

ISSN 0779-3642

B . E . D . I . M .

**Bureau for Exchange and Distribution of
Information on Minilivestock**

**Bureau pour l'Echange et la Distribution
de l'Information sur le Mini-Elevage**

**Semestrial Bulletin of Information
on Minilivestock**

**Bulletin Semestriel d'Information
sur le Mini-Elevage**

Volume 14, N°2, 2005

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NOUVELLES DE L'ASSOCIATION

Rien de bien particulier n'est à signaler, si ce n'est qu'après de nombreuses péripéties administratives, les nouveaux statuts de l'ASBL BEDIM ont enfin été publiés aux annexes du Moniteur belge en date du 8 septembre 2005 sous le n° 05126561. Ceci, en vue d'être conforme à la nouvelle législation en vigueur concernant les ASBL en Belgique.

Par ailleurs, nous rappelons aux lecteurs que notre nouvelle adresse figure au dos de ce Bulletin d'information et que, pour ceux qui ne l'ont pas encore fait, nous souhaiterions obtenir votre adresse E-mail.

NEWS OF THE ASSOCIATION

Nothing particular to mention, if not only that after many administrative contacts, at last the new statutes of the *ASBL* BEDIM have been published in the Appendix of the Belgian Monitor on September 8th, 2005 under no. 05126561. This is in order to stand in accord with the new law regarding the *ASBLs* in Belgium.

On an other hand, we remind our readers that our new address is given at the back cover of this Information Bulletin issue and that, for those who have not yet done it, we wish to get your e-mail address.

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ACTUALITES

Un article intéressant dans le magazine SN Brussels Airlines à propos de la détection des mines antipersonnelles en utilisant des rats

Il existe environ 350 types différents de mines antipersonnelles dans le monde et les technologies actuelles permettent de construire des engins contenant tellement peu d'explosifs que les détecteurs ne sont plus capables de repérer les mines. Toutefois, celles-ci contiennent des substances tellement rares dans le sol que les rats sont capables de repérer leurs émanations avec un taux de réussite de 100 %. Par rapport aux chiens, les rats sont trop légers pour enclencher les détonateurs et leur nez est beaucoup plus proche du sol.

Un anversois, Bart Weetjes, passionné de rongeurs depuis sa tendre enfance, a obtenu un financement de la Direction Générale de la Coopération au Développement en Belgique (DGCD) pour réaliser des premières expériences au moyen de rats à la fin de l'année 1997. En 2000, les expériences qu'il réalisa démontrèrent que les Cricétomes étaient très efficaces pour détecter les explosifs. Il entrepris alors l'élevage de ce rat pour arriver à l'heure actuelle à une trentaine de Cricétomes entraînés à la détection

des mines. Sur le terrain, ceux-ci sont tenus en laisse et pour chaque repérage de TNT enfoui dans le sol ils reçoivent une récompense, à l'issue de deux signaux sonores émis par leur gardien : morceau de banane ou autre aliment qu'ils apprécient tel que les cacahuètes. Ils continuent à travailler de cette manière, sur la base d'un réflexe de Pavlov, tant qu'ils souhaitent obtenir une récompense alimentaire.

Un rat est capable de nettoyer ainsi 100 m² de terrain miné en 28 minutes, alors qu'avec un détecteur de métal 50 m² de terrain peuvent être inspectés par jour au mieux. Il en résulte évidemment un gain précieux de temps et, surtout, d'argent.

Bart affirme que le rat est très sociable et curieux de découvrir de nouveaux environnements. Un changement de personne lors de la détection des mines ne diminue pas leur efficacité. Le Cricetome est calme et docile. Vu sa taille élevée, il est facilement repérable lors des opérations de détection. Il peut vivre jusqu'à 8 ans, ce qui permet largement d'amortir les frais liés à leur entraînement qui dure 6 à 10 mois et débute déjà à 5 semaines d'âge (sevrage). Vu les désastres causés par les mines antipersonnelles, voilà donc un mini-élevage extrêmement intéressant à développer dans le futur : bravo Bart et bien entendules Cricétomes.

An interesting article in the magazine SN Brussels Airlines about detection of antipersonal mines using rats

About 350 different types of antipersonal mines do exist in the world and current technologies enable to built engines containing so little amount of explosives that detectors are unable to reveal mines. However, these contain some substances so rare in the soil that rats are able to detect emanations with a 100% success rate. Compared to dogs, rats are too light to start up the detonators and their nose is much closer to the soil.

A resident of Anvers, Bart Weetjes, passionate of rodents since his tender childhood, obtained at the end of year 1997 fundings from the DGCD to undertake earlier trials using rats. In 2000, his accomplished experiences proved that Cricetomas were very efficient to detect explosives. He thus undertook rearing of this rat to attain nowadays some thirty cricetoms trained to detect mines. On the field, these are left on free move and receive a reward for each detection of soil-deepened TNT, following two sounding signals emitted by their guardian: a piece of banana or other ped they like such as peanuts. They keep working, based on a Pavlov reflex, as long as they wish to get a food reward.

A rat is able to clear 100 m² of undermined land within 28 minutes, while with a metallic detector 50 m² of land can be inspected a day to the best. There is obviously a precious gain of time and especially of money.

Bart confirms that the rat is very sociable and curious to explore new environments. Any change of person during mines detection does not lessen

their efficiency. The cricetoma is quiet and submissive. Owing to its great size, it is easily seen during detection operations. It can live up to 8 years, what greatly allows compensation of costs due to their training which lasts 6 to 10 months and already starts at 5 weeks of age (weaning).

Given the disasters caused by antipersonal mines, here is a minilivestock extremely interesting to develop in the future: congratulations to Bart and indeed... to the Cricetomas.

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PUBLICATIONS

Les termites ailés sont une ressource précieuse en période de soudure alimentaire au Burkina Faso

Moumouni Ouedraogo (2005) : Thèse annexe de la dissertation originale présentée le 9 mars à la Faculté Universitaire des Sciences Agronomiques de Gembloux (Belgique)

Résumé

L'objectif de cette étude est de montrer que les termites ailés constituent une ressource alimentaire importante pour les populations burkinabè de ville comme de campagne en période de soudure alimentaire qui est celle qui sépare l'épuisement des réserves alimentaires aux récoltes suivantes de l'année en cours. Une enquête a couvert 85 % des groupes linguistiques du Burkina Faso, suivie d'une analyse chimique de prélèvements de termites (adultes ailés, reines et soldats).

L'essaimage des termites intervient au mois de juin, correspondant au début de cette période d'insuffisance alimentaire. Au Burkina Faso, diverses techniques permettent la production des termites dont les adultes ailés constituent l'essentiel de la récolte. Ceux-ci sont consommés par 100 % des groupes étudiés, tandis que 41 % et seulement 4 % consomment respectivement les reines et les œufs. Excepté les groupes Peuls du nord du pays (Tamachek, Kurumpfé), les termites sont consommés par l'ensemble des groupes ethniques enquêtés. Les résultats de synthèse montrent que les termites sont très riches en acides gras, avec une nette prédominance d'acides gras mono-insaturés (51 à 75 %). Au regard de ces résultats, on peut affirmer que les termites ailés constituent une ressource alimentaire précieuse en période de soudure alimentaire au Burkina Faso.

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NEWS UPDATE

Forum : Promoting the bussines of grasscutter production in West-Africa, Accra (Ghana), 12-16 December 2005

Rearing of grasscutters as a business in Africa is increasingly expanding and thus taken up by farmers and others. This business aids in promoting sound environmental management (i.e. combating bushfire), contributes to moderating the bush-meat crisis and increases the supply and consumption of protein. Although the industry faces challenges in housing, breeding stock, financing and marketing, technological and social packages do exist to solve these problems on a sustainable basis. To this aim, a large role should be played by governments and partners to encourage the grasscutter rearing business.

Hence an international forum co-sponsored by the Ghana Ministry of Food and Agriculture and some local, regional and international bodies was organized in Accra, Ghana, from 12 to 16 December 2005 to promote grasscutter farming.

The forum objective was to exchange practical, technical and scientific experiences and information on production, processing and marketing of the grasscutter, as well as creating a platform for advocacy, sensitization and education.

Thus, actors involved in input supply, production, processing, marketing and trade had thorough exchange of information on the business through presentations, posters, housing models, video display and, animal and processed products exhibition. Key issues raised included among others poverty alleviation, bush-meat crisis, challenges and opportunities in the grasscutter business, as well as developing a business plan and setting networking and funding for stakeholders in West Africa.

Contact persons: yeboa2006@yahoo.com; joshmajude004@yahoo.com

Pour la Promotion de l'entreprise dans la Production de l'Aulacode en Afrique de l'Ouest, Accra (Ghana), 12-16 décembre 2005

L'aulacodiculture comme entreprise est en expansion croissante en Afrique et est adoptée par les agriculteurs et d'autres personnes. Ce métier aide à promouvoir une gestion adéquate de l'environnement (exemple en combattant le feu de brousse). Il contribue à modérer la crise de gibier et augmente la production et la consommation en protéines. Bien que cette entreprise fait face à des défis de logement, de génotypes, de financement et de marché, des moyens technologiques et sociaux existent pour résoudre ces problèmes de façon durable. A cet effet, un grand rôle devrait être joué par les gouvernements et les partenaires pour encourager le business de l'aulacodiculture.

D'où un forum international co-financé par le Ministère Ghanéen de l'Agriculture et de l'Alimentation avec des organismes locaux, régionaux et internationaux a été organisé à Accra, Ghana, du 12 au 16 décembre 2005 pour la promotion de l'aulacodiculture.

Le forum avait pour objectif l'échange d'informations pratiques et techniques, et d'expériences scientifiques sur la production, le traitement et le marché de l'aulacode, autant que la création d'une plate-forme pour la défense, la sensibilisation et la formation. Ainsi, les acteurs dans la production des intrants, traitement, marché et commerce ont eu de profonds échanges d'informations sur l'entreprise grâce à des exposés, posters, modèles de logement, projection des vidéos et l'exhibition d'animaux et de leurs produits. Les préoccupations majeures soulevées comprenaient entre autres la lutte contre la pauvreté, la crise de gibier, les défis et opportunités dans le business de l'aulacodiculture, aussi bien que le développement du plan des affaires et l'installation d'un réseau Internet et le financement pour les actionnaires en Afrique de l'Ouest.

Personnes de contact: yeboa2006@yahoo.com; joshmajude004@yahoo.com

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SNAILS CAUGHT ON THE WEB

**Ime Ebenso,
Department of Animal Science, University of Uyo, Nigeria**

My current interest is snail farming research. Academic research involves lots of literature review and research methods. I use electronic search engines on the internet, the World Wide Web, or web for short.

Such internet opportunities have made sending and receiving data, messages and attachments by electronic mails (E-mails) in a split of seconds. The everyday post office/surface mail is now referred to as "snail mail." I am in touch (by E-mail) with one Dr. Robert Cowie, a snail researcher, in Hawaii, this researcher is nicknamed "Snail Bob." He bowls slowly in the game of cricket.

During my preparation for University of Uyo, Faculty of Agriculture staff seminar series (my presentation was entitled "Snails-slowly we are coming out" on Tuesday 22nd February, 2005), I visited and accessed many sites on the web for literature. On the Akwa Ibom State government/Ministry of Agriculture and Natural Resources website, large-scale production of snails as culinary delicacy is outlined as an importance investment area of agricultural activity in Akwa Ibom State. A faith based organization, the world Young Women Christian Association (YWCA) has posted on the web in its Common Concern magazine, March 2000, the Obadeyi snail project at Ikoyi, Lagos. This YWCA

effort is targeted at ending family violence against women. "Floyd The Snail," is a ten minutes web movie, with an interesting advice that, "Don't discourage someone that is making progress, no matter how slow."

Free sample copies of research articles on snails can be downloaded from online journal editions. An online journal title "Tentacle" contain information on mollusks (snails). ScienceDirect is a sure engine for scientific research documentations.

Many web pages will prop up on details of agribusiness enterprises involved in processing, marketing and consumption of snail products and by-products. These information can easily be accessed using the google search engine.

Snail races are also popular. On the web, are information of garden snails that are world snail racing champions and which are indexed in Guinness Book of World Records and The Almanac Book of Facts. Some snail races have snails in such categories as elementary grade, middle school grade and high school grade (to indicate their sizes). For many internet users that are familiar with the Yahoo Messenger and other chat rooms, there are also snail chat rooms available. New friends can be made. Production and marketing information can be obtained from hundreds of such chat rooms. Equally entertaining, are numerous snail picture posted on web pages by researchers, photographers and snail fan clubs members. Interesting snail cartoons are on web for your pleasure.

Snails today have become a tool for poverty alleviation. Snails are good and reliable source of protein. Snails are easy to domesticate. Sale of snails augment rural family income.

Lastly, the web has made snails a popular mini-livestock.

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CHASSE ET CONSOMMATION DE *OTOMYS IRRORATUS* (BRANTS) AU KIVU

VICTOR KAOZE NZOMIWA, RDC

Otomys irroratus fait partie de l'ordre des rongeurs, de la famille des *Muridea* et de la sous-famille des *Otomyinae*. Ce rat de couleur fauve, à queue de longueur équivalente à celle du corps, peut atteindre environ 250 g de poids vif à l'âge adulte. Il vit en savanes d'altitude au Kivu, aussi bien en terrier qu'en surface. Il est rarement rencontré dans les greniers ou les habitations. Cet animal est autant nocturne que diurne, mais préfère le temps frais. Il consomme essentiellement les graminées de savanes (*Digitaria*, *Imperata*,

Pennisetum, etc.), ainsi que des feuilles et tubercules de cultures. Sa prolificité semble croître avec l'âge : les primipares ont un à deux petits par portée, tandis que lors des gestations suivantes le nombre de jeunes peut aller jusqu'à six.

La capture de ce rat est assez aisée le matin ou le soir et les jeunes animaux sont autant consommés que les adultes. Après brûlage des poils, ces rats sont généralement fumés, puis frits ou bouillis et présentés avec ou sans légumes.

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NOVEDADES DE LA ASOCIACIÓN

Nada de particular en esta ocasión, si no es que después de innumerables peripecias administrativas, los nuevos estatutos de nuestra asociación internacional BEDIM han sido finalmente publicados en los anexos del boletín oficial belga en fecha del 8 de septiembre de 2005 bajo el nº 05126561, tal como obliga la nueva normativa en vigor sobre las asociaciones en Bélgica.

Por otra parte, recordamos a los lectores de nuestro boletín que nuestra nueva dirección figura en el dorso del presente numero de BEDIM.

Aprovechamos también para solicitar que mandéis vuestra dirección electrónica a la Secretaria de BEDIM.

NOTICIAS

SIMPOSIO SOBRE LA PROMOCION DE LA CRIA DE LA RATA DE CAÑAVERAL (*Thryonomis swinderianus*) EN GHANA.

Del 12 al 16 de Diciembre de 2005

La rata de cañaverl (*Thryonomis swinderianus*) es uno de los animales de caza mas codiciados de África Occidental y Central. Este roedor histricomorfo, pariente lejano del capibara (*Hydrochaeris hydrochaeris*) o el Agouti (*Dasyprocta* spp.), empezó a ser criado en cautividad en Ghana y Benin hace unos 30 años. Actualmente es sin duda la especie de minicria africana cuya producción esta más desarrollada. En Benin, por ejemplo existen mas de 400 productores y un plantel de animales en cautividad que sobrepasa fácilmente los 2000 animales. El simposio, segundo que se celebra sobre esta especie desde 1990, pretende abordar aspectos muy interesantes que sobrepasan la visión meramente zootécnica de su cria. Algunos de los temas propuestos son: la contribución de la cría de *Thryonomys swinderianus* a la reducción del impacto de la caza, Zoocria y lucha contra la pobreza, Procesamiento y

comercialización de productos de *Thryonomys*, La zootecnia de *Thryonomys* como agro negocio, Como mejorar la comunicación y colaboración entre los productores africanos. El evento está financiado entre otros por la FAO y la GTZ.

Cabe destacar la participación financiera de importantes organizaciones conservacionistas como Conservation International, IUCN, o Bushmeat Crisis Task Force, que parece que por fin empiezan a manifestar cierto interés en la cría de animales silvestres.

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REUNION FINAL DEL PROYECTO PECARI “DESARROLLO DE SISTEMAS PARA LA PRODUCCION SOSTENIBLE DEL PECARI DE COLLAR EN AMERICA LATINA.

Dr. Ferran JORI, Departamento de Medicina Veterinaria y Producción Animal Tropical, CIRAD, Montpellier (Francia)

La primera semana de Agosto de 2006 tuvo lugar en la Pousada Ararauna del Pantanal de Mato Grosso do Sul, (Brazil) la reunión final dedicada a la evaluación y análisis final de este proyecto de investigación, financiado por la Comisión Europea por un valor de 650.000 € y dedicado al estudio del pécarí de collar (*Tayassu tajacu*) esta especie con vistas al desarrollo de su cría y explotación en Latinoamérica. En dicho proyecto, han colaborado 3 instituciones brasileñas (Universidad Federal do Para, Universidad Estadual de Santa Cruz de Ilhéus y EMBRAPA Pantanal), 1 peruana (IVITA Iquitos), una británica (DICE), una española (Universidad Autónoma de Barcelona) y dos francesas (Museo de Historia Natural de Paris y CIRAD).

Después de 4 años de proyecto (2001-2004), podemos hacer la siguiente valoración de los resultados obtenidos en el transcurso de este proyecto:

En términos de cría intensiva, la explotación del pécarí de collar (PC) está bastante desarrollada y difundida en diferentes países. Se trata de una especie con grandes cualidades para su explotación como animal productor de carne y cuero. El proyecto ha conseguido reunir la información necesaria para el conocimiento anatómico del aparato reproductor femenino, así como de su ciclo reproductivo. Esta información, permite establecer una gestión reproductiva de los animales con el fin de mejorar la eficacia reproductiva y productividad de las unidades de reproductoras. Otra cualidad de este mamífero neotropical puesta en evidencia en este proyecto, es que *Tayassu tajacu* tiene la capacidad de digerir fibra bruta y de convertirla en proteína lo cual permite la utilización de subproductos agrícolas locales y representa una ventaja para la formulación de dietas de bajo coste como alimento de estos animales.

Desde el punto de vista veterinario, el pécarí de collar aparece como una especie con una excelente capacidad de adaptación y de resistencia al estrés de cautividad, y a las enfermedades infecciosas y parasitarias más comunes. Sin embargo, hay indicios importantes de que *Tayassu tajacu* pueda ser

portador asintomático de agentes infecciosos transmisibles al hombre, como la leptospirosis y la brucelosis. Por lo tanto, se deben extremar las medidas preventivas y seguir investigando sobre las posibles implicaciones de la cría de este animal en el área de salud pública. La mortalidad en los criaderos en los cuales se ha hecho un seguimiento ha sido baja con la excepción de los animales neonatos cuya mortalidad es elevada. Sin embargo, se requiere más investigación sobre la etiología de esta mortalidad y su posible relación con factores infecciosos o etológicos.

El comportamiento del pécarí de collar observado en cautividad en Amazonia peruana y brasileña es excepcional para una especie silvestre, ya que los animales monitoreados en las áreas de estudio del proyecto mostraron muy pocos problemas de stress y la manipulación y contención de los animales se conseguía realizar exclusivamente por medios físicos. Se ha demostrado la existencia de una probable jerarquía dentro del grupo de hembras reproductoras, pero se requiere mayor investigación para establecer posibles relaciones con la edad o el grado de parentesco entre las hembras del grupo. Podemos concluir, que el conocimiento de la cría intensiva del pécarí de collar ha mejorado de forma sustancial gracias a este proyecto, que la especie tiene un buen potencial para la producción de carne y de cuero con buenas perspectivas de rentabilidad, y que su producción en condiciones intensivas es técnicamente viable. Para confirmar su viabilidad social y económica es necesario iniciar proyectos piloto de extensión rural en áreas con buen potencial para la comercialización de los productos derivados de su cría.

Respecto a la producción en sistemas más extensivos, la explotación del pécarí de collar en medio natural está menos desarrollada y existen hasta ahora pocas experiencias concluyentes. La captura regular de individuos de un mismo grupo mediante trampas regularmente aprovisionadas con cebos es técnicamente viable para suidos silvestres que viven en rebaños grandes, como el pécarí labiado o el cerdo asilvestrado. Pero, en el caso del pécarí de collar cuyos grupos familiares son menores, la capacidad de explotación sostenible no compensa el esfuerzo y tiempo necesarios para realizar el manejo y seguimiento de los grupos observados en el Pantanal y el bosque atlántico de Bahía.

Sin embargo, mediante la cría en cautividad, se puede incrementar exponencialmente el tamaño de los grupos, creando de esta forma rebaños de varias decenas de individuos. Estas poblaciones creadas artificialmente pueden entonces someterse a una explotación a mayor escala mediante técnicas más extensivas y un manejo colectivo.

Esta opción, aparece claramente como una alternativa prometedora a la producción intensiva a pequeña escala. Sin embargo, se requiere mayor investigación, en particular en lo que respecta la estructura social de los grupos y al comportamiento y contribución de las hembras reproductoras en el interior de estos "super rebaños".

En términos económicos, un análisis de la producción semi-intensiva del pécarí de collar en Bahía ha demostrado que la explotación comercial puede ser rentable al cabo del 3er año de producción. Los mayores gastos de producción están representados por las infraestructuras en caso de los gastos de inversión y por la alimentación en el caso de los gastos fijos de producción.

Este proyecto llega pues a su fin, dejando tras de sí una buena cantidad de informaciones y artículos que sin duda contribuirán en el futuro a un mayor y mejor desarrollo de la producción del pécari de collar. Algunas de las publicaciones producidas en el marco del proyecto son las siguientes:

Nogueira Filho, S.; Nogueira, S.; Mendes, A. and Jori, F. 2004. A large scale commercial farming of collared peccary (*Tayassu tajacu*) in North Eastern Brazil. *Game & Wildlife Science*, Vol 21 (3), 413-420.

Nogueira-Filho, S.L.G. 2005. The effects of increasing levels of roughage on coefficients of nutrient digestibility in the collared peccary (*Tayassu tajacu*). *Animal Feed Science and Technology*, 120: 151-157.

Mayor, P.; Lopez Gatiús, F. and Lopez-Béjar, M. 2005. Integrating ultrasonography within the reproductive management of the collared peccary (*Tayassu tajacu*). *Theriogenology*, 63, 1832-1843.

Mayor, P. Jori, F and Lopez-Béjar, M. 2004. Anatomohistological characteristics of the tubular genital organs of the female collared peccary (*Tayassu tajacu*). *Anatomy Histology Embryology*, 33, 65-74.

Mayor, P., Le Pendu, Y., Guimarães, D.A., Silva, J.V., Tavares, H.L., Tello, M., Washington, A., López-Béjar, M. & Jori, F. 2006. A health evaluation in a colony of captive peccaries in the Eastern Amazon. 2005. *Research in Veterinary Science* (in press)

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ZOOCRIADERO XMATKUIL, YUCATAN, MEXICO.

Elaborado por: Rubén Cornelio Montes Pérez, Facultad de veterinaria y Zootecnia, Universidad Autónoma de Yucatán, Mérida.

Antecedentes

La Unidad para la Conservación, Manejo y Aprovechamiento Sustentable de Vida Silvestre (UMA) "Xmatkuil" forma parte de la Facultad de Medicina Veterinaria y Zootecnia de la Universidad Autónoma de Yucatán (FMVZ-UADY). Se encuentra ubicada en Xmatkuil, Municipio de Mérida Yucatán y se dedica a la docencia, investigación y extensión de cuatro especies silvestres: Tepezcuintles (*Agouti paca*), Venados cola blanca (*Odocoileus virginianus*), Pecaríes de collar (*Pecari tajacu*) y Boas (*Boa constrictor*). El responsable técnico es el Biol. Dr. Rubén C. Montes Pérez, y el MVZ. José Manuel Mukul Yerves es el encargado del funcionamiento de la UMA.

La UMA cuenta además con el apoyo de un equipo de voluntarios de diversos grados de las licenciaturas de Medicina Veterinaria y Zootecnia (MVZ) y en Biología.

Actividades y servicios efectuados en la UMA.

Las actividades están dirigidas a efectuar investigaciones en nutrición, reproducción, salud, etología y genética en las cuatro especies mencionadas, con el propósito de aportar información biológica y adaptar tecnologías para apoyar planes para la conservación de estos recursos biológicos, ya sea directamente en diferentes comunidades y organizaciones o en instituciones dedicadas a la conservación o aprovechamiento de estas especies.

En la UMA Xmatkuil se realizan actividades de docencia a nivel licenciatura y maestría, concretamente el curso de educación continua con valor para titulación denominado "Producción de Especies Silvestres".

En cuanto a investigación, se han venido realizando varios proyectos desde 1995 sobre diferentes aspectos relativos a la domesticación, manejo y salud de *Agouti paca* en cautiverio, financiados por el Consejo Nacional de Ciencia y Tecnología (CONACYT) y por la Comisión Nacional para el Conocimiento y Uso de la Biodiversidad (CONABIO). Un producto muy importante de estos proyectos fue la elaboración de un paquete sobre la crianza del tepezcuintle y, la transferencia de éste a un criador de esta especie en el estado de Yucatán.

En los años de 2001 a 2004 se ejecutó un proyecto más, con el financiamiento de Fundación Produce Yucatán A.C., éste se denominó "Establecimiento, apoyo técnico y seguimiento de una unidad de crianza intensiva de pecarí de collar (*Tayassu tajacu*)". En este proyecto se abordaron investigaciones sobre parasitosis gastrointestinal, digestibilidad de varios sustratos alimenticios consumidos por el pecarí de collar, caracterización de la actividad ovárica de pecaríes en cautiverio, caracterización genética de tres zoocriaderos (UMA) para determinar la variabilidad genética en cada uno, y finalmente se diseñó y transfirió un paquete de crianza de pecarí de collar a una comunidad de campesinos del estado de Yucatán.

La planeación, seguimiento y asesoría que se efectuaron en los proyectos de transferencia de paquetes de crianza, lo que ahora llamamos transferencia de tecnología, fueron exitosas en los dos zoocriaderos. El primero, de tepezcuintle cuenta actualmente con cinco veces más animales a partir del pie de cría entregado, proveniente de la UMA Xmatkuil, y desde este año se amplía a la crianza de pecarí de collar.

El segundo zoocriadero, de pecarí de collar, ha incrementado su población al doble en el lapso de 12 meses, y dispone actualmente de machos para efectuar la comercialización de animales vivos.

A raíz de estas experiencias, varias organizaciones, campesinos y ganaderos, solicitan asistencia técnica, asesoría y cursos de capacitación a la UMA Xmatkuil. Estas asesorías se llevan a cabo por el Dr. Rubén Montes Pérez y el MVZ. José Manuel Mukul Yerves, con el apoyo del equipo de estudiantes voluntarios.

Los cursos de capacitación que se imparten para la crianza de tepezcuintle y pecarí de collar en modalidad intensiva, están constituidos por dos sesiones, la primera es teórica, donde se abarcan temas generales acerca de la normatividad y legislación de las UMAs, biología y técnicas de manejo de tepezcuintle, venado o pecarí de collar, y en la segunda sesión se imparte la parte práctica del curso, en donde los futuros criadores o interesados, pueden tener contacto directo con la especie en cuestión y ejercitan procedimientos para el manejo de animales en corral.

Además de las actividades mencionadas, la UMA XMatkuil dispone de una población de tepezcuintles, pecarí de collar, venado cola blanca y boas, para el intercambio de animales con otras UMAs.

Existe colaboración en la ejecución de proyectos con la Asociación de Criadores de Venado de Yucatán y Sur de México (ACVY A.C.), Zoológico del estado de Quintana Roo (México), Secretaría de Agricultura, ganadería y desarrollo rural del gobierno de México (SAGARPA), con el Parque Zoológico del estado de Yucatán. También se tiene colaboración técnica con la Secretaría de Medio Ambiente y Recursos Naturales del gobierno de México (SEMARNAT) y con el Centro de Desarrollo tecnológico Tantakin, que es una dependencia del gobierno federal de México (Fideicomiso relacionado con la Agricultura), así como con otras UMAs dedicadas a la cría y conservación de hocofaisán, tepezcuintle, venado cola blanca y pecarí de collar en el estado de Yucatán, y en el estado de Campeche, México.

Recientemente ejecutamos el primer proyecto sobre el estudio poblacional de venados cola blanca (*Odocoileus virginianus*) y pecarí de collar (*Pecari tajacu*) en el municipio de Tzucacab, del estado de Yucatán, México. Uno de los resultados de este proyecto fue presentado en el VII Congreso Nacional de Mastozoología, en México. Este tipo de estudio es para nosotros importante, porque la información que se obtiene de éste, es necesaria para la planificación de estrategias para la conservación y aprovechamiento de fauna silvestre, a nivel de comunidad rural. Incluso, esta información es necesaria para la elaboración de políticas gubernamentales que se dirigen a la regulación de la cacería de subsistencia y deportiva.

Se invita a los interesados a consultar la página Web: www.veterinaria.uady.mx/cuerpos/reproduccion_mejoramiento/uma/paginauma2003.html

* * *

SURVEY OF THE LITERATURE

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HUMAN NUTRITION

Codjia¹ J.T.C. & Assogbadjo² A.E. - Faune sauvage mammalienne et alimentation des populations holli et fon de la forêt classée de la Lama (Sud-Bénin) [Mammalian wildlife as a food supply resource for the rural population in the Lama Forest Reserve (South Benin)]

Source : Cahier Agricultures 2004, 13: 341-347

Language : French

Address : ¹Faculté des Sciences Agronomiques, Université d'Abomey-Calavi, 01 BP 526 Cotonou, Bénin. E-mail: jtccodjia@yahoo.fr
²Aménagement et gestion des ressources naturelles, Faculté des Sciences Agronomiques, Université d'Abomey-Calavi, 05 BP 1752 Cotonou, Bénin. E-mail: assogbadjo@yahoo.fr

Abstract : With the exception of a few studies about rodents, very few surveys have been undertaken on the importance of wildlife as a source of food supply for the rural populations of South Benin. The aim of the present study which was conducted in the Lama Forest Reserve (South Benin) is to find how mammals in this forest contribute to the food security of the local population living in its surroundings. The study was carried out in two phases; a food consumption survey among two local ethnic groups — the Foes (village of Don-Zoukoutoudja) and the Hollis (village of Agadjaligbo), and a field survey for the assessment of the mammals living in the forest, using the Line Transect method. An overall number of 29 mammal species were identified as a source of proteins for local populations: rodents (12 species), artiodactyls (7 species), primates (4 species) and 7 other various species. Despite the diversity of the mammal species consumed in those two localities, the meat preferred by the populations were the *Potamochoerus porcus*, the Grasscutter (*Thryonomys swinderianus*), and the African giant rat (*Cricetomys gambianus*).

BDB ref. : BEDIM 369

* * *

GRASSCUTTERS

Alogninouwa^{a*} T., Kpodékon^b M. & Yewadan^c L. T. - Effects of castration on growth and endocrine pattern in the grasscutter (*Thryonomys swinderianus*, Temminck 1827) [Effets de la castration sur la croissance et le profil endocrinien de l'aulacode (*Thryonomys swinderianus*, Temminck 1827)]

Source: Ann. Zotech. 1999, 48: 225-230

Language: English

Address: ^aÉcole nationale vétérinaire de Lyon, unité pathologie médicale du bétail, 1, avenue Bourgelat, BP 83, 69280 Marcy l'Etoile, France. Tel: (33) 04 78 87 2602; fax: (33) 04 78 87 26 06. E-mail: t.alogninouwa@vet-lyon.fr

^bUniversité nationale du Bénin, Laboratoire de recherche en chimie et biologie appliquées, Unite de recherche cunicole et cavicole. BP 2009 Cotonou, Benin. ^cProjet de développement de l'élevage d'aulacodes, BP 504 Cotonou, Benin

Abstract: In order to analyze the effects of castration on growth performance, cortisol, thyroxine and testosterone assays were performed on three randomized groups of grasscutters (*Thryonomys swinderianus*, Temminck 1827): ten complete females, ten complete males and ten surgically castrated males over 4 months of age. The growth rate of the castrated animals was lower than that of the intact males, but higher than that of the females. The weight gain was positively correlated with blood thyroxine concentration and negatively correlated with blood cortisol concentration.

BDB ref. : BEDIM 342

MPOAME M. - Gastro-intestinal helminths of the cane rat *Thryonomys swinderianus* in Cameroon

Source: Trop. Anim. Hith Prod. 1994, 26: 239-240

Language: English

Address: Dschang University. P0 Box 222, Dschang, Cameroon

Abstract: Domestication of the cane rat, *Thryonomys swinderianus*, as an important food animal is rapidly increasing in some West African countries (Hardouin, 1986). Most work has concentrated on nutrition, reproduction and husbandry but parasites have received little attention. In cane rats raised in captivity, Akomedi and Abul (1986) found various gastro-intestinal lesions (ulceration, necrosis, inflammation, occlusions) partly caused by unidentified helminths, but the impact of these lesions on health and productivity is not yet known. This communication presents the results of the first survey of the gastro-intestinal helminths of the cane rat from Cameroon.

Seventy-six cane rats, 42 males weighing 0.6 to 5.3 kg and 34 females weighing 0.6 to 7.5 kg were obtained from hunters around Dschang in western Cameroon. The animals were examined immediately or frozen as soon as possible for later study. Following the procedure described by Meyer and Olsen (1980), helminths collected separately from the stomach, small intestine, caecum and large intestine were counted, fixed in acetic acid-formalin-alcohol and stored in 70% ethanol. Nematodes were cleared in lactophenol and studied as temporary wet mounts. Cestodes were stained with Semichon's aceto-carmin and mounted in Canada balsam (Pritchard and Kruse, 1982). Identifications were based on Baylis (1928), Skrjabin *et al.* (1960), Spasskii (1961) and Skrjabin *et al.* (1970).

One cestode and 4 nematode species were found (Table I). The high prevalences observed (>71.0%) may result from frequent cross-infection as cane rats tend to live in groups (Heymans and Mensah, 1984) and repeatedly use the same feeding grounds which are heavily contaminated with old and new excreta. The families of the nematodes in this study have direct life cycles (Soulsby, 1982) which would also facilitate cross-infection. Anaplocephalid cestodes, however, have indirect life cycles (Soulsby, 1982), but the ready availability of soil mites, their intermediate hosts, would also facilitate infection of cane rats with *Furhmannella*.

There was no significant difference in prevalence (Chi-square test, $P > 0.05$) and in intensity of infestation (Mann-Whitney U test, $P > 0.05$) between male and female hosts for any of the helminth species. Although social family groups of cane rats comprise females, their young and a single male (Ewer, 1969), it is possible that other males in satellite groups, visit the same feeding stations as family groups and are equally exposed to helminth infestations. It is worth mentioning the absence in this study of 3 other known helminth species of cane rat: *Acheilostoma simpsoni* Leiper, 1911 reported from Nigeria (Popova, 1964), *A. moucheti* Railliet, 1918 from Africa (country not specified) (Popova, 1964), and *Trichuris vondwei* Ortlepp, 1938, from South Africa (Skrjabin *et al.*, 1970).

BDB ref. : BEDIM 335

Mensah¹ G.A., Holzer² R., Schröder³ W. & Baptist² R. - Aspects pratiques en élevage d'aulacodes (*Thryonomys swinderianus*) II. Détection des chaleurs [Practical aspects of grass-cutter (*Thryonomys swinderianus*) breeding: Particulars of coprophagy]

Source: Rev. Trop. Med. Vet. Pays Trop. 1986, 39(2): 243-246

Language: French

Address: ¹Projet bénino-allemand d'aulacodiculture, Ministère du Développement rural et de l'Action Coopérative, B.P. 03-2900 Cotonou, République Populaire du Bénin. ²Institut de production animale des pays tropicaux et subtropicaux de l'Université de

Hohenheim (480), 7000 Stuttgart 70, République Fédérale d'Allemagne. ³Projet Conseiller technique en Production animale auprès du Ministère du Développement rural et de l'Action Coopérative, B.P. 504 Cotonou, République Populaire du Bénin.

Abstract : The genital of female grass-cutters was observed to change its size and aspect periodically. Convenient scales for assessing the changes were defined with respect to the diameter of the vaginal opening, swelling of the vulva, its colour and the presence of secreta. Inspection was easy and quick by lifting the grass-cutter's rear body up to the tail, the animal thus standing on its front legs. The observed changes were thought to be heat symptoms but neither were the females, apparently "in heat", receptive towards the males, or did males appear to be more attracted to those females than to others which were not "in heat". The vaginal openings ranged from less than 4 to more than 28 hours and the interval between two consecutive openings ranged from a few days to several weeks. Although it cannot be excluded that the observed symptoms are related to sexual cycles, it is clear that heat detection on the female of grass-cutter is not practical means of organizing controlled individual matings. Rather, grass-cutters have to be mated by associating one or several females to a male in a pen where they cohabit during prolonged periods or permanently.

BDB ref. : BEDIM 339

Holzer² R., Mensah¹ G.A. & Baptist² R. - Aspects pratiques en élevage d'aulacodes (*Thryonomys swinderianus*) III. Comportement de coprophagie

Source: Rev. Elev. Méd. Vét. Pays Trop. 1986, 39 (2): 247-252

Language: French

Address: ¹Projet bénino-allemand d'aulacodiculture, Ministère du Développement rural et de l'Action coopérative, B.P. 03-2900 Cotonou, République Populaire du Bénin. ²Institut de production animale des pays tropicaux et sub-tropicaux, Université de Hohenheim (480), 7000 Stuttgart 70, République fédérale d'Allemagne.

Abstract: Six grass-cutters recycled an average of 9.5 per 100 of their faeces (SE mean : 30 per 100). The faecal pellets ingested between 24 h and 6 h amounted to 62.5 per 100 of the pellets recycled in a 24-hour period. Intake of pellets during the 6-hour observation period occurred in 3.6 series, every one of which lasted 5.4 minutes and in the course of which 8.4 pellets were ingested one after an other. Every single pellet was masticated as long as 42 seconds. Total time spent on coprophagy was 36.1 minutes per 24-hour cycle while animals spent 190.7 on proper feeding. Pellets taken from the digestive tract of sacrificed animals were analysed with respect to crude protein, fibre content and digestibility. It was found that animals did not form caecotropic pellets. The were

evident practical implications of coprophagy behaviour for grass-cutter breeding.

BDB ref. : BEDIM 338

Jori¹ F., Cooper² J.E. & Casal³ J. - Postmortem findings in captive cane rats (*Thryonomys swinderianus*) in Gabon

Source : Veterinary Record 2001, 148 : 624-628

Language : English

Address : ¹Programme ECONAP, CIRAD-EMVT, TA 30/F, Campus International de Baillarguet, 34398 Montpellier, Cedex 5, France. ²Durrell Wildlife Conservation Trust, les Augrès Manor, Trinity, Jersey JE3 5BP. ³Unitat de Patologia Infecciosa, Facultat de Veterinària, Universitat Autònoma de Barcelona, Bellaterra 08193, Barcelona, Spain

Abstract: The causes of morbidity and mortality in a population of cane rats (*Thryonomys swinderianus*) on an experimental farm in Gabon where monitors for 21 months: 94 of 546 animals (17.2%) died and were examined postmortem, and complementary laboratory examination were carried out on 23 of the cases together of samples from 13 other animals kept elsewhere in similar condition. Twenty-six (28%) of the death occurred in preweaned kits, (40 %) in subadults and 28 (30 %) in adults. The average monthly mortality was 2.5%. Traumatic was responsible for twenty-nine of the death, twelve were due to septicaemia, ten to primary respiratory lesions, five to digestive disorders, four to urinary lesions, three to reproductive problems and three to others causes; no diagnosis could be reached in twenty-eight cases.

BDB ref. : BEDIM 102

van Zyl* A., van der Merwe M. & Blignaut A.S. – Meat quality and carcass characteristics of the vondo, *Thryonomys swinderianus*

Source : S. Afr. J. Anim. Sci. 1999, 29 (3) : 120-123

Language: English

Address : *Correspondence: 244 Carinus Street, Meyerspark 0184, South Africa

Abstract: Animals, maintained from birth on a higher and lower fibre diet, were slaughtered when postnatal growth curves flattened off. Males tended to be larger than females. The meat of females tended to have higher lipid (9.2 g/100 g fresh mass) and energy (767 J/100 g fresh mass) contents than that of males. The cholesterol content of vondo meat was low (48.5-53.4 mg/100 g fresh mass) compared to values for beef and goat. The two diets did not affect carcass characteristics and meat quality significantly.

BDB ref. : BEDIM 148

Oboegbulem^{1,2} S.I. & Okoronkwo¹ I. - Salmonellae in the African Great Cane Rat (*Thryonomys swinderianus*)

Source: Journal of Wildlife Diseases 1990, 26 (1): 119-121

Language: English

Address: ¹Department of Pathology, Microbiology & Public Health Faculty of Veterinary Medicine, University of Nigeria, Nsukka, NIGERIA; ²Present address: Department of Community Medicine, University of Glasgow Glasgow, G12 8QQ, United Kingdom

Abstract: Because of its large size, the African great cane rat (*Thryonomys swinderianus*) is valued for food and has become a popular meat in western Africa. A survey was conducted to determine the occurrence of Salmonellae in cane rats. Ten strains of *Salmonella* sp. were isolated from eight of 25 (32 %) cane rats. *Salmonella* *ajiobo* was isolated from the spleen and intestines of three cane rats; *S. agama* was obtained from the spleen, liver and intestines of three animals; and *S. poona* was isolated from the spleen and liver of two cane rats. The occurrence of salmonellae in *T. swinderianus* is a potential public health hazard. Humans may become exposed to infection by consumption of inadequately cooked infected cane rat meat, or by eating vegetables, sugar cane and fruits contaminated with excretions of carrier cane rats. Incidents of human salmonellosis attributable to cane rat meat have not yet been reported, however, all three serotypes isolated from the cane rats have also been isolated from stools of patients suffering from gastroenteritis in Nigeria.

BDB ref.: BEDIM 299

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AGOUTI

Assis Neto¹ A.C., Meld M.I. V., Carvalho³ M.A.M., Miglino¹ M.A., Oliveira⁴ M.F., Silva³ S.M.M., Batista⁴ J.S., Almolda³ M.M. & Menezes¹ D.J.A. - Agouti's (*Dasyprocta aguti*): Testicular Development: chronological evaluation of spermatogenesis and testicular biometric parameters [Desenvolvimento testicular de Cutias (*Dasyprocta aguti*): avaliação cronológica da espermatogênese e parâmetros biométricos testiculares]

Source: Rev. Bras. Reprod. Anim. 2002, 80-82.

Address: ¹Universidade di Sao Paulo; ²Pontiffcia Universidade Católica di Minas Gerais/Betim; ³Universidade Federal do Piauf; ⁴Escola Superior do Mossoró. E-mail: assischaves@terra.com.br

Abstract: This study was conducted with the aim of evaluate the histological and biometric postnatal development of the agouti's testicles. Thirty-one agoutis were used, originated from the Federal

University of Piauí-PI and the Superior School of Agriculture of Mossoró-RN. After the mensuration of the testicles, the same ones were fastened with Bouin's solution and colored with hematoxylin-eosin. The lamination aspects of the seminiferous tubulus, the presence of primary spermatocytes, the spermatid presence and the formation of the first stages of the seminiferous epithelium cycle were analyzed. The corporal growth of the agouti from the birth to 14 months of age came slow and gradual. The corporal weight is highly correlated with the age and the testicular biometric parameters ($p < 0,05$). The agouti testicular weight showed a sigmoid growth curve with an abrupt growth starting at nine months. The animals stayed non-pubescent until the fifth month, pro-pubescent between the sixth and the eighth month, except one animal with seven months, pubescent between nine and 10 months and post-pubescent between 10 and 14 months. It is concluded that the testicular biometric parameters grew quickly starting in the puberty. All the animals had already reached the puberty with nine months.

BDB ref.: BEDIM 147

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GUINEA PIGS

Sakaguchi¹ E., Itoh² H., Kohno¹ T., Ohshima² S. & Mizutani² K. – Fiber digestion and weight gain in Guinea pigs fed diets containing different fiber sources

Source : Exp. Anim. 1997, 46 (4) : 297-302

Language : English

Address : ¹Faculty of Agriculture, Okayama University, Tsushima-naka 1-1-1, Okayama 700. ²Research Centre, Nihon Nosan Kogyo K.K., 5246 Takura, Tsukuba-shi, Ibaraki 300-33, Japan

Abstract : The effects of different fiber sources on feed intake, weight gain and digestibility of fiber were examined in guinea-pigs fed pelleted diets containing alfalfa meal, oaten hay, beet pulp and commercial hay cubes mixed with a basal diet at ratios of 3 : 1 (75 % in the diet), 1 : 1 (50 %) and 1 : 3 (25 %). The basal diet containing 50 % corn, 4.1 % wheat, 22.1 % wheat flour and 17.7 % corn gluten meal. Food intake increased as the amount of fiber source was increased, but in the case of beet pulp. The most digestible fiber (ADF and NDF) was that of beet pulp. Apparent digestibility of dry matter decreased with increasing ratios of fiber source to the basal diet for all fiber sources, but fiber and crude protein digestibilities varied and depended not only on the ratios of fiber to the basal diet but also on the source of the fiber.

BDB ref. : BEDIM 42

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CRICETOMES

Bobé L. & Mabela M. – Incidence de quatre vers parasites gastro-intestinaux dans un groupe de cricétomes, *Cricetomys gambianus* (Rongeur: Cricetidae), capturés à Lukaya (République Démocratique du Congo)

Source : Tropicultura 1997, 15 (3) : 132-135

Language : French

Address : Faculté des Sciences, Université de Kinshasa, Kinshasa XI, République Démocratique du Congo.

Abstract : Sixty wild cricetomas (*Cricetomys gambianus*) including 24 males and 36 females, caught in Lukaya were examined for the presence of 4 gastro-intestinal parasite worms. High prevalence of *Strongyloides* sp. (98.3 %) and relatively low prevalence of *Hymenolepis nana* (28.3 %), *H. diminuta* (18.3 %) and *Trichuris* sp. (23.3 %) were found. Infestation by 4 parasite worms was affected by the age and sex of cricetomas and no interaction between the different parasites was found.]

BDB ref. : BEDIM 2

Malekani M. – Etude des facteurs favorisant la reproduction en captivité du cricétome, *Cricetomys*, au Zaïre (République Démocratique du Congo)

Source : Tropicultura 1998, 14 (3) : 91-93

Language : French

Address : Projet Cricétomes, Département de Biologie, Faculté des Sciences, Université de Kinshasa, Kinshasa XI, République Démocratique du Congo

Abstract : In the aim to succeed in cricetoma domestication we have to study the factors that can influence reproduction of this animal in captivity such as environmental conditions, parasitism, nutrition and reproductive behaviour. About a hundred cricetomas have been housed in different kinds of cages set up in two animal houses to find the best rearing conditions. Marking technique by making notches and holes at the ears was proved to be an accurate way to identify cricetomas in captivity. Parasite identification, treatment and monitoring in cricetomas were made. Values of some haematological parameters were established. Various diets for cricetomas were made. Litters occurred in the two known species, i.e., *Cricetomys emini* and *C. gambianus*.

BDB ref. : BEDIM 1

Malekani* M., Westlin L. M., Paulus J. J. & Potgieter H. C. – Oestrous occurrence in captive female *Cricetomys gambianus* (Rodentia: Cricetidae)

Source: J. Zool. Lond. 2002, 257: 295-301

Language: English

Address: School of Environmental Sciences and Development (Zoology), Faculty of Natural Sciences, Potchefstroom University for Christian Higher Education, Private Bag X6001, Potchefstroom 2520, Republic of South Africa. *Department of Biology, Faculty of Sciences, University of Kinshasa, PO Box 190 Kinshasa XI, Democratic Republic of Congo

Abstract: *Cricetomys gambianus* is an important source of protein for human consumption in many parts of sub-Saharan Africa. Wild populations are under considerable hunting pressure, suggesting that captive rearing may be desirable. Successful captive-breeding programmes require a better understanding of reproductive physiology and behaviour. Eight groups containing a total of 68 *C. gambianus* females were used to characterize the reproductive pattern, including the occurrence and duration of oestrous, the cycle length, the oestrous cyclicity and the mode of ovulation. These females groups were kept in different socials and physical environment and examination of vaginal smears were carried out at different periods. Results of the vaginal cytology examination showed two characteristic stages of the cycle: “oestrous” and “anoestrous”. Oestrous appeared on average 1.3 times only in one female during 1 month, but its occurrence varied between 0.4 and two times in a month. The mean oestrous length was 3.3 days and ranged from 1.4 to 7.8 days. The average cycle length was 7.9 days but varied between 3 and 15 days. These results showed an irregular cycle pattern and revealed that *C. gambianus* may be an induced ovulator. Housing events, such as the presence or the absence of a male and the type of cages or rearing room, and the dry and the rainy seasons did not seem to influence the cycle pattern in this species. Further investigations on the basic reproductive biology of *Cricetomys* are necessary to provide the basis for developing farming methods that will yield high productivity.

BDB ref. : BEDIM 69

Kisasa*R., Palata* J.C. & Pwema V. - Premiers essais d'élevage du rat-taupo (*Cryptomys mehowi*, Rongeur: Bathyergidae) à Kinshasa, République Démocratique du Congo [Raising of the Mole-Rat (*Cryptomys mehowi*, Rodent: Bathyergidae) at Kinshasa, Democratic Republic of Congo: First Trials]**

Source: Tropicultura 2004, 22 (4): 180-184

Language: French

Address: Université de Kinshasa, Faculté des Sciences, Département de Biologie, *Laboratoire d'unité de Mammalogie, **Laboratoire d'unité d'hydrobiologie.

Abstract: The mole-rat, *Cryptomys* was captured in the grassy savannah of the plateau of the Bateke to be submitted to raising in captivity at the laboratory of the Biology Department in the University of Kinshasa. This small wild underground mammal, very appreciated by the population is victim of overexploitation for its delicious meat. The raising of this rodent could reconcile the safeguard of the species on the one hand and the domestic protein source for the population of the plateau of the Bateke on the other hand. On the 21 animals of which 8 couples and 5 young have been captured on the tray of the Bateke. Out of these 8 couples, 5 died in the first week of raising in the laboratory. And 5 kids survived until the end of the experience, the 3 surviving couples gave birth each during 1 year of raising test to litters with better size from 1 to 3 kids for the 3 couples. This numeric growth rate demonstrates the possibility of raising this small underground rodent in captivity.

The feeding in the laboratory is based on tubers easily obtainable through all markets of the capital. It is the case for cassava and sweet potato].

BDB ref.: BEDIM 529

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FROGS

TRÂN KIÊN Gs. Ts. – Field frog (*Rana granulosa* Wiegmann, 1835) breeding techniques [Ếch D`ông (*Rana rugulosa* Wiegmann, 1835) Các Phương Pháp Chăn Nuôi]

Source : Sciences et Techniques Edition, Hanoi, Viet-Nam, 1996, 110p.

Language : Vietnamese

Address : Université d'Agriculture n°1, Hanoi, Viet-Nam

Abstract : With 67 very clear figures, the author goes through the economic interest of *R. granulosa* breeding in Viet-Nam, the characteristics of the frog and its habitat, ways and means to capture it, description of the breeding infrastructures, feeding inclusive of side productions (manure worms, cockroaches, maggots...) reproduction and juvenile growth, as well as some information on diseases and transport.

[Avec 67 figures très claires, l'auteur expose à fond l'intérêt économique de l'amélioration de la grenouille au Viet-Nam, les caractéristiques de la grenouille et son habitat, les voies et moyens de la capturer, la description des infrastructures

d'amélioration, l'alimentation incluant des productions parallèles (vers, cancrelats, larves...), la reproduction et la croissance juvénile, ainsi que quelques informations sur les maladies et le transport.]

BDB ref. : BEDIM 449

Huys¹ G., ²Pearson M., ³Kämpfer P., ¹Denys R., ¹Cnockaert M., ²Inglis V. & ^{1,4}Swings J. - *Aeromonas hydrophila* subsp. *ranae* subsp. Nov., isolated from septicaemic farmed frogs in Thailand

Source: International Journal of Systematic and Evolutionary Microbiology 2003, 53: 1-7.

Language: English

Address: ^{1,4}Laboratorium voor Microbiologie¹ and BCCMTM/LMG Bacteria Collection⁴, Ghent University, K.L. Ledeganckstr. 35, B-9000 Ghent, Belgium. ²Institute of Aquaculture, University of Stirling, Stirling FK9 4LA, UK. ³Institut für Angewandte Mikrobiologie, Justus-Liebig-Universität Giessen, IFZ, Heinrich-Buff-Ring 26-32, D-35392 Giessen, Germany

Correspondence: Geert Huys: geert.huys@rug.ac.be

Abstract: A group of seven sucrose-negative *Aeromonas* strains (referred to as group Au) isolated from the internal organs of septicaemic farmed frogs (*Rana rugulosa*) in Thailand was subjected to a polyphasic taxonomic study including fluorescent amplified fragment length polymorphism (FAFLP) and ERIC-PCR fingerprinting, 16S rDNA sequencing, microplate DNA-DNA hybridizations and extensive phenotypic characterization. Comparison of FAFLP and ERIC-PCR fingerprints indicated that the group Au isolates belonged to the species *Aeromonas hydrophila* DNA hybridization group (HG) 1 in which they represent a genotypic subgroup closely affiliated to *A. hydrophila* subsp. *hydrophila* and subsp. *dhakensis*. One representative of the Au group exhibited $\geq 99.0\%$ 16S rDNA sequence similarity with the type strains of the two *A. hydrophila* subspecies. DNA-DNA hybridization with type and reference strains of all known *Aeromonas* taxa revealed that the Au group represented a homogeneous taxon that exhibited the highest relatedness with members of the two *A. hydrophila* subspecies, ranging from 75 to 93 %.

Phenotypic characterization on the basis of 152 features further revealed that the Au group isolates differed from *A. hydrophila* subsp. *hydrophila* or subsp. *dhakensis* in a total of 13 biochemical properties. Of these, assimilation of L-glycine and isobutyrate as sole carbon source, acid production from salicin and D-sucrose, and aesculin hydrolysis were of diagnostic value. From the results of this study, it can be concluded that the *Aeromonas* frog isolates of the Au group represent a new subspecies of *A. hydrophila*, for which the name *Aeromonas hydrophila* subsp. *ranae* subsp. nov.

is proposed. Its type strain is Au-1 D12^T (= LMG 19707^T = CCUG 46211^T).

BDB ref : BEDIM 526

* * *

SNAILS

N'Da K.I.*, Otchoumou A. & Koffi K.J.C. - Alimentation à base de produits du papayer et maturation ovocytaire chez *Achatina fulica* (Bowdich, 1820) en Côte d'Ivoire

Source: Tropicultura 2004, (22) 4: 168-172

Language: French

Address: Laboratoire de Biologie et Cytologie Animales (Unité de Formation et de Recherches en Sciences de la Nature), Université d'Abobo-Adjamé, 02 BP 801 Abidjan, Côte d'Ivoire. *Correspondance au Dr K. N'Da, 14 BP 1821, Abidjan 14, Côte d'Ivoire. E-mail: ndakonanci@yahoo.fr

Abstract: L'escargot des jardins, *Achatina fulica* (Bowdich, 1820) est une espèce d'introduction récente en Côte d'Ivoire mais dont la cueillette (le ramassage) et par voie de conséquence, sa consommation prend de l'ampleur au sein de la population. La nécessité de son élevage s'impose. En condition expérimentale d'élevage hors sol, trois régimes alimentaires à base de papaye (R 1: feuille; R2: fruit; R3: feuille + fruit) sont proposés pendant 5 mois à 150 individus répartis en 6 lots de 25. Les observations, aussi bien macroscopiques (quantité d'œufs pondus) que microscopiques (présence en plus ou moins grand nombre des ovocytes matures dans l'ovotestis) montrent que le régime R3 est le plus approprié. Il pourrait alors être conseillé comme aliment à quiconque voudrait faire l'élevage de l'espèce.

BDB ref. : BEDIM 528

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WORMS

Cerda¹ H., Martinez¹ R., Briceno¹ N., Pizzoferrato² L., Manzi² P., Ponzetta³ M.T., Marin⁴ O. & Paoletti^{5*} M. - Palm Worm: (*Rhynchophorus palmarum*) traditional food in Amazonas, Venezuela - nutritional composition, small scale production and tourist palatability

Source: Ecology of Food and Nutrition, year 2000 Vol. 00, pp. 1-20

Language: English

Address: ¹Simon Rodriguez University, Apartado Postal (P.O. Box) 47.925, Caracas 1041-A, Venezuela ²National Institute for Food and Nutrition Research, Rome, Italy ³Department of Zoology, University of Bari, Italy CRIBI, Padova University, Padova, Italy ⁵Padova University, Department of Biology, Padova, Italy *Corresponding author.

Abstract: The use of *alerito*, the larva of the *Rhynchophorus palmarum* (Coleoptera: Curculionidae), by the Jivi (Guajibo) community of Alcabala de Guajibo, Amazonas, Venezuela, is described. The Indians gather the palm worms from damaged or fallen palm stems and eat them raw or roasted. We analysed the nutrient composition of the palm worm and found that it is an excellent source of protein, vitamins A and E, and minerals. We further describe the development of a local, controlled small-scale palm worm production system for use by the Indians in the Amazon. Larvae are bred using wild palm materials and traditional Indian plants. The larval survival and density in each palm substrate is analysed together with the larvae's nutritional composition, and comparison with the mother *palmscucurito* (*Maximiliana maripa*), *seje* (*Jessenia bataua*) and *moriche* (*Mauritia flexuosa*) is made. Finally, the palatability of the palm worm to non-Amerindian tourists is assessed. The nutrient composition of the palm worm, the simplicity of a more controlled local production system and the acceptability of the palm worm to tourists make this non-conventional resource promising both as a nutritional food and as a source of cash income for the Indians.

BDB ref.: BEDIM 523

Manna M.C., Singh M., Kundu S., Tripathi A.K. & Takkar P.N. - Growth and reproduction of the vermicomposting earthworm *Perionyx excavatus* as influenced by food materials

Source: Biol. Fertil. Soils 1997, 24: 129-132

Language: English

Address: Indian Institute of Soil Science, Nabibagh Complex, Berasia Road, Bhopal – 462038, India

Abstract: An outdoor study was undertaken using polyethylene containers to assess the suitability of different organic residues, soybean straw (*Glycine max* L. Merrill.), wheat straw (*Triticum aestivum* L.), maize stover (*Zea mays* L.), chickpea straw (*Cicer arietinum* L.) and city garbage, as food for the tropical epigeic earthworm *Perionyx excavatus*, and to assess the influence of this earthworm on the decomposition of these materials. Maize stover was found to be the most suitable of the food materials used. Population growth of *P. excavatus* was enhanced by addition of these organic materials in the temperature range 24 – 30° C, while the population was adversely affected above 30° C in a vermiculture system.

Addition of earthworms accelerated the breakdown of residues, which ultimately resulted in a lowering of the C:N ratio, water-soluble carbon and carbohydrates and increased ash percentage and cation exchange capacity compared with their respective controls.

BDB ref.: BEDIM 519

Tondoh E.J. - Effect of coffee residues on growth and reproduction of *Hyperiodrilus africanus* (Oligochaeta, Eudrilidae) in Ivory Coast

Source : Biol Fertil Soils (1998) 26:336-340

Language : Laboratoire d'Ecologie des Sols Tropicaux,

Address : ORSTOM/Université Paris 6, 32, avenue Henri Varagnat, F-93 143 Bondy, Cedex, France. Tel: (33) 0148 02 5960; Fax: (33) 0148 47 3088. E-mail: student@bondy.orstom.fr

Abstract: *Hyperiodrilus africanus* (Beddard) is a 12-cm to 16-cm-long earthworm, which is widely distributed in West and Central Africa. It lives in the upper 10-20 cm of the soil, and feeds on a mixture of soil and above-ground litter. Cocoons obtained in the laboratory hatched on average 17 days after deposition and produced two juveniles on average. Paired individuals fed soil amended with 2% coffee residues grew significantly ($P < 0.05$) faster than those in the control soil. Daily individual weight increments were respectively $6.1 \text{ mg worm}^{-1} \text{ day}^{-1}$ and $1.0 \text{ mg worm}^{-1} \text{ day}^{-1}$ in supplemented and control soil. The generation time was short, and cocoon production reached 9.6 month^{-1} (i.e. 115 cocoons adult⁻¹ year⁻¹). When *H. africanus* collected from the field were raised in the laboratory, they grew slowly, laid fewer cocoons and mortality was high. Demographic parameters indicated an improvement when *H. africanus* were raised in batches rather than individually. Mating enhanced cocoon production although parthenogenesis was possible.

BDB ref : BEDIM 521

Moreno G. A. & Paoletti M. - Kuru : A giant earthworm, source of food for Marikitare indians from Venezuela. [Kuru : Una lombriz de tierra gigante, fuente de alimentacion de los indios marikitare de Venezuela.]

Source : Historia Natural, Noviembre 2003, pp 10-15

Language : Spanish

Address : Universidad Complutense , Madrid

Abstract : This paper describes the habits from several Indian tribes in the Venezuelan Amazon, related to the consumption of two species of earthworms: the Motto (*Adiorhinus motto*) and the Kuru (*Pontoscolex corethurus*). Both species present outstanding nutritional properties, such as ten times more iron than a soja seed or the same amount of calcium that can be found in cow milk or fresh cheese. Protein content is higher than 65%. Both species were very recently known to science and taxonomically classified.

Kuru has an exceptional size for an earthworm reaching between 110 and 130 cm of length and weighing 122 gr. His reproductive productivity in natural conditions is not yet well known however, sexual gametes are laid in a bud which remains on earth. Fertilization and development of the juvenile occur within the bud, which hatches when appropriate external conditions for development are met. Controlled breeding of this annelids should be considered as an alternative for protein production in the Amazon.

BDB ref.: BEDIM 354

Orozco F.H., Cegarra J., Trujillo L.M. & Roig A. – Vermicomposting of coffee pulp using the earthworm *Eisenia fetida*: Effects on C and N contents and the availability of nutrients

Source: Biol Fertil Soils 1996, 22: 162-166

Language: English

Address: CEBAS – P.O. Box 4195, 30080 Murcia, Spain. Phone (968) 21 5717, Fax (968) 26 6613

Abstract: In Colombia, more than 1 million tons of coffee pulp are produced every year. Its transformation into compost by means of turned piles has led to a final product with poor physical and chemical characteristics and vermicomposting has been suggested as an alternative method of transforming these wastes into a useful organic fertilizer. The ability of the earthworm *Eisenia fetida* to transform coffee pulp into a valuable compost was evaluated. The influence of bed depth and time on different C fractions, N content and availability of nutrients was studied. The results showed that the C and N contents were not affected by the depth of the bed, whereas time affected both. An increase in the fractionation ratio, determined by calculating the C in the fraction smaller than 100 µm as a percentage of C in the samples as a whole, and low values of humic-like substances were recorded during vermicomposting. After ingestion of the pulp by the earthworms, an increase in available P, Ca, and Mg but a decrease in K were detected.

BDB ref : BEDIM 520

* * *

MINILIVESTOCK

Hardouin J. - Le Mini-élevage et la Faune: 1983-2002 [Minilivestock and Fauna: 1983-2002]

Source : Tropicultura 2004, SPE: 26-29

Language: French

Address: BEDIM, Faculté universitaire des Sciences agronomiques, 2 Passage des Déportés, B-5030 Gembloux, Belgique. E-mail: bedim@fsagx.ac.be

Abstract: The author makes a synthesis on the trend observed through the first twenty volumes of Tropicultura regarding papers on minilivestock and wild fauna. Specialized journals produce indeed more articles on controlled breeding of rodents, guinea pigs for meat, reptiles, insects, manure worms, crocodiles, antelopes or other game species. Giant snails, cricetomas and frogs have been dealt with most often in this periodical. Minilivestock can play an important role for biodiversity preservation and against poaching.]

BDB ref.: BEDIM 518

Nogueira-Filho S.L.G. & Siqueira da Cunha Nogueira S. - Captive Breeding Programs as an Alternative for Wildlife Conservation in Brazil

Source: In K. Silvius, R. Bodmer and J. Fragoso, 2005. People in Nature: Wildlife Conservation in South and Central America. Columbia University Press, pp 171-189

Language: English

Address: Departamento de Ciencias Agrarias e Ambientais, Universidade Estadual de Santa Cruz, Rod. Ilheus-Itabuna, km 16, Ilheus, Bahia 45650-000, Brazil.

Abstract: In this article we describe the biological characteristics, products, and by-products of capybara and collared peccary, as well as the current production systems implemented in Brazil to produce these two species commercially. The paper brings up-to-date information on the current production status of each species in Brazil and compares intensive, semi-intensive and extensive systems for each one of the species mentioned. Analyses of economic parameters such as inputs, outputs, and financial return of the three production systems are also compared. Despite the economic analysis is not based on field data from existing farms, it is definitely a one of the few papers addressing economic analysis on the production of two of the most promising species for game production in Latin America.

BDB ref.: BEDIM 539

Biasatti N.¹, Spiaggi E.¹, Marc L.¹, Di Masso R.² - Minilivestock in Argentina:

Integration with agricultural production

Source: Tropicultura, vol 16-17(4), 212-215

Language: English

Address: ¹CEAV, Centro de Estudios Ambientales, ²Cátedra de Genética y Biometría, 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 various 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 optimization of flows of energy and materials, tending to minimize the environmental impact of livestock production and also to 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 (Hardouin, 1995). A module for raising *Myocastor coypus* (the false nutria or coypu) was developed, to which was linked a module for raising *Eisernia foetida* (the so called red worm), in both cases with a double intention. 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 optimize the system.

BDB ref.: BEDIM 213

Jori F., Edderai D. & Houben P. - The potential of rodents as minilivestock in Africa

Source: Paoletti, M.G., Editor. Ecological Implications of Minilivestock; role of rodents, frogs, snails, and insects for sustainable development

Language: English

Address: Unité d'Epidemiologie, Departement EMVT, CIRAD, Campus International de Baillarguet, Montpellier 34398, Cedex 5, France. E-mail : jori@cirad.fr

Abstract: In many African countries several species of rodents are highly valued as a source of food and income for local people. Systems of rearing are fully developed only in those species, such as the cane rat (*Thryonomys swinderianus*) where the biology is already well known. Semi domesticated breeds have been selected and periurban extension experiments have yielded satisfactory results in many countries. For other species such as the brush tailed porcupine (*Atherurus africanus*), its potential for minilivestock has not yet been fully assessed. It adapts well to captivity but shows little prospects for rearing because productivity of females is low. Giant rats or *Cricetoma* (*Cricetomys* spp.) are widely consumed and some countries have initiated

research on them with promising results. Unfortunately, despite considerable improvements, no attempts have been made to develop extension programmes. Even though rodent production is developing in some parts of Africa, with obvious ecological and socio- economical benefits, rodent farming projects are not the panacea and several problems still need to be solved to reach a large scale production and to offer an alternative to the bushmeat trade.

BDB ref. : BEDIM 541

Delvingt W., Hardouin J. & Zongo D. - Espèces sauvages chassées ou exploitées [Wild species hunted or managed]

Source: Manuel de zootechnie comparée Nord-Sud, pp 63-68. Agence universitaire de la Francophonie AUF-INRA Editions, Paris 2005. ISBN 2-7380-1055-5, 16x24, 638p. Price: 85 euros; for Africa, Asia, South America and Haïti: 22 euros.

Language: French

Abstract: After some pages devoted to classical and traditional hunting, game ranching, and game farming, the 3 last pages deal shortly with rodents, batrachians, snails, worms, and insects.

BDB ref.: BEDIM 540

Hardouin J. – Pathologie du mini-élevage [Minilivestock pathology]

Source: Manuel de zootechnie comparée Nord-Sud, pp 470-471 ; see under Delvingt et al., section Minilivestock

Language: French

Abstract: Very little is known on diseases and troubles of minilivestock when bred under control. Some cases are mentioned.

BDB ref.: BEDIM 542

Hardouin J. – Les perspectives nouvelles du mini-élevage [Future prospects for minilivestock]

Source: Manuel de zootechnie comparée Nord-Sud, pp 497-499 ; see under Delvingt et al., section Minilivestock

Language: French

Abstract: Minilivestock ought to be recommended for self production and consumption in rural or peri-urban populations, as meat can be produced at low cost, based on local feed, and using animals traditionally consumed for centuries. Gathering as in the old times can be replaced by production under human control.

BDB ref.: BEDIM 543

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Rédacteur en Chef / Editor-in-Chief :

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