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EDITORIAL

Chats with people interested by minilivestock came recently to the conclusion that B.E.D.I.M. should add a new action to all those already undertaken with success.

The point raised is the creation through the Bulletin of open lists of names and addresses, classified according to the animal species, i.e. separate lists for grass-cutters, cricetomes, capybaras, pacas, guinea pigs, frogs, iguanas, snakes, achatines, manure worms, maggots, palm grubs, lepidoptera, ...

For details see under "News of the Association".

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Varias discusiones con aficionados a la mini-cria han conducido la sugerencia de que BEDIM se encargue de la organización de varias redes de especialistas y aficionados. Concretamente, se trata de permitir a cada investigador /a o interesado/a en alguna especie en corresponder directamente con otras personas vinculadas o con interés en la misma especie animal, gracias a la elaboración de listas de personas separadas por especie (aulácodos, cricetomos, capibaras, pacas, cobayas, iguanas, ranas, serpientes, tortugas, cangrejos terrestres, caracoles, lombrices, moscas, mariposas, etc...). Para mayor información, consultar la sección Novedades del presente boletín.

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Des discussions avec des amateurs de mini-élevage ont conduit à la suggestion que B.E.D.I.M. organise réellement le réseau. Concrètement il s'agirait de permettre à chacun de correspondre directement avec les autres personnes intéressées par la même espèce animale grâce à des listes séparées par espèce (aulacodes, cricétomes, capybaras, pacas, cobayes, iguanes, grenouilles, serpents, crabes terrestres, escargots géants, vers de compost, asticots de mouches, vers du palmier, papillons, ...). Des détails sont fournis dans ce Bulletin (voir Nouvelles).

NOUVELLES DE L'ASSOCIATION

Le Conseil d'Administration s'est réuni le 29 septembre 2000, principalement pour examiner l'évolution des pourparlers avec le CIRAD-EMVT, annoncés dans le Bulletin précédent. Pour des raisons qui semblent être d'ordre administratif, le dossier n'a pas avancé du côté français. L'association BEDIM pour sa part a poursuivi le programme à court terme établi qui consistait essentiellement à poursuivre la publication du Bulletin et à continuer de fournir des conseils à ceux qui en demandent. Simultanément, en collaboration avec la Faculté universitaire des Sciences agronomiques de Gembloux et l'asbl « Aide au Développement – Gembloux », la mise à jour du site internet BEDIM était reprise ainsi que sa traduction.

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Par ailleurs, une suggestion formulée par l'Assemblée Générale de mai 2000 a été caractérisée avec le lancement de petits documents pratiques, simples mais assez complets pour permettre de démarrer un élevage. Chaque GUIDE TECHNIQUE D'ELEVAGE sera consacré à une espèce animale. Dès à présent, la Série Information et Documentation est en cours de publication, chaque fois par un fascicule de 8 pages en format facile.

Les Guides Techniques d'Elevage suivants sont disponibles à partir de décembre 2000, sauf retard imprévu de la part des auteurs respectifs :

n°1	Aulacodes	n°5	Athérures
n°2	Escargots	n°6	Vers de compost
n°3	Grenouilles	n°7	Asticots
n°4	Cobayes		

A titre de promotion temporaire, ces Guides sont disponibles gratuitement à raison d'un seul Guide par personne qui en aura fait la demande par lettre envoyée par la poste.

Cette formule a été imaginée pour réduire les contraintes administratives de l'organisme qui pourrait reprendre les activités de BEDIM. De cette manière, on pourra envoyer un Guide lorsqu'une demande de renseignements est reçue pour une espèce déterminée.

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Dans le même état d'esprit, et après discussion avec plusieurs spécialistes du mini-élevage, des efforts sont actuellement entrepris pour un **PARTAGE DES RESPONSABILITÉS** concernant les relevés de la littérature entre diverses institutions, chacune spécialisée dans une espèce. Dès à présent, deux accords ont été passés dans ce sens. La couverture des questions liées aux Escargots Géants sera assurée par le Dr J.T.C. Codjia du Département d'Aménagement et Gestion de l'Environnement, Faculté des Sciences Agronomiques, Université Nationale du Bénin, B.P. 526 Cotonou – Bénin (ccodjia@syfed.bj.refer.org).

NEWS OF THE ASSOCIATION

The Board of Trustees met on 29 September 2000, mainly to examine the present stage of discussions with CIRAD-EMVT, already mentioned in the previous Bulletin. For administrative reasons the situation did not really move forward in Montpellier (France). On its side BEDIM continued implementing the short term programme i.e. publication of the semestrial Bulletin and technical advices to those who wrote in this sense to the Secretariat. At the same time, the BEDIM web site is being updated, improved and translated in collaboration with the University Faculty of Agricultural Sciences of Gembloux and the non-profit making association "Aide au Développement Gembloux".

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Following a recommendation which came out during the last General Assembly of May 2000, action has been taken to provide practical and simple booklets enabling those wanting to start breeding minilivestock. Each **TECHNICAL GUIDE FOR BREEDING** will concern one species only. Nowadays the Series Information and Documentation is in press, each number being composed of 8 pages printed in an easy format. The following titles are available since December 2000, but only in French. Translated texts (English or Spanish) may be considered by the Board of Trustees, would written requests in this sense being received.

- N°1 Aulacodes (Grass-cutter; Cane rat)
- N°2 Escargots (Snails)
- N°3 Grenouilles (Frogs)
- N°4 Cobayes (Guinea pigs)
- N°5 Athérures (Brush-tailed porcupine)
- N°6 Vers de compost (Manure worms)
- N°7 Asticots (Maggots)

The Board of Trustees has decided for a limited period and as a promotional action to provide free of charge one single Guide per person who would request it by writing sent by post. This measure has been adopted to alleviate the administrative constraints which could hamper the activities of the institution(s) taking over possibly the actual work of BEDIM when a demand reaches the Secretariat asking for advice on a given animal species belonging to minilivestock.

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It is with the same spirit that efforts are presently undertaken a to share of **RESPONSIBILITIES FOR THE REVIEW OF LITERATURE** between various institutions, according to their specific competence and interest.

Un autre accord concerne les Insectes dont s'occupera l'Unité de Zoologie générale et appliquée (Prof. Ch. Gaspar), F.U.S.A.Gx, 2 Passage des Déportés à B-5030 Gembloux, Belgique. Merci à ces deux nouveaux interlocuteurs.

ACTUALITÉS

LISTES D'ÉLEVEURS EN MINI-ÉLEVAGE (PAR ESPÈCE ANIMALE)

Comme mentionné dans l'éditorial de ce Bulletin, tous ceux qui sont intéressés par une ou plusieurs espèce(s) animale(s) faisant partie du mini-élevage auront dorénavant la possibilité de correspondre directement avec des collègues vivant partout dans le monde. Plusieurs réseaux spécialisés par espèce pourront être créés. Si vous êtes intéressés, envoyez-nous : nom, prénoms, adresse complète (avec pays), e-mail éventuel, et surtout le nom de l'espèce animale qui vous intéresse.

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La **LÉGISLATION COMMUNAUTAIRE** sur le chiffre d'affaires / TVA s'intéresse à tout! Un texte de 36 pages a été communiqué par hasard (document 377L0388) ; il concernait l'harmonisation des législations des Etats membres (sixième directive 77/388/CE du Conseil du 17 mai 1977). L'intérêt pour B.E.D.I.M. et le mini-élevage est fort limité, quoique réel: en dernière page, l'Annexe A dresse une liste des Activités de Production Agricole identifiées. On y voit :

- II. Elevage en liaison avec l'exploitation du sol, 6 : héliciculture
- IV. Pêche, 4 : élevage des grenouilles
- V. Activités de transformation des producteurs agricoles.

It is already agreed that the field of Giant land snails will be covered by Dr. J.T.C. Codjia (Département d'Aménagement et de Gestion de l'Environnement, Faculté des Sciences Agronomiques, Université Nationale du Bénin, B.P. 526, Cotonou, Bénin) who can also be reached by e-mail: ccodjia@syfed.bj.refer.org. Similary, the field of Insect breeding will be monitored by the Unit of General and Applied Zoology, Faculté universitaire des Sciences agronomiques, 2 Passage des Déportés, B-5030 Gembloux, Belgique (Head: Prof. Charles Gaspar). Many thanks to both for this new collaboration.

An open call is hereby opened to other institutions which would like to work actively with BEDIM and cover a specific sector of the minilivestock.

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NEWS UP-DATE

DIRECTORIES OF MINILIVESTOCK BREEDERS (by animal species)

As mentioned in the editorial, all those who are concerned by one or more animals belonging to the minilivestock are hereby offered exchanging their adressess with colleagues sharing same interest all around the world. A series of several specialized minilivestock networks is expected. If interested, please sent your: surname and name, full address (with country name), e-mail if any, and the name of the animal species. Separate directories will be set up by species.

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The EUROPEAN UNION LEGISLATION on the financial turn-over and A.V.T. deals with anything! A 36 pages text in French (Document 377L0388) came in by chance; it concerns the harmonization of the legislation of the Members States (Sixième directive 77/388/CE of the Council dated 17 May 1977). The interest of it for BEDIM and minilivestock is very limited, though existing: in the last page, Annex A lists the Activities of Agricultural Production identified as such. We can read:

- II. Animal Production connected to land use, 6: Heliciculture (snail breeding)
- IV. Fisheries, 4: Frog breeding (raniculture)
- V. Processing activities undertaken by agricultural producers.

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En matière d'ENCOURAGEMENT À L'ÉLEVAGE DES GRENOUILLES, le Secrétariat a cru utile de reproduire du courrier reçu du Cameroun et signé par le Dr. Vét. Michel Fofou Moapo (B.P. 17446 Douala).

Six ans, après le Projet d'élevage de grenouilles lancé en Afrique par J. Hardouin. Je décide de créer avec un homme et une femme d'affaire Camerounais une ferme d'élevage de grenouilles et aussi des poissons.

En Février 2000, je descends d'abord sur le lieu situé à Makepe un quartier non loin du Centre Ville de Douala où il n'y a pas souvent d'inondations pendant les grandes pluies.

Une première étude avec les quatre élèves nous a amené à conclure que l'endroit est bien humide et que l'eau est oxygénée. L'eau s'écoule à toute saison sans problème. Une semaine après, nous sommes allés en ville chercher 12 manœuvres ; leur rôle était d'abord de creuser le canal. A chaque moment j'entrais dans le canal pour mesurer la profondeur. Sur mon plan d'action l'eau sortant d'un étang ne devait pas entrer dans l'autre. A côté des étangs des grenouilles, j'ai aussi fait créer un grand étang de poissons. Avec des pioches, des houes et des pelles, nous avons déraciné tous les arbres et les arbustes se trouvant dans les étangs. A côté des racines de ces arbres, j'ai découvert certaines races de vers de terre qu'on ne rencontre jamais à la surface de la terre.

Mes collègues ont même souligné que c'est grâce au projet d'élevage de grenouilles lancé en Afrique par le Prof. J. Hardouin que nous sommes entrés dans un nouveau monde de vers de terre. C'est avec de la terre et du sable placés dans des sacs que nous avons fait des digues. Certains appellent ce canal par le nom suivant « CANAL J. Hardouin ».

Plusieurs photos étaient jointes : elles ne peuvent malheureusement pas être reproduites ici. Par ailleurs, le Dr Fafou Moapo transmet également un autre texte dont l'essentiel est reproduit ci-dessous.

L'an 2000, le 1^{er} du mois de mai, sur mon initiative un groupe de futurs ranculteurs ont défilé à la Place des Fêtes à Douala au Cameroun.

Sur leurs tricots était écrit le message suivant : « Hommage au Professeur J. Hardouin pour le projet d'élevage des grenouilles en Afrique ».

Quelques centaines d'agriculteurs et d'éleveurs mobilisés pour la circonstance ont lancé des slogans d'accueil. En organisant cette fête c'était pour apporter avec magnificence ma vision messianique au Cameroun et en Afrique ... pour ne pas laisser enterrer le projet d'Elevage de grenouilles lancé en Afrique par le Prof. Honor. Dr. Ir J. Hardouin du Secrétariat de BEDIM à Gembloux en Belgique. « Le message fut bien accueilli par le Gouverneur et le Public ».

Pour achever cette fête organisée sur mon initiative, nous nous sommes retrouvés le soir dans une ferme de grenouilles où on nous attendait avec le repas pour le dîner.

Papers dealing with **FROG FARMING ENCOURAGEMENT** arrived at the Secretariat, which found useful summarizing in English what was written in French on more than three pages by Dr. Vet. Michel FOFOU MOAPO (B.P. 17446 Douala, Cameroon).

Unfortunately, it is not possible to reproduce the attached photographs in the Bulletin.

Six years after the first proposals for frog farming in Africa made by J. Hardouin, I decided to start a frog and fish farming scheme, together with a business-woman and a business-man both from Cameroon. In February 2000, a place not too far from Douala is identified where labourers were quickly posted to dig small canals and ponds. Earthworms never seen on the surface of the land were present and have been captured, and this was an unexpected discovery issued from a frog project. Sacks full of soil and sand were used to build dykes. Some people speak already of the “Jacques Hardouin Canal”.

On the 1st May 2000, I suggested to a group of frog farmers to take part at the parade organized at the Place des Fêtes, Douala – Cameroon. A message printed on their tee-shirts mentioned “Homage to Prof. Hardouin for the Frog Farming Project in Africa”. This message was most welcome by the Governor of the Province and by the public.

Prof. Hardouin comments that event as follows: “It is evident that, as soon as will and goodwill are present, it becomes possible implementing new projects even in non-conventional sectors provided that the size of the operation remains logic. These information from Cameroon could possibly be used in other places as good argument. However the name of the BEDIM President has not necessarily to be used, unless it can really help, if at all”.

A cela, le Prof. J. Hardouin répond :

Ces deux textes montrent que lorsque la volonté de réaliser quelque chose est présente, il est possible de lancer des opérations si l'on reste dans des dimensions logiques. Ces messages du Cameroun pourraient servir ailleurs sans qu'il soit cependant nécessaire d'évoquer le nom du Président de BEDIM, sauf si cela permet de mieux faire avancer les choses.

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La VIDÉOCASSETTE sur le mini-élevage en milieu forestier tropical a été projetée cette année encore aux étudiants du Cours International de Production et Santé Animales Tropicales CPSAT de l'Institut de Médecine Tropicale d'Anvers – Belgique. Ce sont les étudiants qui suivaient le module « Problématique d'Élevage en Milieu Tropical », enseigné par le Dr Eric Thys, Professeur à cette institution et Secrétaire de BEDIM, qui en ont bénéficié. Plusieurs d'entre eux rentreront dans leur pays avec un exemplaire de cette cassette.

De même, les participants au stage groupé organisé par l'A.S.B.L. « Aide au Développement – Gembloux ADG » ont discuté avec fougue sur le mini-élevage après la projection de cette cassette. Les débats étaient menés par le Prof. Honoraire Jacques Hardouin, Président de BEDIM. Ici aussi, plusieurs stagiaires ont décidé d'emporter une cassette dans leurs bagages lors de leur prochain retour.

Ces deux formations sont organisées grâce à l'appui financier de la coopération belge.

Des cassettes sont encore disponibles pour la vente aux Presses Agronomiques de Gembloux.

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Les ESCARGOTS sont connus en Europe pour pouvoir servir efficacement d'indicateur biologique en matière de pollution de l'environnement. Cette utilisation ne représente pas un objectif pour les achaticulteurs en général, ni une méthode retenue dans les pays tropicaux. Néanmoins un article fort intéressant en la matière signé par A. Gomot de Vaufleury et F. Pihan est cité dans la revue de la littérature, car la méthodologie adoptée pourrait servir de modèle. Les lecteurs du Bulletin qui connaîtraient des utilisations d'escargots pour évaluer le niveau et la variation de la pollution dans des pays tropicaux devraient le signaler au Secrétariat.

The VIDEO-CASSETTE on minilivestock in the tropical forest habitat has again been presented this year to the post-graduate students of the International Course of Tropical Animal Production and Health CIPSAT at the Institute of Tropical Medicine Antwerp – Belgium. The students who selected the module “Problems of Animal Breeding in Tropical Environment” attended these courses and seminars run by Dr Eric THYS, Professor at the I.T.M. and BEDIM Secretary. Many of these students will go back home with a copy of the cassette.

Similarly, the participants to the group training session set-up by the association “Aide au Développement – Gembloux” discussed hardily on minilivestock, following the projection of the video-cassette and the comments of Prof. Emer. Jacques Hardouin, President of BEDIM. Here also, many participants have decided to bring back home a copy of the cassette.

The two sessions mentioned above have been organized under financial support of the Belgian Cooperation.

Copies of this video-cassette are still available and on sale by the Presses Agronomiques de Gembloux.

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SNAILS are known in Europe as good bioindicators of environmental pollution and its variations. Using achatines for the same purpose in tropical countries is not a technique adopted yet. Nevertheless an article written by A. Gomot de Vaufleury & F. Pihan is mentioned in the literature review of this Bulletin as the methodology used is worthwhile noticing as a potential model. Readers of the Bulletin being aware of the use of achatines to check pollution variations in the tropics should let it know to the Secretariat.

Les GRENOUILLES continuent à intéresser beaucoup les gens, aussi bien ceux qui souhaitent en élever pour la consommation que ceux qui sont concernés par la biologie pure et l'environnement.

Ainsi, une diminution progressive du nombre d'espèces d'amphibiens est constatée un peu partout dans le monde. Le phénomène a été bien étudié en Australie, qui a été fort touchée par cette transformation. Des chercheurs pensent avoir identifié au moins une cause à ces réductions de population : un champignon. On a en effet trouvé que la peau des grenouilles est touchée par le *Batrachochytrium dendrobatidis*, ce qui n'était pas le cas antérieurement. Toutefois, il est admis que l'on ne peut attribuer la disparition constatée des amphibiens à un unique facteur.

Les lecteurs du Bulletin intéressés par le développement de la raniculture tropicale sont rarement des spécialistes en systématique des batraciens anoures. Malgré cela, chacun est bien conscient qu'il faut être certain des noms qui sont donnés aux grenouilles utilisées ou observées. La chose se complique parce que des synonymes existent très souvent, et qu'il arrive donc que l'on cite des noms différents alors qu'il s'agit d'une seule espèce, ou que le nom que l'on emploie ne se retrouve pas dans la documentation parce qu'il a changé.

Le Secrétariat de BEDIM a interrogé un spécialiste des amphibiens (Thierry Frétey), dont un article est analysé dans ce numéro. Ses commentaires intéresseront certainement plusieurs lecteurs.

Grenouille-taureau asiatique : identifiée en général comme *Rana tigrina*, qui est une déformation largement utilisée de *Rana tigerina*, qui en réalité est maintenant appelée *Hoplobatrachus tigerinus* (Daudin, 1802).

Rana occipitalis, parfois identifié comme *Dicroglossus occipitalis* (Günther, 1860) s'appelle désormais *Hoplobatrachus occipitalis* (Günther, 1859 « 1858 »).

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TERMITES – Appel pour des Informations

Le Secrétariat de BEDIM envisage de réunir toutes les informations disponibles concernant l'élevage et l'utilisation des termites pour un usage comme nourriture par l'homme ou par des animaux (poules, pintades, poissons, ...) exploités par l'homme. Chaque lecteur qui a connaissance d'une méthode d'élevage devrait la décrire, puis envoyer son texte à BEDIM. Une page peut suffire. Il n'est pas nécessaire d'avoir réalisé soi-même cet élevage si on en connaît très bien la technique, qu'il faut décrire en détail. Il en est de même pour les méthodes d'utilisation même si les termites ne sont pas produites par l'homme mais simplement récoltées en cassant des termitières. Ne pas oublier de situer l'endroit où cela se pratique et dans quel contexte (jardin scolaire, cadre de vulgarisation, ...).

FROGS keep interesting many people, and not only those who would breed them for consumption and/or sale but also those concerned by pure biology and environment. In that context, a progressive reduction of the amphibians population is observed everywhere. The phenomenon has been well analysed in Australia where this modification is noted. Scientists believe that at least one cause of the population decrease is a fungus. Frog skin is indeed infected and damaged by *Batrachochytrium dendrobatidis*, which was not the case previously. However, it is admitted that the observed disappearance of amphibians cannot be attributed to only a single factor.

The readers of the Bulletin interested by tropical frog farming development are usually not specialists in the field of batrachians systematic. Nevertheless it is well accepted that the names attributed to the frogs observed or used must be correct. Things become sometimes more confused by the existence of several names for one single species or by the absence in the literature of a name used because the name has been modified.

BEDIM secretariat has asked and obtained precisions from an amphibian specialist (Thierry Frétey), of whom an article is reviewed in this issue. His comments will surely interest many readers.

Asian bull-frog: usually called *Rana tigrina*, which is a largely used distortion of the old true name *Rana tigerina* today labelled *Hoplobatrachus tigerinus* (Daudin, 1802). *Rana occipitalis*: sometimes called *Dicroglossus occipitalis* (Günther, 1860) is now known as *Hoplobatrachus occipitalis* (Günther, 1859 “1858”).

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TERMITES – CALL FOR INFORMATION

The Bedim Secretariat asks for any information on breeding and use of termites as food for people or for animals (poultry, guinea fowls, fish, ...) kept by people. Any reader of the Bulletin being aware of a breeding technique should describe it and send the text to BEDIM. One page may be enough, but several pages will also be welcome. The writer should not necessarily have practiced the method himself, if he is well aware of the technique used. The same applies to utilisation techniques, even if the source of termites is not true breeding but just collection of blocks from active termitaries broken for the purpose. Do not forget mentioning the place where these activities take or took place, as well as the conditions (school garden, extension centre, private farm, ...).

GUINEA PIG MEAT USE

Mario Cicogna, Professor, Istituto di Zootecnia Generale, Facoltà di Agraria, Università di Milano, Via Celoria 2, I-20133 Milano, Italia.

The most common methods of slaughtering are stunning and sticking, or breaking the neck's vertebrae or asphyxia by submerging the head in water for a few seconds. With the first and second methods blood may be drained from the body through a small slit. The second method should be preferred because it causes a quick and more human death. Immediately after slaughter the hairs are burned on the fire or peeled off by dipping the guinea pig in boiling water for a few seconds, then the animal is eviscerated, but skin, head, feet, liver, heart, kidney and fat remain on the carcass.

In Latin America guinea pig's meat is broiled or roasted in brick or stone oven, boiled, fried or a combination of boiled and fried, or prepared as a soup. In broiling the carcass is tied on one end of a stick and exposed to a charcoal fire, eventually oil or lard may be applied as a glaze to the carcass with a brush or a corn husk. Before cooking the meat may be seasoned and marinated from a few hours to overnight. Seasoning may consist of ground spices such as hot pepper, coriander, parsley, mint, onion, garlic and salt. Additionally the guinea pig may be stuffed with fresh herbs, such as meat and oregano. Before frying, the meat may be seasoned with a sauce of garlic, onion, salt, pepper and vinegar or cooking wine. Some cut the meat into five pieces, while others fry the whole carcass, then cut it in halves or quarters depending on what customers prefer. They are served with baked or boiled potatoes, parched corn, cheese, rice, and so forth. The meat may be also squashed with a slate on a flat grill or soaked in salt water for about two hours and boiled with beef bones, scallion, beans, potatoes, and mint. Different recipes are popular in different areas of Peru, Ecuador, Bolivia and Colombia. Guinea pig dishes are offered in households and restaurants, but also in informal settings at marketplaces or along busy roads.

In Cameroon guinea pig's meat is considered a prestige meat, generally reserved for the head of the household and distinguished visitors, and it may be roasted, cooked wrapped with flavours in dried leaves (ndomba) and eaten with cassava, cooked with cucumber (namgon) or used to prepare a soup.

Résumé

L'abattage est similaire à celui des lapins ; les poils sont grattés après trempage dans l'eau bouillante ou brûlés. La carcasse classique est débarrassée des entrailles mais on laisse la peau, le cœur, le foie, les rognons et la graisse.

Toutes les préparations existent : grillé, rôti, frit, bouilli ou en soupe. La carcasse est parfois farcie. La découpe est faite en 2, 4 ou 5 parts selon les habitudes locales. En Amérique latine, la viande de cobaye est couramment consommée à domicile, mais elle est également servie dans les restaurants ainsi que sur les marchés ou au bord des routes. Dans certaines régions du Cameroun, c'est une viande de prestige préparée de diverses manières (dans des feuilles, avec des concombres, ...) et souvent mangée avec du manioc.

CRIANZA EN CAUTIVERIO DE LA MORFO AZUL

Por Clinton Callegari, Proyecto Mariposa EIRL, P.O. Box 451, Iquitos, PERU.

Tel: 094 260530 / 094 670 342

email: proyecto_mariposa@manguare.com.pe o mariocallegari@hotmail.com

La morfo azul se considera una de las mariposas más bellas del mundo. Por este motivo, es objeto de un intenso comercio y víctima del tráfico ilegal en algunos países Latinoamericanos. No obstante la morfo es fácil de criar, si se conoce bien la planta hospedera exacta.

La *Morpho achilleana* resiste bien el manejo en cautividad, tiene un ciclo relativamente corto (dos meses y medio del huevo a la fase adulta) y se alimenta de un gran número de leguminosas papilionáceas tales como *Machaerium* (jacaranda), *Dalbergia* (palo de rosa), *Pterocarpus* (drago), *Myrocarpus* (aceite caspi), ..

Las hembras son fáciles de captura y ovipositan fácilmente en cautiverio. La cópula puede hacerse en condiciones artificiales sin necesidad de grandes espacios.

Las hembras adultas se pueden capturar mediante una red para mariposas o también atrayéndolas con frutas ligeramente descompuestas embebidas con alguna bebida alcohólica (aguardiente, vino..). Se recomienda iniciar la crianza con una docena de hembras. Dos o tres días después de la copula, (que se puede hacer manualmente con algo de práctica), las hembras empiezan a poner huevos en las ramas de la planta hospedera que habremos introducido junto con las mariposas. Estas se deben alimentar con agua azucarada. De esta forma, cada hembras se puede mantener unos veinte días produciendo unos 70 u 80 huevos.

Cada mañana se retiran los huevos que se depositan en cajas de plástico de 30 X 25 X 10 cms, donde se criaran las larvas u orugas. Es importante no poner más de veinte larvas por caja y manipularlas con pinzas, para evitar transmitirles enfermedades con las manos.

A partir de la cuarta muda de piel, se pueden poner hasta 50 larvas sobre plantas en maceteros que se mantienen en cajas de tela metálica de 50 X 50 X 100 m, y que se deben humedecer diariamente.

Cualquier larva que presente síntomas de debilidad debe ser separada del resto y desechada para evitar posibles contagios.

Cuando las larvas tengan 75 mm de longitud, dejaran de comer para comenzar la formación del capullo o crisálida. Al cabo de 15 días en el interior del capullo, emerge la forma adulta conocida mundialmente como "Blue Morpho".

Si se desea continuar la crianza a partir de las mismas mariposas adultas, es importante ponerlas en una caja de tela de más de 1 m³. Se recomienda una proporción de dos hembras por cada macho. Se requieren unos tres días de confinamiento par que las hembras queden fecundadas.

Para mayor información o intercambio de datos sobre la cría de mariposas, pueden dirigirse al autor.

NOVEDADES DE LA ASOCIACION

El consejo de administración (CA) de BEDIM se reunió el pasado 30 de Septiembre del 2000.

En el mismo se votó y fue aceptado por unanimidad el informe del pasado CA, que tuvo lugar el 18.03.2000.

GUIAS TECNICAS DE CRIA

El BEDIM está produciendo una serie de manuales de vulgarización sobre las principales especies interesantes en minicria. Son manuales muy sencillos de unas 10 páginas como máximo. Estas guías se publicarán inicialmente en versión francesa. Mas adelante se estudiará la posibilidad de traducirlas al inglés y al español.

PAGINA WEB

La página Web de BEDIM en versión francesa y inglesa está siendo actualizada. Una vez finalizada, se debatirá la necesidad de una versión en español.

CONTACTOS CON LA FAO

Tras la salida por jubilación del Dr. René Branckaert, el responsable provisional de la sección sobre la producción animal de pequeñas especies es el Dr. Simón MACK. Se ha recibido con gratificación su voluntad de seguir financiando a BEDIM durante el año 2001.

REPERTORIO DE PERSONAS INTERESADAS LA MINICRIA (POR ESPECIES).

Tal como se menciona en la sección Editorial de este boletín, todos aquellos/as que estén interesados/as por una o varias especies animales que forman parte de la mini-cria, tienen a partir de ahora la posibilidad de mantenerse en contacto directamente con colegas con los mismos intereses en otras partes del mundo. Varias redes especializadas por especie podrán de este modo ser creadas. Rogamos a toda persona interesada en formar parte de alguna de estas redes, que mande a la secretaria de BEDIM: su nombre, apellidos, dirección completa (incluyendo el país), su dirección electrónica, y el nombre de la especie/s animal/es que le interesan.

NOTICIAS – NOTICIAS - NOTICIAS – NOTICIAS - NOTICIAS – NOTICIAS

CURSOS DE ESPECIALIZACIÓN SOBRE CRÍA Y MANEJO DE ANIMALES SILVESTRES

Del 20 de Septiembre al 5 de Diciembre, la Facultad de Ciencias Agrarias del estado amazónico de Pará, en Brasil ha organizado el 3er Curso de especialización en manejo para la conservación y producción de animales silvestres, y el 3er curso latinoamericano de especialización en animales silvestres: conservación en la Amazonia. La información sobre este y otros futuros cursos se puede obtener a través de /

Profesora Maria Dores Correia Palha

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V CONGRESO INTERNACIONAL DE MANEJO DE FAUNA SILVESTRE EN AMAZONIA Y LATINOAMERICA: CRITERIOS DE SOSTENIBILIDAD

La Fundación Natura - Colombia, La Universidad Nacional de Colombia a través del Instituto de Ciencias Naturales y la Estación de Biología Tropical Roberto Franco, el Ministerio del Medio Ambiente, el Instituto de Investigación en Recursos Biológicos Alexander von Humboldt, Conservación Internacional - Colombia y el Instituto de investigaciones amazónicas Sinchi organizan el "V Congreso Internacional de Manejo de Fauna Silvestre en Amazonia y Latinoamérica", en Cartagena de Indias - Colombia entre el 10 y 14 de septiembre del 2001.

El objetivo general es conocer, evaluar y difundir el estado del arte en manejo de fauna silvestre, y sus criterios de sostenibilidad en Latinoamérica. Se programaran conferencias magistrales, mesas de trabajo, sesiones temáticas con presentaciones libres y exposición de carteles. Las áreas temáticas serán entre otras: conservación in situ y ex situ de fauna silvestre y preservación de hábitat, criterios de uso sostenible, manejo de fauna por comunidades, indicadores de sostenibilidad, ecología aplicada al manejo, fisiología y etología, uso, comercio, política y legislación de fauna silvestre.

Los detalles sobre las fechas de inscripción, precios y presentación de trabajos se pueden encontrar en

<http://www.humboldt.org.co/faunaquintocongreso> o por fax a los números 571-2486250 0 3484899 de Bogotá, Colombia.

CONGRESO SOBRE CONSERVACIÓN DE LA BIODIVERSIDAD EN LOS ANDES Y LA AMAZONÍA

24 - 28 DE SEPTIEMBRE 2001, CUSCO, PERÚ

Objetivos:

El congreso internacional y interdisciplinario tratará de la conservación de la biodiversidad en los Andes y la Amazonía con énfasis en Ecuador, Perú y Bolivia. Estos países albergan una enorme riqueza cultural y biológica, actualmente amenazada. El congreso ofrece la posibilidad de juntar los diferentes actores involucrados con la conservación de la biodiversidad como los científicos, las organizaciones no gubernamentales (ONGs), la gente local y grupos indígenas.

El congreso busca la contribución de científicos, la presentación de proyectos aplicados y conocimiento tradicional. Los resúmenes individuales (conferencias y pósters) deben referirse a uno de las seis sesiones principales.

- 1) Diversidad de especies en los Regiones Tropicales con énfasis en Ecuador, Perú y Bolivia
- 2) Biodiversidad y los servicios de ecosistemas
- 3) Uso sostenible de recursos naturales
- 4) Uso y valor de productos no maderables
- 5) Manejo de parques naturales y áreas protegidas
- 6) Ecoturismo (en comunidades indígenas) - oportunidades y riesgos

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PROMOCIÓN DE LA VENTA DE CARNES PROCEDENTES DE ANIMALES SILVESTRES EN BRASIL

Del 12 al 14 de Septiembre tuvo lugar en Sao Paulo el 1^{era} Feria Gastronómico de Carnes de Animales Silvestres, con el fin de promocionar la venta de carne de animales silvestres criados en cautividad.

El consumo de carnes de animales silvestres en la capital brasileña se estima en unas 100 toneladas mensuales, que se consumen básicamente en restaurantes especializados en la preparación de carnes exóticas, procedentes de granjas o zocriaderos. Las especies que mas se producen y se consumen son el capibara (*Hydrochaeris hydrochaeris*) con mas de 100 granjas abstaeciendo el mercado, el caimán de anteojos (*Caiman crocodylus*), la tortuga amazónica (*Podocnemys expansa*), con mas de 580 mil individuos criados en cautiverio y los dos especies de pecaris (*Tayassu tajacu* y *T. pecari*), además de especies exóticas como el jabalí europeo (*Sus scrofa*) y el avestruz africano (*Struthio camelus*). Se calcula que le mercado de carnes exóticas crece un 30% cada año. La cria de estos animales esta autorizada por el IBAMA, siempre y cuando se cumplan los procedimientos legales necesarios.

Para mas informacion: <http://www.emporiosilvestre.com.br>

ALERTA SOBRE LA INTRODUCCION Y CRIA DE CARACOLES GIGANTES AFRICANOS FUERA DE SU HABITAT NATURAL

El caracol africano *Achatina fulica* es una especie importante como productor de proteína animal en Africa, donde se cria facilmente en cautividad. No obstante, fuera de su hábitat natural, su introducción para la cría puede tener un impacto nefasto para el medio ambiente, llegándose a convertir una plaga para la agricultura de determinados países. Este es el caso de su introducción en determinadas islas del Pacifico y del Caribe puede tener efectos devastadores para la agricultura y la biodiversidad de estos países.

Para evitar estos efectos adversos, el Servicio de Protección de las Plantas de las Comunidades del Pacifico ha elaborado una serie de medidas de control para combatir los devastadores efectos de esta plaga en algunas islas.

1. Para prevenirla introducción del caracol gigante africano en países libres de esta plaga, se recomienda las siguientes medidas de cuarentena:

- Advertir a importadores y exportadores sobre la necesidad de una buena limpieza de los contenedores - sobretodo en su parte inferior - y fumigar todo el material de transporte en los países de origen antes enviarlos.
 - Los contenedores deben tener un certificado de haber sido convenientemente revisados y limpiados antes de cargarse en los naves de y transporte. Estos certificados deben ser elaborados por la compnia de transporte.
 - Si durante este proceso de control, se hallan algunos especímenes de caracoles, los contenedores deberán ser fumigados de forma especialmente intensa y cuidadosa.
 - Limpiar al vapor todos los vehículos y maquinaria nueva o de segunda mano, procedente, o que haya circulado por
 - Inspeccionar meticulosamente todos los cargamentos de mercancías nuevas o de segunda mano, importadas de países que estén afectados por la plaga del caracol africano, en los puertos de entrada, inmediatamente después su llegada.
 - Cualquier caracol vivo interceptado debe ser inmediatamente destruido mediante fuego o inmersión en agua de mar.
2. Para países en los cuales al caracol africano ya esta establecido, se recomiendan las siguientes medidas:
- Animar a la población local a intervenir en la recolección y eliminación de moluscos africanos mediante fuego o inmersión en agua de mar.
 - Limpiar de basura y maleza el interior y alrededores de zonas infestadas para reducir las áreas de reproducción del molusco.
 - Rodear las áreas infestadas con bandas de arena y limpiar toda la vegetación alrededor de las mismas para evitar el movimiento de los caracoles a otras áreas.
 - Evitar el movimiento de material vegetal o tierra procedentes de áreas infestadas hacia otras áreas libres de la presencia del molusco.
 - Poner cebos con metaldehído en al interior y alrededores de áreas infestadas, con la precaución de que estén fuer del alcance de los niños y otros animales domésticos.
 - Asegurarse que todos los puertos aéreos o marítimos, y los almacenes de vehículos y naves, están libres de caracol africano.

SURVEY OF THE LITERATURE

EDIBLE AND USEFUL RODENTS

Yewadan C.T. & Behr K. – Fiches techniques pour l'Elevage d'Aulacodes [Technical Leaflets on Grass-cutter Breeding].

Language : French (no English summaries)

Source : Projet Promotion de l'Elevage d'Aulacodes, Minist. Développ. Rural. Rép. Bénin & G.T.Z. (German Cooperation); 1999.

Address : 08 B.P. 1132 Cotonou, Bénin
aulacode.benin@intnet.bj

Abstract : Six leaflets have been produced with simple text and drawings to facilitate the running and provide advices in the field of grass-cutter breeding. Each leaflet (14x20.5 mm) deals with one matter:

n°1: Housing (20p.)

n°2: Breeding (20p.)

n°3: Feeding (20p.)

n°4: Reproduction (20p.)

n°5: Health (12p.)

n°6: Management (12p.)

This series of technical leaflets summarizes the results of more than 15 years activity. Two other leaflets are mentioned also but where not provided to the Secretariat viz. n°7 (Extension) and n°8 (Slaughtering and Meat Processing).

Anonymous – Rising above the rat trap.

Language : English

Source : New Agriculturist on-line, May 2000, 2p.

Address : <http://www.new-agri.co.uk/00-3/focuson/focuson/focuson.html>

Abstract : Surveys in Mozambique have shown that rats have an impact on the livelihoods and welfare of farmers and pose considerable health risks (bubonic plague, leptospirosis, rat bite fevers, ...). Existing technology on rodent control is inappropriate in rural villages where rats are often an important source of protein. Farmers involved in rat trapping are happy with the success achieved as trapped rodents can be eaten and much less food is destroyed by rats.

Moreira JR and MacDonald D. - Capybara use and conservation in South America.

Language : English

Source : Taylor VJ and Dunstone N, Editors. The exploitation of mammal populations, Chapman & Hall, London, 1996. pp 88-100.

Address :

Abstract : Today, capybara is hunted throughout most of its range for meat, hides or to reduce crop damages. Although there might have been local extinctions, capybara is generally not endangered. In fact, its habitat is increasing due to the advancing conversion of neotropical forest into garsmland. The only large scale commercial harvesting of capybara is being conducted in Venezuela. Seasonally flooded savannahs as the

ones present in the Pantanal, or along the Amazon valley, are also suitable for capybara hunting in a similar manner that in Venezuela. A deterministic age structured seasonal model was used to research the way in which harvesting could affect capybara populations. The maximum sustainable yield was found at a rate of 0;17 for capybaras in the Marajo island (Brazil). Selective harvesting of this species by sex may reduce fertility and lead the population to collapse and should not be recommended. The productive potential of capybaras in the neotropics calculated by the model was 841 kg/km² per annum.

Mendes A, Nogueira SS, Lavorenti A. & Nogueira Filho S. - A note on the cecotrophy behaviour in capybara.

Language : English

Source : Applied Animal Behaviour Science, 2000, 66, 161-167.

Address :

Abstract : Six adult capybaras were placed in individual pens and observed 96 serial hours. During this period, a behavioural pattern interpreted as cecotrophy was observed 243 times 73% of cecotrophy acts occurred between 6:00 and 12:00 am while 27 % occurred between midnight and 6:00 pm. The observation of cecotrophy in capybaras suggests that maintenance expenses with protein supplements for this species in captivity can be reduced.

Cueto GR, Allekotte R & Kravetz FO - Scurvy in capybaras bred in captivity in Argentina.

Language : English

Address : Departamento de Biología, Facultad de Ciencias Exactas y Naturales, Universidad de Buenos Aires, Ciudad Universitaria, Pab. II, 410 p., (1428), Buenos Aires, Argentina.

Source : Journal of Wildlife Diseases. 2000, 36: 1, 97-101.

Abstract : Seven young capybaras (*Hydrochaerus hydrochaeris*) were fed a pelleted diet without ascorbic acid and 8 capybaras received the same diet with 1 g of ascorbic acid daily. Animals in the first group developed signs of scurvy-like gingivitis, breaking of the incisors and death of one animal. Growth rate of animals deprived of ascorbic acid was considerably less than that observed in the control group. Ascorbic acid deficiency affected pregnancy, especially during the early stages.

Senou M, Yewadan LT & Behr K - Paramètres génétiques de quelques caractères d'importance économique chez l'aulacode (*Thryonomys swinderianus*).

Language : French

Address : Faculté des Sciences Agronomiques de l'Université Nationale du Bénin B.P. 526 Cotonou, Bénin.

Source : Journal of Animal Breeding and Genetics. 1999, 116: 4, 305-310

Abstract : Heritability of weight at 4 months of age, weight at 8 months of age, docility and litter size in grass-cutters (*Thryonomys swinderianus*) as well as the genetic and phenotypic correlations between traits were estimated using offspring-

parent regression and analysis of variance in hierarchical half- and full-sib groups. The data used consisted of 5 generations of unselected animals (n = 1183). Analyses of variance yielded higher estimates of heritability coefficients than regression methods. Estimates of 0.44 and 0.67 were found for genetic and phenotypic correlations between weight at 4 months of age and weight at 8 months of age. Estimates of genetic and phenotypic correlations between weight at 8 months of age and docility were -0.34 and -0.10, respectively. Genetic and phenotypic correlations of 0.32 and 0.30 were obtained between weight at 8 months of age and litter size.

Andrade PCM, Lavorenti A & Filho SLGN - Efeitos do tamanho da area, da dieta e da idade inicial de confinamento sobre capivaras (*Hydrochaeris hydrochaeris*) em crescimento. [Effects of the size of area, of the diet and of the initial age of confinement on capybaras (*Hydrochaeris hydrochaeris*) growth]

Language : Portuguese

Address : Depto. Produção Animal e Vegetal, FCA, Universidade do Amazonas, Brazil.

Source : Revista-Brasileira-de-Zootecnia. 1998, 27: 2, 292-299.

Abstract : The effects of size of the area (40 or 400 m²), of the diet and of the initial age of confinement (70 or 150 days) were observed in 58 capybaras randomly distributed in the following treatments: confinement (1 animal/20 m²) and pelleted diet; confinement and grass (*Pennisetum purpureum*); semi-confinement (1 animal/70 m²) and pelleted diet; and semi confinement grass plus diet meal. There were no differences of weight gain (DWG), between confinement and semi-confinement. Confined capybaras had smaller intake (312.29 g/day), better feed: gain ratio (F:G; 5.1:1) and higher mortality (20.41%) than semi-confined capybaras, which had less body fat (14.75%). Animals fed with grass had smaller DWG (18.80 g) and worse F:G (22.2:1) and 25% mortality. There were no differences between DWG and F:G for initial ages of confinement and diet. Animals confined at 70 days of age had higher DM intake (339.7 g/day) and higher mortality (30.3%).

Ito FH, Vasconcellos SA, Bernardi F, Nascimento AA, Labruna MB & Arantes IG - Evidencia sorologica de brucelose e leptospirose e parasitismo por ixodideos em animais silvestres do pantanal Sul-Mato-Grossense. [Serological evidence of brucellosis, leptospirosis and parasitism by ixodid ticks in wild animals of the pantanal of Mato Grosso do Sul, Brazil]

Language : Portuguese

Address : Departamento de Medicina Veterinaria Preventiva e Saude Animal, Faculdade de Medicina Veterinaria e Zootecnia da Universidade de Sao Paulo (FMVZ-USP), Brazil.

Source : Ars-Veterinaria. 1998, 14: 3, 302-310.

Abstract : Laboratory tests on peccaries *Tayassu pecari* & *T. tajacu* and on capybaras *Hydrochaeris hydrochaeris* gave some positive results concerning brucellosis and leptospirosis. Identified ticks were *Amblyomma cajennense* and *Boophilus microplus*.

GUINEA PIGS

Darmon*, N., Abdoul, E., Roucayrol, A.M., Blaton, M.A., Briend, A., Desjeux, J.F. & Heyman, M. – Sensitization to Cow's Milk Proteins during Refeeding of Guinea Pigs Recovering from Polydeficient Malnutrition.

Language : English

Source : Pediatric Research, 1998, Vol. 44, n°6.

Address* : Unité 290 de l'Institut National de la Santé et de la Recherche Médicale, Hôpital Saint-Lazare, 107 rue du Faubourg Saint-Denis, 75010 Paris, France.

Abstract : The paper gives the results of an experiment aiming at better understanding of intestinal dysfunction in connection with sensitization of guinea pigs to cow's milk, mainly cow's milk protein. It has been shown that sensitization to cow's milk proteins can develop in guinea pigs recovering from experimental malnutrition through refeeding.

Finnie J.W., Noonan D.E. & Swift J.G. – Adenovirus pneumonia in guinea pigs.

Language : English

Source : Austr. Vet. J. 1999, 77, 3, 191-192.

Address : Institute of Medical and Veterinary Science, Veterinary Services Division, 101 Blacks Road, Gilles Plains, South Australia 5086.

Abstract : Respiratory problems in guinea pigs are frequent, but infections by adenovirus are not well documented. The paper describes sudden death of four young adults with adenovirus pneumonia.

Pugliese A. – La carenza di vitamina C nella cavia [Vitamin C deficiency by guinea pig]

Language : Italian (no English summary)

Source : Obiettivi & Documenti Veterinari, 1999, 5, 29-31.

Abstract : The guinea pig is one of the few mammals unable to synthesize vitamin C, hence its total dependency of a balanced diet. Fresh fruits and vegetables meet normally the requirements, but commercial pellets prepared for rodents have usually a too low content in vitamin C for guinea pigs. Young and pregnant females are the most sensitive. Haemorrhages and troubles of bone and dental tissues are rather characteristic of the deficiency. Treatments are based on 10-50 mg vitamin C per kg liveweight in the feed.

Cicogna M. – Guinea pig meat use.

Language : English

Source : BEDIM Bulletin, 2000, 9, 2,

Address : Istituto di Zootecnia Generale, Facoltà di Agraria, Università di Milano, 2 Via Celoria, I-20133 Milano, Italy
e-mail: Mario.cicogna@unimi.it

Abstract : The author describes some slaughtering techniques and ways or recipes to prepare guinea pig meat.

EDIBLE TROPICAL SNAILS

Koudandé, O.D. & Ehouinsou, M. – Essai sur l'effet de la densité sur la production de biomasse d'escargots géants africains (*Archachatina marginata*) au Bénin [Effect of the Density on the Biomass production of African Giant Snails (*Archachatina marginata*) in Benin].

Language : French

Source : Tropicultura, 1998-99, 16-17, 3, 127-129.

Address : Dr. O.D. Koudandé, Department of Animal Breeding, Wageningen Agricultural University, P.O. Box 338, 6700 AH Wageningen, The Netherlands.

Abstract : Under variable densities (4, 8, 15 and 22 animals per m²), young African giant snails fed with a diet of papaya leaves had a growth rate linked to the rearing density. In fact, the weight gains were respectively 112%, 114%, 76% and 64%. However the biomass production increased with the density, this enhancement followed a logarithmic curve.

Yalçın, S., Dogruer, Y. & Gürbüz, U. – Vakum Paketleme ve muhafaza sıcaklığının kara salyangozu etinin kalitesine etkisi [Effect of vacuum packaging and storage temperature on the quality of snail meat].

Language : Turkish (with English summary)

Source : Veterinarium, Special Issue 9th Congress of Kükem, 1997, 20, 3, 82.

Address : Veteriner Fakültesi Besin Hijyeni ve Teknolojisi Anabilim Dalı, Konya, Turkey.

Abstract : Meat of boiled-frozen snails (*Helix adspersa*) was divided into two groups as vacuum and unvacuum packed kept at 4°C in refrigerator and -18°C in deepfreezer for 60 days. Samples were analysed for chemical composition and microflora.

Yalçın, S., Dogruer, Y. & Yalçın, S. – Kara salyangozu etinin mikrobiyolojik kalitesi ve kimyasal bileşimi [Microbiological quality and chemical composition of snail meat].

Language : Turkish (with English summary)

Source : Veterinarium 1995, 6, 1-2, 50-52.

Address : Veterinar Fak. Besin Hyem ve Teknolojisi Anabilim Dalı, Konya, Turkey.

Abstract : This study was carried out to investigate the microbiological quality and chemical composition of snail meat and to obtain some basic information for its consumption. Meat of boiled-frozen snails (*Helix adspersa* and *Helix lucorum*) was used. The average number of general microorganism of snail meat samples was 2.0×10^4 /g. Coliform group microorganisms and salmonella were found in the samples. The average values of dry matter, protein, fat, carbohydrate and ash of samples were 25.52, 19.65, 0.70, 3.51 and 1.55 % respectively. The average pH value of snail meat samples was found to be 6.44. The average values of calcium, phosphorus, magnesium and zinc of samples were 279.23, 168.63, 10.62 and 1.35 mg/100 g. respectively.

Lambert, M. – Giant African snail.

Language : English

Source : Pest Advisory Leaflet n°6, Plant Protection Service, 1999, 3p.

Address : Secretariat of the Pacific Community, Private Mail Bag, SUVA, Fiji Islands (Pacific)

e-mail: pps@spc.org.fj

Abstract : This leaflet, originally written in French by M. Lambert, is the third edition of the translation. It deals only with *Achatina fulica*, considering this snail as a pest which it is indeed. Damage caused by *A. fulica* is always greatest when the snails occupy a new area, where a population explosion normally occurs for some years. The leaflet mentions the main biological characteristics of the snail, but provides mainly information on how to control it: physical methods (strip of bare earth or bands of sand), collection, chemical control (metaldehyde, which is highly risky for livestock and pests), cultural control (cleaning of the fields) or biological control. For this last method, great care must be taken before introducing “cannibal snails” which often prefer other local molluscs than *A. fulica*. The giant African snail can be eaten (if not poisoned) by pigs, poultry and people but preferably cooked. *A. fulica* being very difficult to eradicate once established, it is much more better preventing its introduction (quarantine, ...).

FROGS

Frétey, T. & Dewynter, M. – Amphibiens Anoures de la Forêt des Abeilles (Gabon) [Anuran Amphibians of the Forêt des Abeilles (Gabon)].

Language : French

Source : J. Afr. Zool. 1998, 112 : 171-184.

Address : Labo. d'Evolution des Systèmes Naturels et Modifiés.
Université de Rennes I. Avenue du Général Leclerc
F-35042 Rennes Cedex France

Abstract : A list of 38 species of Anuran Amphibians from the Forêt des Abeilles, in Gabon, is provided. Some collected individuals are larger than those found in Cameroon.

Filho*, O.P.R., Andrade, D.R., Lima, S.L., Filho, J.T.S. & Gonçalves, S. – Reprodução Induzida de Rã-Touro (*Rana catesbeiana*, Shaw, 1802) com Uso de Extra Bruto Hipofisário [Induced Reproduction of Bull Frog (*Rana catesbeiana*, Shaw, 1802), using Crude Hypophyseal Extract].

Language : Portuguese

Source : R. Bras. Zootec., v.27, n.4, p. 658-663.

Address* : Depto. De Biologia Animal da UFV – 36571-000 Viçosa, MG, Brazil.

Abstract : This research was conducted, in a 15-day period, to evaluate the effect of bull frog, *Rana catesbeiana*, Shaw (1802) spawning technique for reproduction, by means of the application of a crude hypophyseal extract (CHE). Sixty couples were used in the first gonadal maturation phase, which were conditioned in 1.54 m² test cages, at a temperature of 25 ± 2°C and a LD photoperiod of 12h. A complete randomised design in a 4 x 3 factorial (dose x time) arrangement, with four replicates was used. The treatments consisted in three hormonal doses (1, 3, 5 and 7 mg/kg) and three intervals of application (6, 12 and 18 hours). There was spawning in all treatments, however there were differences on the frequency among different treatments. The animals used as control did not freely spawn even by compression of the body's lateral and ventral wall (forced spawning). Forced spawning occurred when only 3 mg/kg of CHE were used. There was no significant effect of hormone interval application. The crude pituitary effect was significant, with average spawning ranging from 59 to 94%

Sant'ana Costa*, C.L., Lima, S.L., Andrade, D.R. & Agostinho, C.A. – Caracterização Morfológica dos Estádios de Desenvolvimento do Aparelho Reprodutor Masculino da Rã-Touro, *Rana catesbeiana*, no Sistema Anfigranja de Criação Intensiva [Morphological Characterization of Development Stages of Male Reproduction Apparatus of Bullfrog, *Rana catesbeiana*, in the intensive Anfigranja System].

Language : Portuguese

Source : R. Bras. Zootec., 1998, v.27, n°4, P.651-657.

Address* : Bióloga, MS em Zootecnia, UEPG, Brazil.

Abstract : The objective of this work was to characterize the morphological characterization of the development stages of male reproduction apparatus of bullfrog *Rana catesbeiana* from

intensive Anfigranja system. During the period of one year, 657 bullfrog males were removed from regrowing and reproduction sections in Anfigranja system to study basic aspects of the reproduction of this species. The collections were realized monthly and, in that occasion, the body and testicles weights for each animal were recorded and their macroscopic gonadal characteristics, registred. Testicles from 274 males were removed and histologically analysed. From the macro and microscopic gonadal characteristics, analysis set of the testicles, five stages of gonadal maturation for the male of *Rana catesbeiana* were determined: juvenile, beginning of maturation, intermediate maturation, advanced maturation and spent.

Honark, A. – A study of frog raising system for additional income of farmers in the northeast.

Language : Thai (with English summary)

Source : Kaen Kaset, Khon Kaen Agriculture Journal, 1997, 25, 2, 86-92.

Address : Department of Agricultural Economics, Faculty of Agriculture, Khon Kaen University, Khon Kaen 40002, Thailand.

Abstract : A study of frog raising systems appropriate to farmers which also gives good economic return was carried out at two levels: experimental-station level and on-farm, under both concrete and earth pond conditions. In the experiment at Khon Kaen University (KKU) Department of Fisheries, Thailand, the frogs were fed with fish pellets combined with flesh of small fishes, earthworms and crabs. In the study at on-farm level in a village of Khon Kaen, three farmer families were assigned to raise frogs under the same conditions as at KKU. The study showed that there was no difference in growth rate and mortality rate of frogs raised in the two types of pond. The analysis of cost and profit showed that without the cost of non-cash payments, farmers made a profit of 22.40 and 21.06 baht/kg frog cultured in concrete ponds and earth ponds, respectively. The results at experimental-station level showed that without the cost of non-cash payments, profits of 4.18 and 7.80 baht/kg were obtained from concrete ponds and earth ponds, respectively. [40 baths= ± 1EUR in 2000].

Yalcin, Suzan, Dogruer, E. & Yalcin, S. – Microbiological quality and chemical composition of frog meat.

Language : Turkish (Summary in English)

Source : Journal of Central Animal Research Institute, Turkey, 1995, 5(1-2), 39-40.

Address : Selcuk Univ., Faculty of Veterinary Medicine, Konya (Turkey).

Abstract : The analyses of meat from frozen legs of *Rana esculenta* were made. No *Salmonella* were found, and Coliform microorganisms were 3.1×10^4 per gram. Mean values in the samples were: 23.23 DM, 21.55 protein, 0.97 fat and 0.7% ASH. Ca was 15.11 mg/100 g of sample, P 98.90, Mg 11.77 and Zn 0.67. Mean pH was 6.38.

MANURE WORMS

Sunitha, ND., Giraddi, RS, Kulkarni, KA & Lingappa, S. – Evaluation methods of vermicomposting under open field conditions.

Language : English

Source : Karnataka Agric. Sci., 1997, 10, 4, 987-990.

Address : Department of Agricultural Entomology, University of Agricultural Sciences, Dharwad – 580 005, India.

Abstract : This study aimed to evaluate 2 methods of vermicomposting under open field conditions. The heap system was better for biodegradation of wastes than the pit method. The heap recorded higher population growth with a ± 20 fold increase in *Eudrilus eugeniae* as compared to ± 17 with the pit method. Biomass production was also significantly higher (± 46 fold) in the heap than the pit (31 fold). The production of vermicompost was also higher in the heap (± 50 kg) as against ± 39 kg in the pit.

Gomot de Vaufleury, A. & Pihan, F. – Growing snails used as sentinels to evaluate terrestrial environment contamination by trace elements.

Language : English

Source : Chemosphere, 2000, 40, 275-284.

Address : Laboratoire de Biologie et Ecophysiologie – Université de Franche-Comté des Sciences et Techniques – place Leclerc – 25030, Besançon Cedex, France.

Abstract : *Helix aspersa* has been used successfully to test the presence of pollutants like cadmium, copper, lead and zinc through mortality and growth rates.

MINILIVESTOCK

Beckmann, R. – Beat early hazards to boost mud crab culture.

Language : English

Source : Partners in Research for Development n°13, pp 28-33.

Address : c/o ACIAR, G.P.O. Box 1571, Canberra ACT 2601, Australia.

Abstract : An ACIAR project has learnt a lot about bringing crab larvae through the various stages of the life cycle of crab culture of the genus *Scylla*. Today a village-based form of mud crab aquaculture already exists but with very low performances. Four research centres and universities have jointed to seen the project FIS/1992/017 aiming at reducing the high losses from egg laying to adult stage. As a result, reliable production of seed crabs for villagers to grow out is now possible and already practised in the Philippines.

Biasatti, N.R., Spiaggi, E.P., Marc, L. & Di Masso, R.J. – Minilivestock in Argentina. Integration with Agricultural Production.

Language : English (with Resumen in Spanish)

Source : Tropicultura, 1998-99, 16-17, 4, 212-215.

Address : Centro de Estudios Ambientales (CEAV). Facultad de Ciencias Veterinarias, Universidad Nacional de Rosario. Ovidio Lagos y Ruta 33. (2170) Casilda, Santa Fe. Argentina.
e-mail : ceav@unrove.edu.ar

Abstract : The development of alternative agricultural production can take different forms. In Argentina there is an important diversity of species available to be incorporated into production systems, giving support for the use of natural resources based on taking advantage of the regional fauna. Moreover the use of different animal species can be incorporated under the concept of the optimisation of flows of energy and materials, tending to minimize the environmental impact of livestock production, and also t make more efficient use of the ingredients required for developing the activity. The integration of non-traditional species (minilivestock) within the context of sustainable agricultural development was the motivation for the present study. A module for raising *Myocastor coypus* (coypu of false nutria) was developed, to which was linked a module for raising *Eisenia foetida* (the so-called red worm), in both cases with a dual purpose. Preliminary estimates were made of the productive aspects of both species, as well as an analysis of their integration, to understand the extent to which diversification linked with complementation tends to optimise the system.

Owusu-Nsiah, W. – Exploitation, Husbandry and Trade in Royal Python (*Python regius*) in Ghana / Exploitation, Elevage et Commerce du Python Royal (*Python regius*) au Ghana.

Language : English + French

Source : Nature & Faune (FAO, Accra – Ghana), 1999, vol.15, n°2, 13-27.

Address : Wildlife Department, Accra, Ghana

Abstract : The exportation of the royal python from Ghana dates as far back as the 70s. The species is bred since 1988. The level of international trade became cause for concern in 1992. The paper describes how the Wildlife Department controls the breeders and the eggs laid from the pairings. Independent control confirms the success of python breeding (clutch size per breeding female of 7-10). The article gives the results collected by a CITES consultant.