Buffalo Newsletter

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

INCLUDES SHORT COMMUNICATIONS, RESEARCH PAPERS, TECHNICAL NOTES, ONGOING RESEARCHES

Particularly important events are coming out both in this and the next year. I am just back from the 4th Asian Buffalo Congress in New Delhi, India (February 25-28, 2003) organized by the Asian Buffalo Association, President Dr. S.K. Ranjhan, by the Indian Society for Buffalo Development, President Dr. O.S. Tomar and by Dr. O.P. Dhanda, Organizing Secretary of the Congress and Professor in the Department of Animal Production Physiology in Agricultural University of Hisar.

There were more than 700 partecipants and two books of proceedings were produced: the first with 40 main papers, the second with more than 700 abstracts of oral presentations.

India is a great reality with more than 94 millions buffaloes that produce 39 millons MT milk (56% of total national production); in comparison to 218 millions cattle having lower milk yield and worse quality.

But buffalos produce also meat and work, while cattle do not produce so much.

During the Congress, it was decided to appoint Yang Bingzhuang as the President of the Asian Buffalo Association, who will organize the 5th Asian Buffalo Congress in China in 2005, while Libertado Cruz , the President of the International Buffalo Federation (I.B.F.), will organize the 7th World Buffalo Congress in Manila, Philippines, on October 2004.

I remind the readers that the Permament General Secretary of I.B.F. is in Monterotondo, Roma, at the same address of the Buffalo Newsletter and of the Buffalo Network Coordination Centre, and that the components of the Standing Comittee of I.B.F. are reported in the annex.

During this year (August 28 – 30th) the 2nd Italian Congress on Buffalo Farming will be held in Rome as well as the Symposium on Recent Progress in Buffalo Reproduction as a Satellite Symposium of the 54th Annual Meeting of the European Association for Animal Production *(see programme is the next pages)*.

There are therefore many occasions to meet farmers, technicians, scientists, but for those who will not be able to take part to the meetings, the Buffalo Newsletter will continue to refer about all activities related to buffalo research and development.

Antonio Borghese

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AZI-KHELI BUFFALO – AN IMPORTANT GENETIC RESOURCE

M. Sajjad Khan

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Swat valley in Pakistan is an enchanting land of magnificent scenic beauty and rich historic past. It lies in the monsoon belt and is greener and more fertile than the valleys further north in Pakistan. The meandering Swat river adds to the beauty of flowered filled slopes and fruit-laden orchards. Mingora is district headquarter and famous for its precious stone markets. It is accessible by road, some 176 km north east from Peshawar (North West Frontier Province, NWFP). Upper half of the valley gets a lot of snow while lower half remains cold in winter. The buffalo which is also part and parcel of this green valley is called Azi-Kheli *(Figure 1)*. The name is after a tribe 'Aziz Khell'. Animal are mainly found in Khwaza Khella and Madyan areas of Swat district (NWFP) but can be found in whole valley of Swat. Size may be similar to Kundhi breed (about 450-500 kg) of Sindh province. The frequent colour is reddish brown giving appearance of albino in some animals with scanty to thin hair coat. Hair loss seems gradual as young calves can be seen having normal brownish hair coat. Partially or totally black animals can also be seen. Forehead has a white marking of variable size and can be totally white. Body is compact similar to swamp buffaloes with horn semi-sickled (not seen in Nili-Ravi or Kundhi breeds of Pakistan) and smaller in size as compared to Mediterranean buffaloes. The udder in lactating animals is fairly developed while tail is characteristically short. Animals are docile and if inside the house, are mainly cared and managed by women. Grazing is practised in summer because winter is harsh and animals are generally kept inside. Crop residues (including maize and sorghum stalks) are the main forage in winter. Kitchen waste and garden refuse are also fed along with crushed grains and cakes. Age at first calving (45 months), calving interval (18 months) and other reproductive traits are reported to be similar to other dairy buffaloes. Animals are naturally bred only. Bulls are usually reared only by few farmers in a town. Milk production per lactation is estimated to be 1800 litres per lactation of about one year. Yet, wide variation in productivity is reported.

Population of Azi-Kheli buffaloes is estimated to be 20-30 thousand. They are the major source of milk in Swat valley along with local cattle breeds. Nili-Ravi from the Punjab province is also brought into the valley for milk production and is returned back to Punjab or to other areas of NWFP for recycling or for slaughter. Beef is obtained from the local cattle. Azi-Kheli buffaloes are generally expensive (by about 25%) as compared to Nili-Ravi. Population is feared to be decreasing as there is no institutional or other facility to study, develop or conserve this breed. No comprehensive study (except a survey in 1988) is available on this breed of buffalo.

Figure 1. Azi-Kheli buffalo heifer.

COMPUTER IMAGE ANALYSIS IN THE EVALUATION OF WEIGHT AND MORPHOLOGY OF ITALIAN BUFFALO

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INTRODUCTION

The present study aimed to apply the methodology of computer image analysis to the evaluation of Italian buffalo. Such methodology allows to perform precise and reliable measurements through camera shooting, and to eventually video processing the pictures with the appropriate softwares.
Animal morphology was important since the ancient times. During the second half of the 18th century, livestock began to be evaluated on the basis of the relationship between conformation and production. Morphology became then more and more important, and, after precise measurements were made easier to be obtained, such evaluation achieved a scientifical meaning *(Bourgelat, 1768, cited by Magliano, 1930)*. A list of morphology measurements was then identified, including linear, angular and perimetral ones; such measurements provided useful indications on weight and morphology of livestock. Several tools were built for this purpose, such as the measuring stick *(Tamaro, 1901)* and the measuring ribbons – some of which are still in use. The mentioned tools involve waste of time and high manpower costs, and are not suitable for modern animal production; therefore, scientists have looked for new systems of animal evaluation. Among these new systems, the computer image analysis was successfully investigated: in fact, this methodology showed several technical, economic and ergonomic advantages, not requiring to go physically close to the animal, and proved to be very useful also to obtain measurements from grazing animals even at long distances *(Filippi Balestra et al., 1994; Negretti et al., 1996; Zehender et al., 1996; Bianconi e Negretti, 1999; Negretti et al., 1999; Tozser, 2000; Negretti et al., 2001)*.
The results obtained in the present study show how precise and repeatable this methodology is also in buffalo; in fact, the differences between the measurements obtained through computer analysis and those obtained traditionally were lower than 3%, while correlations among them were higher than 0.90 ($P<0.01$).

MATERIALS AND METHODS

During the present trial, a digital camera with resolution
higher than 2 million pixel was used together with a specific software for the computer image analysis. The shooting and the video processing were performed according to the standard conditions that were previously tested and agreed, consisting of:
-position and distance from the animal;
- focal length;
- position of the camera;
- animal position *(fig. 1)*.

The present research was carried out on 18 adult Italian buffaloes during 6 different repeated trials, performed every month, including a total of 90 camera shootings. The trials included camera shooting, measurements and weighing, and had the purpose to test the precision rate of the new methodology. A research group was established, including, beyond the authors of the present paper, S. Bartocci and S. Terramoccia (Animal Production Research Institute, Rome).
The selected parameters were:
Height at withers (H.WI.), from withers to ground;
Thorax Height (TH.H.), from back line to bottom of the belly;
Trunk Length (TR.L.), from point of shoulder to hip;

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Rump Height (RU.H.), from point of rump to ground;
Rump Length (L.RU.), from ilium to ischium;
Rump Width (RU.W.) from the two ischium points. The last parameter was shot from a top view.

RESULTS AND DISCUSSION

The results from the experimental trials confirmed the high precision and repeatability of the system, because individual differences in the measurements taken with the traditional systems and the computer image analysis range from 0 to 3%, with average values of 1%, and therefore they are statistically acceptable. The two systems are very similar as it is also confirmed by analysing the pairs of data, where differences lower than 1.5 cm were detected *(fig. 2)*. It should be considered also that the measures taken with the traditional systems might show differences of 1-2 cm between each other, if they are taken at different times and/or by different people. Successful results were also obtained in the correlations between a few body conformation parameters obtained through the computer image analysis and body weight. In fact, the trial included also the regular weighing of all animals on an electronic scale. The obtained data, although to be considered preliminary, indicated a correlation of 0.90 ($P<0.01$) between body surface obtained through the computer analysis and body weight.
The major advantage of the new methodology is that it offers also to the farmers the opportunity to collect precise and fast measures with less danger and costs. From a simple camera or video

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Figure 1. Procedure used in the computer image analysis of animal morphology.

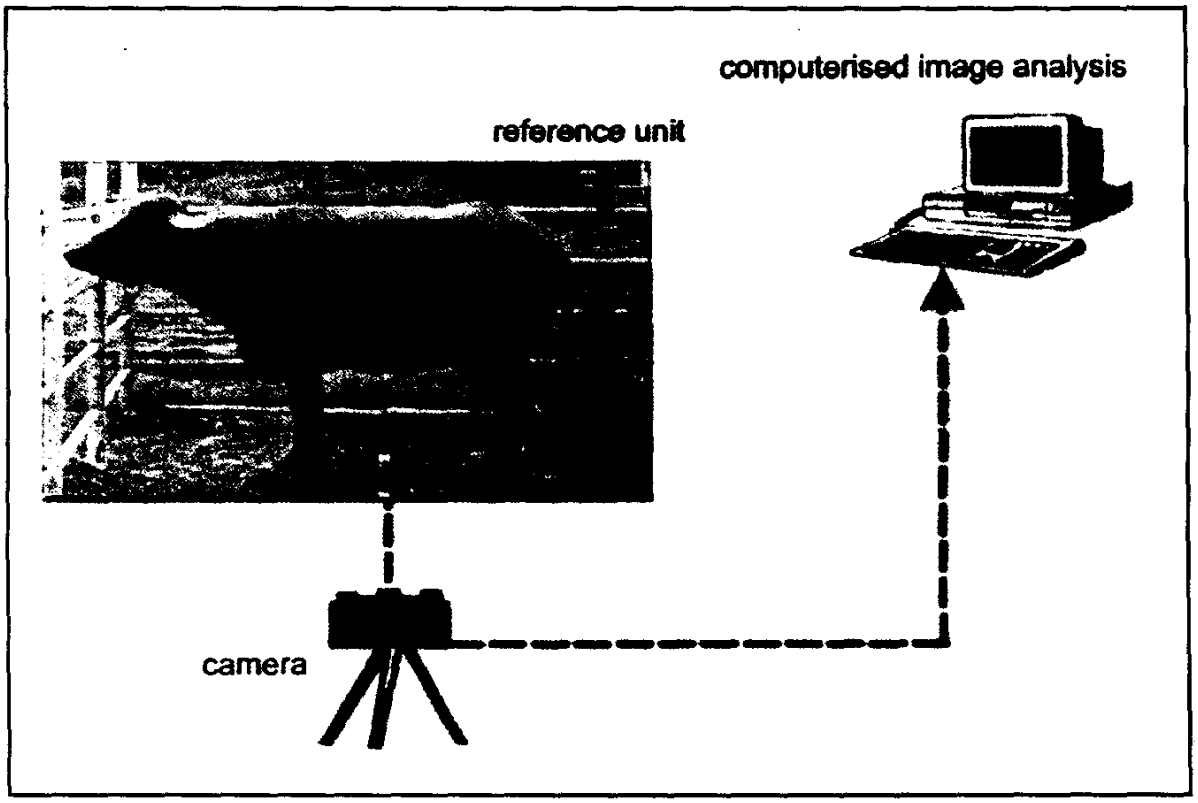
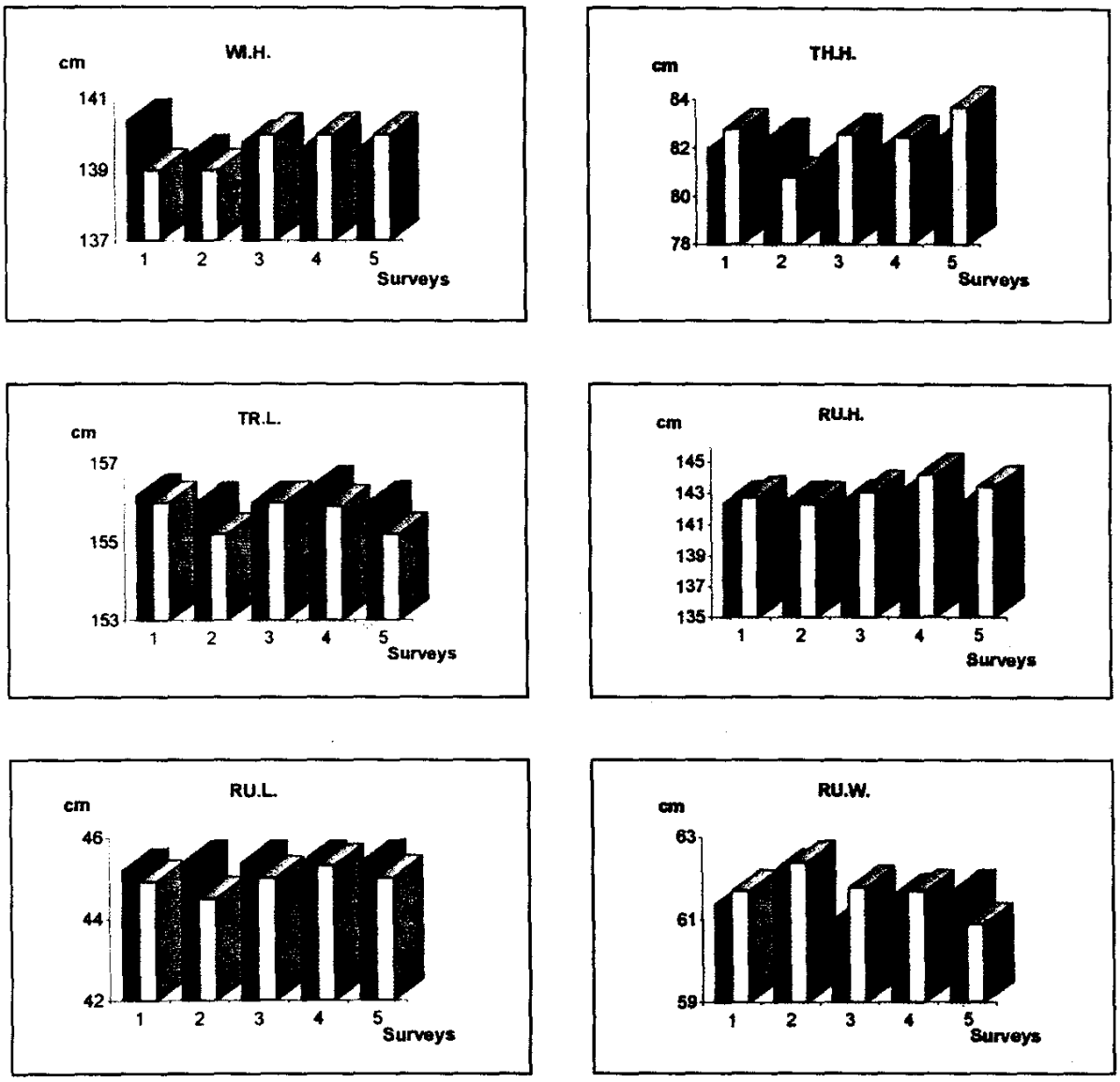


Figure 8. Trend of the measurements during the 5 trials, with the two methods: traditional measurements ■ and computer image analysis | |



filming, all necessary information can be extracted. In this way, the old-fashioned traditional systems that were used during the past centuries can be overcome.
In animal production systems, morphological measures have been avoided for a long time, for the difficulties and costs required to obtain them; they have been substituted by scoring and evaluations, which are unfortunately biased by the person who is requested the judgement.

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From now on, it will be possible to use them again; moreover, it will be possible also to obtain some measurements and parameters that could not be obtained with the traditional tools, like the surfaces and the angular values. These new parameters can be included in formulas that will be useful to make the methodology more and more precise, and these formulas could be fruitfully employed by researchers and producers. A further advantage of the methodology is that the pictures will represent a source of data to be filed appropriately, so that those who want to refer to a specific population and time will have easily access to them. This opportunity will be particularly useful for the breeders and for proposing new breeding strategies.
Finally, it is obvious that the research will receive huge advantages from the use of this new methodology.

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BUFFALO MILK COMPOSITION OF MURRAH AND HALF-BRED MURRAH x MEDITERRANEO IN CORRIENTES, ARGENTINA

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KEYWORDS

Buffaloes, milk composition

INTRODUCTION

Argentina is the third American country with higher numbers of buffaloes, after Brazil and Venezuela (Vale, 1999). Buffalo population is around 50.000 heads, distributed in the provinces of Corrientes, Formosa, Chaco, Misiones, Buenos Aires, Entre Rios, Tucumán, Mendoza and San Luis *(Zava, 2002)*. Corrientes is the province with the majority of buffaloes of the country.
Main breeding purpose in Argentina is meat production, but the production of milk begins to be a reality in the farms located in the provinces of Corrientes, Misiones, Formosa, Santa Fe, Buenos Aires and Tucumán. Murrah, Mediterranean and crossbred of them are the main dairy breeds of the country.
The physico-chemical composition of buffalo milk has been studied in many countries like India *(Rao and Nagarcenkar, 1977; Sharma et al.,1997; Dubey et al., 1977)* Italy *(Spanghero and Susmel, 1996)* Bulgaria *(Peeva, 1997)* Venezuela *(Briñez, 2000)* and Brazil *(Furtado, 1980; Huhn et al., 1981, 1991; Macedo et al.,1997; Faria et al., 1997; Tonhati, 1999)*.
In Argentina, works on milk composition are scarce *(Patiño et al., 1999, 2000)* and the obtained values in the various countries present a great variability *(Patiño et al., 2000)*, mainly in the content of fat, proteins and total solids, which influence the yields of the derived products and they are of great importance for the dairy industry and trade. Therefore, it is important to know and to determine the composition of milk of the different buffaloes breeds from our country, in order to select the best breeds for dairy production.
The present work has as objective to determine and to compare the physico-chemical composition of milk of Murrah and half-bred Murrah x Mediterranean in order to obtain some parameters for the North-East of Argentina.

Figure 1. Murrah Buffalo (Farm "Santa Maria del Rosario" Corrientes, Argentina).

MATERIALS AND METHODS

The present work was carried out between July and December 2001 in the dairy farm "Santa María del Rosario" located about 30 km from the city of Corrientes, in the Corrientes Province. The local climate in the region is humid and subtropical, with annual rainfall of 1200 to 1400 mm, temperature of 21.5 °C and humidity of 75% .
Forty buffaloes, 20 Murrah and 20 half-bred Murrah x Mediterranean of first to fourth calving were used in this work. All animals were milked once a day during the morning, receiving the same feeding consisting of natural pastures of low quality.
Every fifteen days, samples of 200 ml of

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Table 1. Physico-chemical charatacteristics of buffalo milk Murrah and half-bred Murrah x Mediterranean (average values).

VARIABLE	BREEDS	
	Murrah	**Murrah x Mediterranean**
Density (g/ml)	1.0316 ± 0.003	1.0316 ± 0.002
Acidity (° Dornic)	19.86 ±3.06	19.82 ± 2.68
pH	6.74 ± 0.14	6.69 ± 0.16
Total Solids (%)	16.68 ± 2.58	16.81 ± 2.59
Fat (%)	7.04 ± 1.25	7.60 ± 1.81
Protein (%)	3.73 ± 0.82	3.73 ± 0.88
Lactose (%)	4.57 ± 0.23	4.61 ± 0.21
Ash (%)	0.85 ± 0.05[a]	0.80 ± 0.05[b]

Means with different superscripts are significantly($P<0.01$) different from each other.

milk were collected. Samples were labeled, identified and cooled until delivery to the laboratory . Samples were preserved to temperatures of 5 - 8 °C until their arrival to the laboratory.
At the laboratory, the samples were maintained at 4 °C until the analyses, that were as follows: density by termolactodensimeter *(AOAC, 1975)*; titrable acidity by Dornic's techique *(AOAC, 1975)*; fat by Gerber method *(BSI, 1955)*; protein by Kjeldahl method *(BSI, 1966)*; total solids by direct method *(AOAC, 1965)*; lactose by polarimetric method *(AOAC, 1980)*; pH by potenciometer and ashes by incineration in muffle furnace *(AOAC, 1980)*.
The obtained information were statistically analysed using ANOVA.

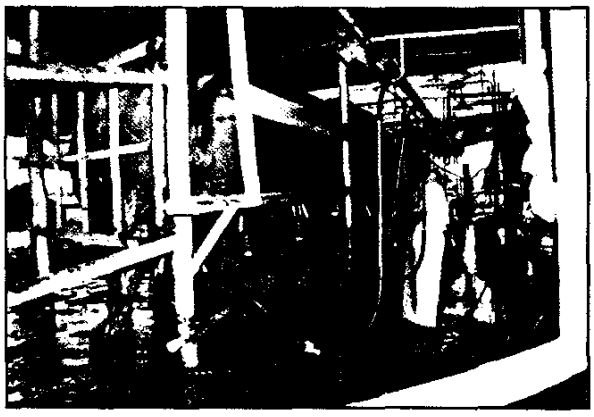

Figure 2. Milking parlour (Farm "Santa Maria del Rosario" Corrientes, Argentina).

RESULTS AND DISCUSSION

In *Table 1* the mean values of the physico-chemical composition of milk of Murrah and half-bred Murrah x Mediterranean are presented.
The physico-chemical components that presented the highest variability were: acidity, fat and total solids.
With regard to the variability of the titrable acidity, previous studies carried out by Briñez, 2000 in Venezuela with half-bred buffaloes from different crossbreeding types demonstrated that the different lactation stages affect titrable acidity, which is increased as the lactation advances.
Fat and total solids percentages vary not only for the stage of lactation but for the type of animal as demonstrated by Huhn *et al. (1981)*, in Brazil with half-bred Murrah x Mediterranean, where the author points out that the more Murrah blood is found in the half-bred, the less are fat and total solids content in milk. Also Dubey *et al. (1997)* working in India with Murrah demonstrated that calving number and lactation stage affect fat and total solid content.
In the present study, statistically it was shown that no significant differences exist among the physico-chemical components of buffalo milk; except for the ashes, for which a higher content was made evident in the Murrah breed.

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CONCLUSIONS

No significant differences in the physico-chemical components of buffalo milk were found in the present study, with the exception of ashes. It is convenient to continue to investigate in milk quality of the different buffalo breeds and their crosses in order to establish rules for the production of quality milk and to provide suggestions for the breeding schemes.

Figure 3. A buffalo herd in the Santa Maria del Rosario Farm, Corrientes, Argentina.

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GENETIC ANALYSIS OF PERFORMANCE TRAITS OF SWAMP AND RIVERINE BUFFALO

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Kandiah Thevamanoharan has successfully obtained the degree of Doctor in Applied Biological Sciences at the University of Leuven (Belgium) with a dissertation on "Genetic analysis of performance traits of Swamp and Riverine buffalo". The work has been judged of extreme interest by the Editor of the Buffalo newsletter and a summary is therefore given here.
The dissertation includes a wide review covering the activities in the genetic improvement of buffalo in different countries of the world; it consists then in two experimental studies carried out on two different buffalo populations.

ABSTRACT

Systematic genetic improvement has almost never been attempted or given a chance. It seems likely that selection could quickly improve productivity. Unfortunately, the large bulls that would be best suited for breeding purposes are often being selected as draft animals and castrated, or sent to slaughter. The result is that buffalo overall size in country such as Thailand has been decreasing as the genes for large size and fast growth are getting lost. It is important to develop a sound selection and breeding strategy based on accurate estimates of genetic parameters and breeding values for the genetic improvement of the indigenous buffalo populations.
Two studies were carried out, the first on Swamp buffalo of Thailand and the second on Riverine buffalo (Nili-Ravi) of Pakistan. The objective was to evaluate the performance traits and to know the magnitude of different environmental and genetic sources of variation. Phenotypic and genetic parameters such as heritability, repeatability, phenotypic and genetic correlations, breeding values and genetic trends were also estimated. The level of inbreeding in the herd of Nili-Ravi was evaluated.
For the first study, data of growth traits and body measurements of 1736 Swamp buffaloes of the Surin Livestock Breeding Station in Thailand for the period 1980-1991 were used. All growth traits appeared to be significantly affected by the year and the season of birth. The sex of the calves was the only significant source of variation for birth weight and pre-weaning average daily gain. All growth traits were significantly influenced by the parity of the dam with exception of the 2-year weight.
The moderate to high estimates of heritability for various growth traits and most of the body measurements indicated good prospects for improvement of these performance traits through selection if the animals are uniformly managed and fed. Moreover, the phenotypes of these animals appear to be a good indicator of their genotypes.
The moderate to high estimates of heritability and genetic correlation among the traits suggested that these facts should be utilised in formulating breeding plans for Swamp buffaloes by giving apropriate weighting to body weight in the selection criteria so that higher body weight and growth rates could lead to earlier maturity.
A positive genetic trend was observed for birth weight, weaning weight, 2-yr weight, pre-weaning and post-weaning average daily gain during the study period. This demonstrated that the selection was effctive in realising improvement in all growth traits of Swamp buffaloes.
For the second study, data on 3195 lactation records of 1183 Riverine (Nili-Ravi) buffaloes from the Livestock Experiment Station of Bahadarnagar in Pakistan, for the period 1950-1998 were utilised. The effect of season of calving was found to be significant only on lactation length. The effect of parity was significant only on milk yield and lactation length. Milk yield was found to be significantly affected by the lactation length and age at first calving was significanlty affected by the year of birth. The year and season of service and lactation number were significant sources of variation for the service period. Calving interval was affected sigrificantly by the year and season of calving and the lactation number.
The low estimates of heritability and repeatability for all the production and reproduction traits suggested that most of the observed variation in these traits was due to temporary environmental conditions and management. Thus multiple records on collateral relatives and progeny should be used in selection programmes. The improvement of these traits may be achieved by better environmental conditions i.e. better feeding, better management, reduction of heat stress, better control of diseases including vaccination programmes and wide spread milk recording and testing systems.
The positive estimates of the genetic correlation between the age at first calving and dry period are suggesting that heifers which calve at younger ages are expected to have a shorter dry period. Moreover, selection for higher milk yield in the first lactation will result in a shorter service period, but also in a longer calving interval. Therefore appropriate selection procedures must be implemented for the improvement of these traits.
There was no specific genetic trend observed for milk yield and other traits during the study period. The average level of inbreeding was rather low. One of the main reasons for the low level of inbreeding in the present herd was incompleteness of pedigrees, especially for animals born in the earlier years of the period of analysis.

53th Meeting of the European Association of Animal Production, Cairo, 1-3 September 2002
Buffalo Session for the first time in EAAP

The 53rd Meeting of the European Association of Animal Production (EAAP) was held in Cairo, Egypt, from 1st to 3rd September 2002. It was the first time that an EAAP Annual Meeting was held outside Europe: Egypt has been a long-time member of EAAP.

The hosts were the Egyptian Society of Animal Science (ESAP) under the patronage of the Ministry of Agriculture and they did a most remarkable job of organization offering the participants a superb hospitality.

It was the first time that a scientifical session of an EAAP Meeting was dedicated to buffalo production. This session, named "New developments in buffalo production" was held on 3rd September from 9 to 12 a.m. and was chaired by B. Moioli, Animal Production Research Institute, Rome, and Ali Nigm, Giza University, Cairo and ESAP active member.

The foreign as well as all the Egyptian participants appreciated this event that was stimulated by the importance of buffalo in Egypt: in this country in fact over 3 million buffaloes are reared and their number is even slightly higher than cattle numbers. In all Egyptian Universities, several groups of researchers approach the various subjects of buffalo production, and at governmental level, systems to improve buffalo production in the country have been implemented, such as animal recording, extension service, A.I..

Because buffalo production systems are compound and variegated more than any other livestock system, the session aimed to give an outlook on the most urgent research priorities.

For this reasons, four invited papers were planned so that each of them could focus on one "hot" problem, which means a non-solved aspect yet. The first paper discussed the relations between energy, fibre, protein content of the diet and milk yield and quality; two further papers concentrated on the systems to improve reproduction efficiency and make A.I. better feasible; the fourth paper compared carcass characteristics of Friesian cattle and buffalo and offered proposals for improving meat production from buffalo.

Here are the titles and the speakers in the session, which consisted in four invited papers and five theatre communications.

Tripaldi C. Some factors affecting milk quality of Italian buffalo

Di Palo R. Modern technology applied to buffalo farming for milk production

Barile V. Efforts to improve reproductive efficiency in female buffaloes

O. Y. Abdallah. Accumulated information on meat production from Egyptian buffaloes

Thomas C.S. Cisternal and teat measures and milk ejection in buffaloes

El Ghousein S. Comparative study of the udder structure in buffaloes and cattle: morphological and anatomical characteristics of the mammary tissue

Gamal Ashour. Comparative study of the udder structure in buffaloes and cattle: histological constitution of the mammary gland.

A. Fayed. Bovine ephemeral fever in dairy cattle and buffaloes: Egyptian experience

Ligda Ch. Harmonising traditional buffalo production systems to the consumers demand for certified quality products.

Some words about the speakers might be useful to the readers of the newsletter, for those that would like to contact them in case they feel that they could fruitfully co-operate together.

C. Tripaldi is a Senior Researcher of the Animal Production Research Institute of Rome; she is an expert of milk composition and quality and milk analyses (not only buffalo milk) and her ongoing researches deal with sustainable animal production and organic farming. Contact her at *carmela.tripaldi@isz.it*

R. Di Palo is a veterinarian, Senior Researcher at the University on Naples. Her Institute ranks among the top ones in Italy where buffalo research has the first priority. Contact her at *dipalo@unina.it*

V. Barile is a veterinarian, Senior Researcher, Animal Production Research Institute of Rome. Her ongoing researches focus on A.I. in buffalo, estrus synchronization and out-of-season calvings. Contact her at *vittoria.barile@isz.it.*

O.Y. Abdallah, full professor in the Department of Animal Production at the Faculty of Agriculture, Ain Shams University, Cairo. He has accumulated a deep experience in meat science and mainly in comparing quality traits of buffalo and cattle. He published numerous papers on muscle dissection and carcass composition. Contact him at *esap@gega.net.*

Thomas C. Santosh, is an Indian who graduated in Kerala; then he worked for nine years at Bombay for the milking machine factory Delaval; his work consisted in research and development of buffalo production and milking management. He then obtained a grant from Delaval for which he is at present in Sweden (Uppsala University) studying and researching in the Animal Production department. Contact him at *tomninan@yahoo.com.*

Safaa El-Ghousein, Palestinian, is an Assistant Professor of Animal Physiology at Jerash University, Jordan. She got her M.Sc. and PhD. from Cairo University and she worked deeply and for long with Prof. El-Shafie on buffalo. Contact her at *esap@gega.net.*

Gamal Ashour is Professor of Animal Physiology, Department of Animal Production, Faculty of Agriculture, University of Cairo. His recent researches deal with adaptation of farm animals. Contact him at *esap@gega.net.*

A. Fayed is professor of infectious diseases in Cairo University and Senior Consultant on epidemics for

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the Ministry of Agriculture and Veterinary Services. He is called in the various provinces when a disease breaks off. Contact him at *esap@gega.net*.
Christina Ligda works for the National Agricultural Research Foundation in Chalkidiki, North of Greece. She was a student of prof. Andreas Georgoudis, Professor of Animal Genetics at the Aristotle University of Thessaloniki, well known to the readers of the Buffalo newsletter. Together with her professor, her research work aims to rehabilitate buffalo in the North of Greece through promotion of buffalo products, conservation of landscape and enhancement of tourism. Contact her at *chligda.arsc@nagref.gr*.
The major issues and conclusions reached during the session are here summarized.
C. Tripaldi explained how yield and quality of buffalo milk have recently improved mainly because diets are more appropriate to satisfy the requirements. As energy content of the diet gets higher, also protein and fat content increase, and coagulation parameters and estimated yield of "Mozzarella cheese" are also higher. When fat is added to diets, only if this is administered at the first stage of lactation an increase in milk yield is recorded. Fat supplements also cause a change of fatty acids composition in milk fat. A too low level in dietary protein affects milk yield and quality. However, the only effect when dietary protein is in excess, is the higher milk urea content. As regards to somatic cell counts, it seems that higher milk yield and better chemical and technological characteristics are obtained with low somatic cell counts.
R. Di Palo referred about the selection activity that has been carried out in Italy, leading to an average lactation production of 2,149 kg milk, although some herds registered an average yield over 3,000 kg. Forty-three sires have been progeny tested and 16 more are still in trial. Estrus synchronization programmes are well established and successful. Research is being carried out on pedometer for estrus detection and Ovum Pick Up technique.
V. Barile described the results of the ongoing research to improve reproduction efficiency in female buffaloes: the knowledge of hormone profiles during the estrus cycle and the use of hormones helps to anticipate puberty, improve reproductive efficiency in the low breeding season, improve the success of A.I.
O.Y Abdallah showed figures on the difference in carcass components between buffalo and cattle (either 50 or 75% Friesian). He detailed also the percentage of muscle, bone and fat in the different cuts, and concluded that, if well selected, buffalo is a promising meat producer.
C. Santosh Thomas referred about his researches on physiology of milk ejection related to anatomical characteristics, in particular teat length and circumference and cisternal area.Cisternal area increases as the buffalo gets older, but is not affected by the lactation stage. He concluded that in machine milking small amounts of cisternal milk and delayed milk ejection must be considered.
Safaa El-Ghousein referred about comparative studies of the udder in Friesian and buffalo. Friesians show a wider distance between the fore and rear teats, and greater length of rear teats. But length, diameter and distance of the fore teats are similar in the two species and the conclusion is that the two udders, when considering functional relations, follow the same patterns.
Gamal Ashour measured the ratio between lobular and interlobular connective tissue, the alveoli number per cm^3 and the total alveoli surface in buffalo, Egyptian cattle and Friesian, making evident that Friesian is superior in the density of alveoli and the abundance of secretory cells.
A. Fayed referred on the five outbreaks of bovine ephemeral fever that occurred in Egypt, the most recent in 2000 that caused a mortality of 4-12% and a reduction in milk production by 48%. He described the clinical signs as well as blood profiles, while making evident that exotic high yielding cattle were affected much more than local cattle and buffalo. He discussed the measures to treat affected animals.
Christina Ligda gave a paper on the possibilities to exploit the Greek buffalo population in an economic way, through the production of certified products. The main characteristic of the buffalo production system in Greece is that animals are fed natural vegetation and it is likely that buffalo meat will be the main quality product obtained from buffalo in Greece.
Conclusions: as in all scientifical meetings where buffalo people meet together, we realised that because buffalo is spread out all over the world in such different climatic, social, and productive environments, it is impossible to refer to one type of buffalo production. Buffalo production systems are compound and variegated more than any other livestock system.
On one side – in intensive and semi-intensive systems – buffalo is exactly like a dairy cow: therefore it is possible to adopt the recording systems, the genetics and the breeding strategies of the dairy cow. Even in these systems, however, nutrition and reproduction practices of the dairy system cannot be applied to buffalo, because of definite physiological differences.
On the other side, in low-input systems, which are the majority at world level and where productivity is low, no or little care is given to feeding systems, while milking aspects, reproduction, search for better bulls become the most urgent research priorities.
The meeting of scientists from different countries is extremely useful: first it helps to be aware that different research goals and priorities might exist for the same livestock; second, it favours new ideas and purposes to emerge.

B. Moioli,
Animal Production Research Institute, Rome

2° Italian Congress on Buffalo Farming

28-29 August 2003

Istituto Sperimentale per la Zootecnia
Via Salaria, 31 Km 26.700 - 00016 Monterotondo – Roma

After two years from the previous one, here we are with the 2nd Italian Buffalo Congress. The event will take place near Rome and at the end of August in order to give all participants the opportunity to also attend an international scientifical meeting: a Satellite Symposium on Buffalo Reproduction that has been organised within the Annual Meeting of the European Association for Animal Production.
On the 29th of August, two practical training course on foot diseases and ecography will be held.

SCIENTIFICAL PROGRAMME:

August 28th, morning session, 9:00-11:00
Introductory remarks.
August 28th, morning session, 11:30-13:30
Feeding and Nutrition: Main paper by *F. Infascelli*, University of Naples
Free communications/Discussion
August 28th, afternoon session, 15:00-17:00
Meat production: Main paper by *H. Tonhati*, Brazil
Free communications/Discussion
August 28th, evening session, 17:00-18:30
Health and diseases: Main paper by *A. Fagiolo*, Institute Animal Diseases, Rome
Free communications/Discussion
August 29th, morning session, 9:00-12:00
Economy and management: Main paper by *F. Consalvo*, Buffalo production expert
Free communications/Discussion
August 29th, morning session, 12:00-13:00
Poster discussion.
August 29th, afternoon session, 15:00-18:00
Round Table on "Milk production and processing", chairman *A. Borghese*, Animal Production Research Institute, Rome
Free communications/Discussion

Registration fee: 300 euro (Satellite Symposium included)

Buffalo paddock at Tor Mancina farm (Rome)

54th Annual Meeting of the European Association for Animal Production

SATELLITE SYMPOSIUM on

Recent progress in buffalo reproduction

30 August 2003 – Palazzo dei Congressi, Roma

August 30th, EAAP Satellite Symposium, Palazzo dei Congressi, Roma

MORNING SESSION:

- *A. Borghese:* Introduction on the activity of the FAO Inter-Regional Cooperative Research Network on Buffalo.
- *A. Malfatti:* Recent advances in buffalo endocrinology / Free communications.
- *P. Baruselli:* Artificial Insemination in the developing countries / Free communications.
- *A.H. Barkawi:* Reduction of calving interval, pre-puberal time and post-partum anestrus / Free communications.

AFTERNOON SESSION:

- *B. Gasparrini:* Prospects and constraints for applying biotechnologies / Free communications.
- *W. Vale, L. Zicarelli:* Reproduction problems in high yielding buffaloes / Free communications.

Registration fee: 80 euro.

INSTRUCTIONS TO AUTHORS

Proceedings of the Congress will be published by the Editor of the magazine *Bubalus bubalis*. Four pages, Microsoft Word format, Times New Roman 12 font are the requirements. Title in bold 14 font. Names and affiliations of authors: bold italic and 12 font. Top and botton margins: 5.8 cm; left and right margins: 4.6 cm.
Titles of paragraphs in capital letters and bold. At least one author for each paper must register before:

30.06.2003.

Deadline for sending the papers (in English for the Satellite Symposium, in Italian with English Summary for the Italian Congress):

30.04.2003

to following addresses:
zicarell@unina.it
antonio.borghese@isz.it
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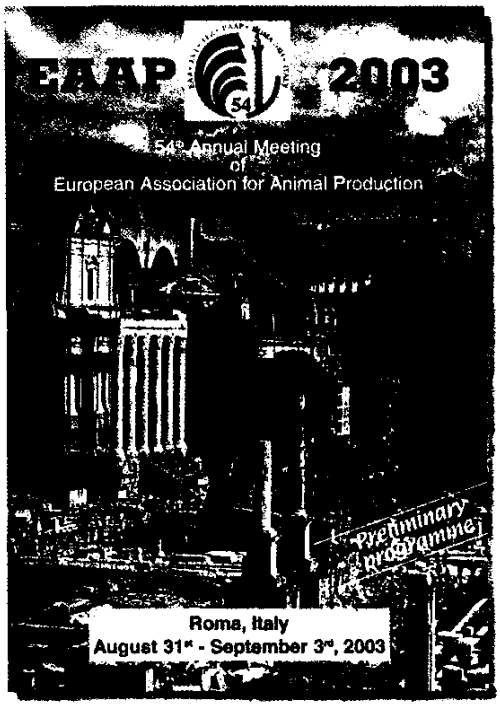

PUBLICATIONS

We would like to inform all readers of the Buffalo newsletter that a dictionary of specific words concerning animal production, in three languages (English, French and Arabic) is available, as follows:

Boujenane I. *& Sraïri M.T. 1998. Lexique Français-Anglais-Arabe des Termes de Productions Animales. Actes Editions, Rabat. ISBN : 9981-801-48-8.*

The glossary – according to the authors – aims at defining a common and universal technical language for the various participants in the animal science field such as researchers, specialised engeneers, students, teachers and producers. Moreover, the purpose of the glossary is to be a link between different languages and cultures. That is why efforts were made to make this version as complete as possible, and to provide the most recent words and expressions used in the field. Thus the glossary compiles about 1500 words related to the techniques of animal production, health, housing and feeding.

The first author, I. Boujenane, is Professor and Researcher of the Institut Agronomique et Vétérinaire Hassan II, Rabat, Morocco; Ph.D. in Genetics at the University of California, Davis, U.S.A.

His teaching subjects include quantitative genetics, animal breeding and reproduction techniques in sheep.

His research subjects cover genetic characterization of local breeds, genetics of reproduction in sheep, crossbreeding, estimation of genetic parameters, genetic evaluation.

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