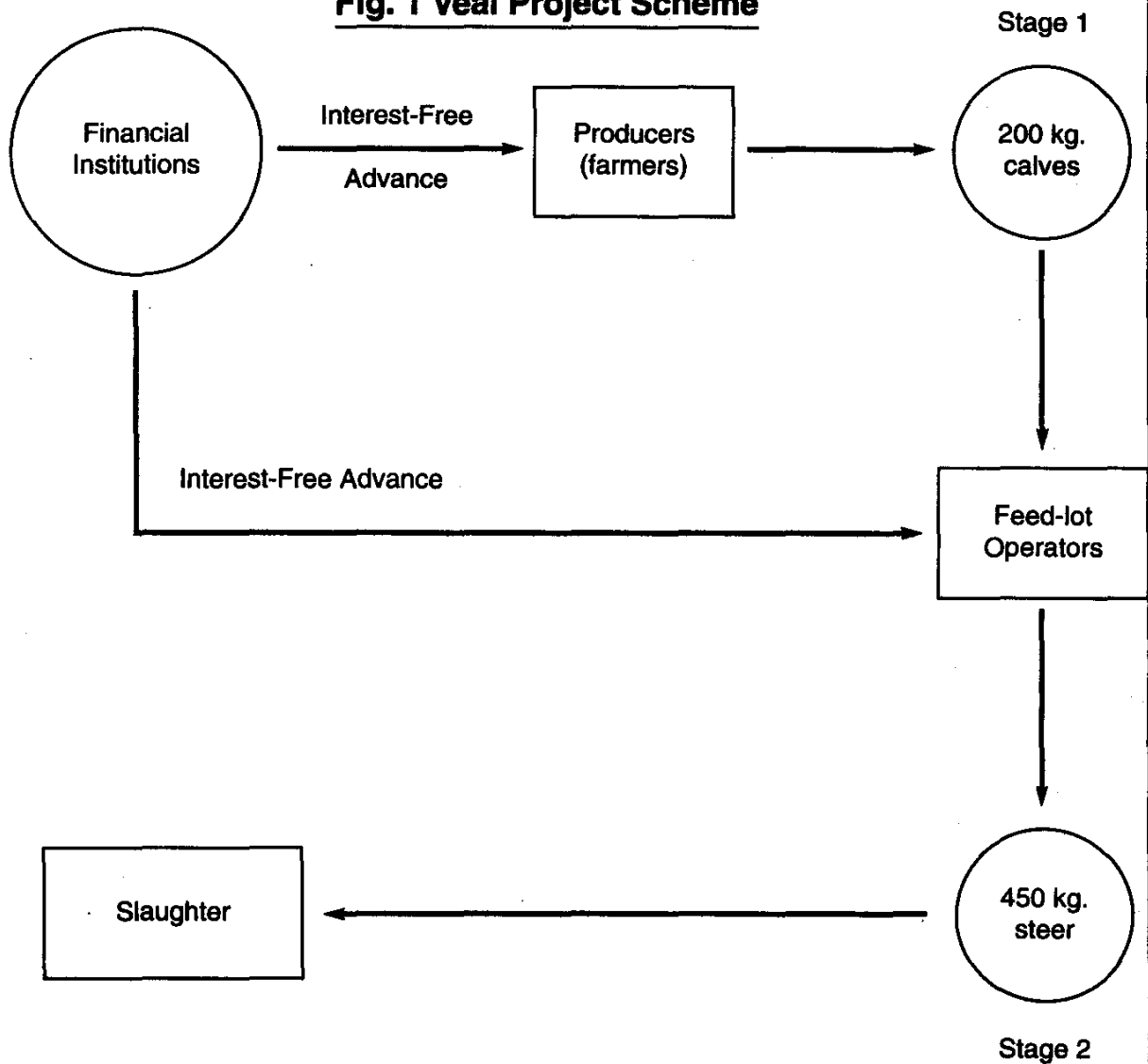


Egyptian Buffalo Heifer
 Courtesy of E. S. E. Galal
 FAO/RNEA

Table 1: Number of calves contracted and delivered as finished

YEAR	NUMBER OF CALVES
	DELIVERED
1964/65	1675
1965/66	7513
1966/67	19110
Interruption	
1983/84	36846
1984/85	60198
1985/86	70130
1986/87	79869
1987/88	125000
1988/89	na

Fig. 1 Veal Project Scheme



ial of increasing red meat supply in Egypt by 70,000 tons of carcass annually, at the rate of 200 kg a finished calf. Table 1 shows number of finished calves during the operation of the Project.

Financing of both stage 1 and stage 2 was through state institutions.

Present Situation and Prospects

The Project has come to a halt in 1990. There are many

reasons that let to this situation.

Since the late eighties the Egyptian economy has been going through restructuring with more liberalization. Interest rates have risen dramatically, many of the subsidies are being lifted, privatization is encouraged and market-oriented economy is being promoted. This has led to disturbance in the financing institutions for the Project, e.g. interest-free advances to producers and feed-lot operators have become difficult to justify

and the subsidized feeds are no longer available.

However, the Project did show technical feasibility. If organizational and financial structures could be worked out to suit the current developmental atmosphere, then once again the buffalo can contribute to narrowing the meat gap in Egypt.

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MILK REPLACERS FOR BUFFALO CALVES

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Faculty of agriculture,
Ain Shams University, Egypt

Buffalo is the main dairy animal in Egypt. Buffalo milk accounts for 68% of the total milk production in the country. Egyptians prefer to consume buffalo milk because of its high content of total solids and fat. Therefore, the price of buffalo milk is double of that of cow milk. The Egyptian farmer used to sell male buffalo calves for slaughter at 4-6 weeks of age to minimize calf milk consumption, and to increase cash. Under such system 350,000 male calves were slaughtered annually at that age, to produce about 13,500 tons of carcass. During the rearing period of these male calves, they consume about 87,500 tons of natural milk. Moreover, the female buffalo calves consume yearly about 100,000 tons of milk. This means about 187,000 tons of natural milk

are consumed by buffalo calves which form about 13% of the buffalo milk production in the country.

Since the early seventies, scientists at Ain Shams University started intensive series of experiments to develop different recipes of milk replacers specific for buffalo calves to achieve the following goals:

- a) To save more than 150,000 tons annually of natural milk (which is consumed by buffalo calves) for human consumption.
- b) To help the farmer to raise male calf on replacers till later weaning age, then to fatten it till mature slaughter weight (450 kg)

Over two decades research work has been carried out to clarify the effect of different recipes of milk substitutes on calf performance, e.g. growth rate, digestion coefficient of different nutrients, efficiency of utilization as well as some blood parameters which can reflect the nutritional status and health.

A series of experiments were carried out during the seventies and early eighties to clarify the effects of:

- 1- Inclusion of different levels of skim milk.
- 2- Maximum level of sweet whey that can be utilized in different recipes.
- 3- Different levels of added fat.



Egyptian Buffalo Calves during rearing/fattening
Curtsey of E. S. E. Galal
FAO/RNEA

4- Different dilutions of milk substitute powder in the water.

5- Different starter forms.

At the same time, positive (suckled natural milk) and negative control (suckled cows calf milk replacer) treatments were always available for comparison. The results showed

that the level of skim milk in milk substitute should not be less than 25%. Increasing the level of skim milk improved calf daily gain and feed efficiency, while frequency of diarrhea, pneumonia incidence was decreased.

Increasing the level of skim milk in replacer showed better digestion coefficient of different nutrients.

Calf weaning took place either when calf reaches 85 kg

live body weight or at 90 day of age, whichever comes first. More than 80% of the calves reached their weaning weight at 62 days of age.

Calves of the negative control treatment, showed high frequency of diarrhea, high incidence of pneumonia, very slow daily gain, low feed efficiency, hair losses, skin scars and high percentage of death losses.

B U F F A L O N E W S

Faculty of Agriculture, Cairo University CURRENT PROJECTS

1. GENETIC AND BREEDING PROJECTS.

Title: Pilot Cattle Information system in Egypt

OBJECTIVES:

Creation of database system to obtain real statistical and productive parameters at high accuracy to be used in the National programs for improving dairy herds including buffaloes.

MAIN RESULTS:

- 1 - Drawing the lactation curve of buffalo cows through different regimes of milk recording at accuracy of about 95%.
- 2 - Developing our own software for analysis of productive and reproductive traits.

REQUIREMENTS:

- 1 - Information concerning any software for milk recording of buffaloes.
- 2 - Information regarding the appropriate individual identification devices.

Title: A National Program for Buffalo Genetic Improvement

OBJECTIVES:

- 1 - Establishment of a precise and continuous system for production of progeny tested buffalo bulls.
- 2 - Selection of bull genetic lines for milk and carcass production.
- 3 - Construction of a semen bank for spreading A.I. technique and achieving national genetic improvement plans.

2. REPRODUCTION PROJECTS

Title: Reproductive seasonality of Egyptian buffaloes in relation to pituitary hormones

OBJECTIVES:

Previous works indicated that the cold season of the year (short day light length and low temperature) is the peak of reproduction, while the hot season is the lowest. This work aims to find out the pineal, pituitary and ovarian axis in relation to reproductive seasonality.

Title: Management regime of heat detection in relation to calving interval length

OBJECTIVES:

Long calving interval is the most critical problem of buffaloes. It is not clear whether it is due to physiological disorders or management failure. Times and frequency of oestrous detection must be studied to determine the causes of long calving interval with particular reference to season of calving.

Title: Effect of seasonality and milk productivity on reproductive performance of buffaloes

OBJECTIVES:

It has been found from the previous researches that the environmental factors greatly affect the reproductive performance of the Egyptian buffalo cows particularly at the post-partum stage which lead to an increase of the calving interval. Additionally, the observable individual variations in milk production may influence reproductive efficiency of buffalo cows.

Proceedings of the International Symposium on "Prospects of Buffalo Production in the Mediterranean-Middle East" held in Cairo (Egypt) from 9 to 12 November 1992, can be requested to:

PUDOC, P.O. Box 4,
NL 6700 AA Wageningen.
Sale price: DFL 217.-, US \$ 145.-

CONGRESSES, CONFERENCES AND MEETINGS

SYMPOSIUM on Improvement of Productive and Reproductive Efficiency of Buffalo

Organization:
Italian Ministry of Agriculture
15-16 December 1993
Venue:
Istituto Sperimentale
per la Zootecnia
per la Zootecnia
Via Appia, 85085 BELLA (PZ),
Italy
tel. 0976-72915
fax. 0976-79930

The Italian Ministry of Agriculture has financed a 4 yr research project (1989-1993) on 'Improvement of Productive and Reproductive Efficiency of Buffalo'. The project was coordinated by prof. A.M. Pilla. Besides the laboratories of the Animal Production Research Institute, 8 University institutes, the National Research Council (CNR) and the Istituto Superiore di Sanità (National

Institute for Health and Sanitary Affairs) took part to research project. Altogether, 47 researchers have worked for 4 years. The announced symposium has the purpose to spread the scientific results of the project and to verify their impact on the prospects of buffalo production in Italy.

PROGRAM OF THE SYMPOSIUM

Wednesday, Dec. 15th, 1993

- Scientific workshop

- 1 - Physiology of reproduction
 - 1.1 - Puberty and maintaining ovarian cyclic activity (A. Borghese et al.)
 - 1.2 - Oestrus and ovulation (E. Seren et al.)
 - 1.3 - Post-partum anaestrus and oestrus induction (L. Zicarelli et al.)
- 2 - Energy requirements
 - 2.1 - Feedstuff degestibility (S. Bartocci, T. Di Lella et al.)

- 2.2 - Energy requirements of growing buffaloes (S. Gigli et al.)
- 2.3 - Energy requirements of dairy buffalo cows (M. Verna et al.)
- 2.4 - Effect of different diets on buffalo milk quality (C. Tripaldi)
- 2.5 - Endocrine and metabolic aspects of buffaloes (G. Bertoni et al.)
- 3 - Studies on the rumen
 - 3.1 - Physiology of rumen activity and intestine digestion (D. Settineri et al., F. Mascero)
 - 3.2 - Microbiology of rumen (S. Puppo and P.S. Cocconcelli)
 - 3.3 - Conclusions and proposals (A.M. Pilla)

Thursday, Dec. 16th, 1993 -

Technical

- 1 - Introduction (A.M. Pilla)
 - 2 - Reproduction (A. Borghese, E. Seren, L. Zicarelli)
 - 3 - Nutrition (G. Bertoni, T. Di Lella, S. Bartocci)
- Conclusions, visit of the institute.

Questionnaire

Please answer the following questions and return to:

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I wish to receiving further issues of the "Buffalo Newsletter",
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Address	Address
City, code	City, code
Country	Country

**FIRST ASIAN
BUFFALO ASSOCIATION (ABA)
CONGRESS**

This Congress has as its theme "Buffalo Production and its Impact on Small Farm Development" and will be held at the Khon Kaen University, Thailand, from 17 to 21 January 1994. It is hosted by the Khon Kaen University, in collaboration with Kasetsart University and the Department of Livestock Development.

The Asian Buffalo Association (ABA) was founded on 23 November 1992 as a result of the unanimous recommendation reached at the Asian Buffalo Network Meeting which took place in Bangkok, Thailand during the Sixth Animal Science Congress of Asian-Australasian Association of Animal Production Societies. The overall objective of the association is to foster the research and development on buffaloes in Asian Region. Further information on the

Association can be obtained from Dr Masao Sasaki, ABA Executive Secretary, c/o FAO Regional Office, Maliwan Mansion, Phra Atit Road, Bangkok 10200, Thailand, Fax: 66 2 2800445.

Dr Suporn Limsirichaikul, Department of Animal Science, Faculty of Agriculture, Khon Kaen University, Khon Kaen 40002, Thailand, will be the person to contact for more details on the Congress.

**4TH WORLD BUFFALO
CONGRESS**

The International Buffalo Federation announces the venue of the fourth World Buffalo Congress on 27 to 30th June 1994 in Sao Paulo, Brazil. Organized by the America Buffalo Breeders Federation and by the Brazilian Buffalo Breeders Association, the scientific programme will include plenary lectures, round tables and poster sessions.

Plenary sessions will cover

topics such as adaptation of buffaloes to environment, diseases, economy, genetics, welfare and the future of buffalo production in the world. Posters are grouped according to the usual main topics (Genetics and Breeding, Reproduction, Nutrition, Health, Management...). There will be no oral presentation of the brief communications. A postgraduate competition will be organized during the congress, with prizes for the first ten communications.

A training course on Biotechnology of Reproduction in Buffaloes will be organized in relation with the congress, to be held at the Centre for Biotechnology of Animal reproduction in the Castanhal county, Para State.

For more information contact: Brazilian Buffalo Breeders Association, Av. Francisco Matarazzo 455, Parque Agua Branca, 05001-300 Sao Paulo, Brazil, Fax (55) 11 263 49 06.

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