

OPPORTUNITIES FOR RABBIT RESEARCH AND HUMAN DEVELOPMENT IN THE WESTERN HEMISPHERE: A RABBIT REVOLUTION?*

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ABSTRACT: Throughout the Western Hemisphere, opportunities exist to develop viable rabbit research programs that meet the unique needs of small-scale, limited-resource farmers. In this paper, basic problems of small-scale farmers are first briefly described, and, secondly, pre sent examples are provided of

alternative and innovative research programs that directly address these special needs. Rabbit scientists are further encouraged to elevate the stature of the rabbit as a significant "niche" livestock species to benefit humanity through the expansion of sustainable, small-scale rabbit farming and (or) development projects.

RÉSUMÉ: Opportunités pour la recherche sur le lapin et le développement de l'homme dans les pays occidentaux: une révolution cunicole?

Dans le monde occidental actuel existent des opportunités pour développer des programmes de recherche viables, orientés vers les besoins spécifiques de l'élevage du lapin en petites unités chez des producteurs ayant des ressources limitées. Dans cet article sont rapidement décrits les problèmes spécifiques aux

élevages cunicoles de petite taille. L'auteur fournit également quelques exemples de programme de recherche alternatifs et innovants consacrés à ces problèmes spécifiques. Les chercheurs cunicoles sont par ailleurs vivement encouragés à situer le lapin comme une espèce zootechnique à part entière pour en faire bénéficier l'humanité à travers une élevage durable du lapin en petites unités et/ou à travers des programmes de développement.

INTRODUCTION

This paper's subtitle, "A Rabbit Revolution", conveys the theme that opportunities indeed exist for rabbit scientists to engage in a concerted effort in developing appropriate research programs that will foster the expansion of sustainable rabbit production throughout the Western Hemisphere. On the occasion of the 1st AB-WRSA "Congreso de Cunicultura de las Americas" event, held in Montecillo, Mexico, in 1998, a paper was presented entitled, "Small-scale rabbit meat production in the Western Hemisphere: Back to basics", which was later published in World Rabbit Science (LUKEFAHR, 1999). Because of the West's history of largely failed commercial industry efforts, this paper recommended that more emphasis be placed by rabbit scientists on the promotion and research support of rabbit "cottage industries" consisting of small- as opposed to large-scale enterprises. A cottage industry could be characterized by few breeding

rabbits in the backyard, use of local materials for hutches and other equipment, feeding of fresh forages, garden and kitchen "wastes", integration of rabbits with other farm components (e.g., rabbit manure recycled as organic matter for gardens), sharing of family labor, and sales of rabbits though local markets.

With respect to human development in terms of poverty alleviation, especially in the lesser-developed countries, commercial enterprises tend to benefit only the wealthy while ignoring the needs of the poor (UDO, 1997; LUKEFAHR and PRESTON, 1999). For example, few unskilled laborers are often hired at less than minimum wage, while the rabbit meat produced is mainly consumed by the wealthy. Moreover, commercial livestock industries are known to impart negative aspects on society (HODGES, 1999), such as small producers being forced out of business due to their inability to compete with large producers, and on the environment (e.g., pollution; CHEEKE, 1999). Further, only limited cases of success have been noted where commercial enterprises, typically located near major urban centers, have been met by significant consumer

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* Invited paper presented at the 2^o Congreso de Cunicultura de las Americas, June 19-21, 2002, Ciudad de La Havava, Cuba.

demands for rabbit meat.

In contrast, the “*Back to Basics*” paper also illustrated, by example, how small-scale rabbit projects have provided opportunities for subsistence farmers to abandon poverty to improve their quality of diet and to improve their standard of living. According to HUSS (1982), there are millions of small farms in Latin America that are too small to support large livestock. The FAO (1997) reported that approximately 66.4 % of land holdings in North and Central America (excluding Canada and the U.S.) and 46.0% in South America involve farms less than 5 hectares in size. COLIN and LEBAS (1996) documented the proportion of total does found on so-called traditional farms (<8 does) was estimated at 8.2, 86.5, and 31.7% in North (Canada and U.S.), Central and South America, respectively. They further estimated that approximately 5.5 million breeding does exist in the 36 countries reporting from the Western Hemisphere.

In addition, COLIN and LEBAS (1996) reported that only 150, 148, and 127 grams of rabbit meat is consumed per person in 36 countries surveyed in North, Central, and South America, respectively. It is well known that throughout the Western Hemisphere it is not a traditional practice to consume rabbit meat, but in some cases this constraint has been successfully breached (LUKEFAHR, 1988; CAPRA *et al.*, 2000). As rabbit scientists, we are challenged to remove this and other cultural or sociological and technical barriers that prevent impoverished small farm families from realizing the full potential of the rabbit as a special niche, food animal species. To more successfully remove these barriers, perhaps a more integrated, albeit interdisciplinary, approach is needed involving specialists in agricultural education, gender programs, nutrition, sociology, *etc.*

This sequel paper will further explore opportunities for rabbit scientists to develop or

enhance viable research programs that promote and support small-scale rabbit production in the context of humanitarian aid and of elevating the stature of the rabbit as a niche livestock species.

SMALL-SCALE FARMER NEEDS AND RESEARCH OPPORTUNITIES

In the “*Back to Basics*” paper, the last section was entitled: *New research priorities - future challenges*. To help guide rabbit scientists, several suggested examples of alternative research priorities that address basic needs of limited-resource farmers were listed, as follows:

- * Develop suitable farm-based diets to replace commercial pellets
- * Identify local remedies for treating disease (*e.g.*, ethno-veterinary medicine)
- * Select local breeds for novel traits (*e.g.*, forage intake capacity, low nutrient requirements, and thermo-tolerance)
- * Implement appropriate farmer training and extension methods
- * Focus on niche market opportunities.

The nature of these research topics generally entails decreasing costs (through sustainable on-farm measures) and (or) increasing returns (through more efficient production and (or) adaptation of stock, better training methods, improved market conditions, *etc.*). Besides promoting sustainability, these measures could potentially enhance farmer’s ability to become self-reliant in food production and income generation without depending on off-farm inputs or resources, such as commercial feed, medications, exotic breeds, technical expertise, and formal markets. Of course, it is not possible to generalize local conditions across regions. There is a need for more research to justify existing local practices. For example, commercial breeds developed in hot climates may perform

comparably or even better than local breeds.

At the last WRSA congress held in Valencia, reports from Argentina (KAHAN and ROCA, 2000), Cuba (RIVERON, 2000), Mexico (MARTINEZ-AISPURO *et al.*, 2000), Trinidad (RASTOGI *et al.*, 2000), and Uruguay (CAPRA *et al.*, 2000) presented useful information on similar topics as those listed above. These papers generally highlighted rural-based program efforts designed to assist small-scale farmers in their local environments. Some of these studies also referred to rabbit breeder organizations and projects specifically designed to improve nutritional status of low-income families. These efforts are certainly applauded and are strongly encouraged to expand throughout the Western Hemisphere to impact the masses.

It is proposed that the field via "on-farm research" as a laboratory be adopted to develop and test models and collect data, while maintaining a direct and sharp focus on the needs of limited-resource farmers. Of course, travel expenses and time are often rare commodities, but a common solution has been to involve capable extension staff or field workers who received basic training by rabbit specialists at a university or an extension center. In terms of research funding support, perhaps most rabbit scientists in the Western Hemisphere, myself included, operate their research programs on shoestring budgets. So, the on-farm approach can offset the high costs of having to maintain a large rabbit population at a research center or station.

Further, "accountability", as viewed by agency or government officials, is generally judged more favorably under field (on-farm) as opposed to laboratory conditions. This has been especially evident when rabbit farmers, themselves, effectively articulated field successes resulting from direct efforts of rabbit scientists. In some cases, as a result of demonstrated on-farm successes, the researcher has been rewarded in terms of program (re)funding, either

from the government's coffers or by grant funding agencies. Also, in my experiences, humanitarian organizations are more apt to fund proposals in which practical research ("on-farm demonstrations or experimentation") is conducted on small farms rather than in laboratories or at research stations.

ALTERNATIVE AND INNOVATIVE RABBIT RESEARCH PROGRAMS

A conventional research program is aimed, for example, at testing components of the commercial production system, such as diet formulations to increase rabbit production output. Generally, in lesser-developed countries there would be a limited potential for impact resulting from commercial-oriented research, except under limited conditions as previously described. With respect to target group, an unconventional research program addresses the needs of limited-resource farmers who simply lack the time, transportation means, technical skills, social status or capital to adopt commercial-scale technologies or management systems. Examples are given below of several rabbit research programs that are unconventional that have already made a major contribution or that have a major potential for benefiting limited-resource farmers.

Unconventional nutrition research programs are directed by Drs. Alessandro Finzi in Italy, Rena Perez in Cuba, Arturo Pro-Martinez in Mexico, and Thomas Preston (presently in Cambodia and formerly Viet Nam). Briefly, these independent programs focus on alternative feeds and feeding systems (as opposed to commercial diets or concentrates), which can support low-cost rabbit farming systems on small farms. FINZI and AMICI (1996) reported on the feeding of crumbles and molasses blocks to fryers using local feed ingredients as supplements to fresh forage or hay. LE THU HA *et al.*, (1996) investigated combinations of molasses blocks with fodder from leguminous trees

as a complete diet for rabbits. Both Drs. Finzi and Preston have conducted additional independent studies on small farms to ensure repeatability of results and smooth adoption success by farmers. Dr. Perez's work has primarily involved the feeding of sugarcane and leguminous forages to rabbits to secure sustainable feeding systems that are simple and easily adoptable by farmers in Cuba (PEREZ, 1998). Dr. Pro-Martinez's research team in Mexico has carried out several investigations involving the feeding of high levels of inexpensive, quality forage diets to rabbits (MARTINEZ-AISPURO *et al.*, 2000). Collectively, these innovative research programs have stimulated rabbit scientists in other countries to conduct similar practical studies that have high potential impact for subsistence farmers.

Another example, conventional breeding and genetics research programs traditionally focus on selection of production traits (*e.g.*, growth and litter size) in the context of large-scale or industrial applications. Alternatively, LUKEFAHR (1998) proposed for small-scale operations in adverse environments the need for research that focuses on selection for functional versus production traits whereby direct and indirect responses to selection are examined. For example, increased forage appetite/intake capacity per unit of body weight, fur density, and ear length are characters that relate directly to fitness from a local adaptation point of view, and which presumably modulate production trait expressions. In Tunisia, FINZI *et al.*, (1988) observed a local breed as having small body size, small litters, large ears, *etc.*, a typical description for local rabbits from hot environments. In Egypt, HANAFI *et al.*, (1984) reported heritabilities to be generally higher in the Giza White (a local breed) than for the Bouscat breeds (an exotic-temperate breed) for measures of heat tolerance, body temperature and respiration rate. IBRAHIM (1988) noted that the Baladi and Giza local breeds had less dense fur than Bouscat and Flemish Giant exotic breeds, which is evidence of genetic adaptation. In south Texas, RUIZ-FERIA and LUKEFAHR (1998) demonstrated

that fur clipping of weanling fryers significantly improved feed appetite and, in turn, weight gains, more so for Altex than for New Zealand White rabbits.

Overall, it may be counterproductive to select for growth or litter size in local breeds. Of course, higher production requires a better feeding, management, training, *etc.* The displacement of local with exotic breeds has oftentimes been counterproductive, as well, because exotics may lack the genetic adaptation qualities necessary to produce and survive in adverse environments and (or) subsistence production systems. However, in Egypt it has been observed that commercial lines developed in Spain may perform well compared to local breeds (YAMANI, 1994; KHALIL, personal communication). In general, it may be useful to conduct on-farm trials under local conditions in which local and exotic breeds, as well as hybrids, are evaluated on the basis of relative adaptation for production.

In conclusion, rabbit scientists in the Western Hemisphere are encouraged to mainly focus on special opportunities that exist to benefit humanity by expanding sustainable, small-scale rabbit farms. Rabbit scientists - through alternative and innovative research programs - can more appropriately address the unique problems faced by limited-resource rabbit farmers, and, hence, elevate the stature of the rabbit as a significant niche livestock species.

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