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RABBIT PRODUCTION VIS-À-VIS POVERTY ALLEVIATION AND FOOD SECURITY IN ASIA

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Abstract. This paper aims to create awareness among the public about the importance of rabbit farming to meet food crisis in the future. Rabbits can be easily reared by small-scale farmers in their backyard with minimal investments for more income generation. Rabbits make use of forages of low nutritive value to produces highly nutritious meat and the faeces of the rabbits can be used as an alternative to inorganic fertilizer, this interaction between rabbits and soil makes rabbit farming suitable for integrated farming system. Waste of rabbits make excellent compost which in turn makes high quality organic fertilizer. The rabbit faeces were used in the manufacture of bio-digesters and the fertilizer value of the faeces aids to improve the environment by reducing methane emissions. Feeding and housing management of rabbits were not much complicated. Rabbit house can be made from locally available materials and the rabbits can be fed with household wastes and the forages and legumes that can be cultivated within the farmers own farm, that should meet the animals daily needs. Thus the construction and off farm feed costs will be reduced. This makes sure that the rabbit farming will be well accepted by small scale farmers to meet both their nutritious and financial requirements. The farmers can also expand their farm to a commercial level, if guidance, knowledge and technical supports were provided and this makes the market to flood with rabbit in the future which is the only way for food security and employment generation.

1. Introduction

Most of the populations of the Asian countries depend mainly on agriculture for their food, income and mere subsistence. Livestock plays an important role in improving the economic status of the poor. The purpose of livestock keeping of small scale farmers in these regions is for the draught power, food, cash income and organic fertilizers from faeces. They mostly rear only one species due to the risk of the diseases and management issues. Now there was a belief that the Rabbit farming has the potential in improving income and food security of smallholder families by efficiently utilizing feed resources. Therefore, poor families with limited resources could make use of rabbit farming because of increased income and increased consumption of rabbit meat to meet the families' nutritional needs.

ASIA AND ITS FOOD CRISIS

Asia remains home to 67 per cent of the world's hungry of about 552 million people, despite of its rapid economic growth and a big reduction in poverty over the past two decades. The food price crisis after decades of declining real prices was a major setback to the region's poverty reduction efforts. Indeed, a recurrence of escalating, volatile world food prices is one of the three major risks facing Asia, alongside climate-related disasters and the impact of the global financial crisis. Slowing gains in

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agricultural productivity, overexploitation of natural resources and increasing water scarcity are the critical concerns on the supply side. The other big regional development challenge related to food security is the persistent malnutrition (ADB, 1999).

The biggest challenge to sustaining food security and promoting inclusive rural growth in Asia are (i) revitalizing agricultural productivity growth, (ii) addressing the impacts of climate change on agriculture, (iii) the participation of small farmers in modern food value chains and (iv) tackling persistent malnutrition. By 2030, 40 per cent of developing Asia is projected to face severe water shortages, which, along with urban encroachment and soil erosion, will put a very significant stress on the region's agricultural land base.

ROLE OF SMALL FARMERS

For securing more inclusive rural growth, Asia's small, resource-poor farmers- an estimated 350 million of them- must be able to participate in modern food value chains. A successful structural transformation would see the small scale agriculture evolve from subsistence-oriented production to commercially oriented farming driven by the market forces of dynamic, urbanizing economies (ADB, 1999). With the transformation, the impact on rural poverty and inclusivity could be enormous given that about 45 per cent of Asia's people depend on small farms for all or part of their livelihoods. Enabling them to participate in modern agricultural value chains could become a significant intervention to achieve this goal and also allows them to reduce cost, increase revenue and bargaining power. For any innovations to be successful, it should reach the small farmers level and make sure that the technical advices and financial support should be provided.

RABBIT PRODUCTION, A NEW APPROACH FOR POVERTY ALLEVIATION

Rabbit production is a new development in the region, which plays an important role in the view of food security and income generation. According to the FAO (2001), backyard rabbit keeping provides additional income and supplies additional protein for poor rural and urban households with low investment and labour inputs. Rabbits have small body size, short generation interval, high reproductive potential, rapid growth rate, genetic diversity and the ability to utilize forages and by-products as major diet components that make the animal appropriate for small livestock keeping in developing countries (Cheeke, 1986).

The advantages of small-scale rabbit production are:

- As a small monogastric herbivore, the rabbit easily accommodates a fairly wide range of cellulose-rich foods
- It is adaptable to the family diet and food preservation techniques available on small rural and semi-urban farms
- It is highly productive in terms of offspring (kg/year/dam) thanks to mating induced ovulation, short gestation and lactation periods as well as great prolificacy
- It produces highly nutritious, low fat and low cholesterol meat
- It is easy to transport and market, the recurrent costs for maintaining animal beyond the optimum marketing age are low
- Labour costs are low and the work can be done by family members: women and children, or perhaps aged or handicapped people, usually the most vulnerable and least privileged social strata for whom rabbit husbandry, like that of other small animals , represents an attractive and remunerative occupation
- It represents a contribution to the family income
- Investment is low: infrastructure and equipment can easily be put together by the breeder and not much space is needed

RABBIT FARMING

In general, locally adapted, rustic breeds or crossbreeds are usually more suitable for small scale extensive production systems than recently imported exotic animals from intensive production systems. The growth rates of rabbits range from 10 to 20 g/day in the tropical regions compared to

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temperate countries, where growth performance typically is between 35 to 40 g/day (Lukefahr and Cheeke, 1991). Heat stress and quality of the diets decides these differences. High ambient temperatures can cause infertility in breeding rabbits, bucks being more sensitive than does. The house for rabbits can be made from local materials, such as small poles or sticks and bamboo. The main idea for designing of houses was to prevent losses from predators. Proper hygiene and management of cages could prevent the spread of certain epidemic diseases. Diets should consist of nutritious and palatable grasses, forages and legumes that can adapt to the region. It was also recommended to use local feed resources which farmers can produce in plots to provide diets that have high contents of digestible energy and protein.

INTEGRATION OF RABBIT FARMING

Many countries have focused on rabbit projects as a means to target poverty alleviation. A sustainable system of rabbit production involves the use of renewable on-farm resources, such as local breeds, feedstuffs from forage or garden plots, local materials for hutches and other equipment, and family labour. The key is low investment and operational costs. In addition, the integration of rabbits with other farming enterprises generally results in “increasing the whole more than the sum its parts” (i.e., nutrient recycling among aquaculture, garden and vermiculture activities) (Lukefahr, 2007).

Livestock convert plant materials that are low in nutritive value into high quality products and return nutrients to the soil in the form of faeces. This synergistic interaction between livestock and crop can improve the sustainability of the farming system and improve soil fertility. Livestock faeces, including rabbit wastes and human excreta have been used as materials for biodigesters that aids to improve the environment by reducing methane emissions and preventing deforestation. The faeces from rabbits make excellent compost, which is rich in organic matter and nutrients that can produce remarkable results for the home garden and flowers.

ANIMAL PRODUCTS FOR MALNUTRITION

Rabbit meat is lean, rich in proteins of high biological value, low in cholesterol content and high in linolenic acid, this makes the rabbit meat to be recommended by nutritionists over other meats. Rabbit meat was richer in calcium (21.4 mg/100g) and phosphorous (347 mg/100g) than other types of meat and lower in fat (9.2mg/100g) and cholesterol (56.4 mg/100g) (Nistor *et al*., 2013). This high protein and low fat content of the rabbit meat is preferred over other meats to overcome malnutrition.

Many of the developing regions of the world are now facing a double burden of a growing population and malnutrition. In most developing countries in Asia, and even in food surplus countries, malnutrition still exists, which results in ignorance and poverty among rural peoples. Animal products have contributed from 3 to 45 per cent of total food calories for humans in the Asia-pacific region in 1999 with the lowest (3.0%) in Bangladesh and highest in Mangolia (45%), while Australia, Japan and New Zealand also consume high quantities of animal products, accounting for 20 to 30 per cent of food calories from animal products (Samkol and Lukefahr, 2008). Without the availability of animals that largely use agricultural by-products and forages and vegetative plants, there would certainly be less food production.

RABBIT POPULATION AND PRODUCTION

The world production of rabbit meat is of the order of 1.5 million tons. This would mean a per capital annual consumption of roughly 280g of rabbit meat; however, most inhabitants in many countries in many countries do not consume rabbit meat as compared to the consumption of 2.5-3 kg/year in France and 4-4.5 kg/year per capita in Italy (Lebas and Colin, 1992). Europe is indeed the centre of world rabbit production (75%). China ranks second, which specifically involves the central Chinese provinces, such as Sichuan and Szechuan (Samkol and Lukefahr, 2008). Some regions of Africa, Central America and Southeast Asia, particularly Indonesia are considered as less production areas. It was reported that the countries such as Indonesia, the Philippines, Thailand and Vietnam account for 87 per cent of the total doe population and Brunei has the largest number of breeding does per 1,000

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inhabitants (Bondoc *et al*., 1986). Vietnam led other countries in the total value of rabbit meat produced per 1,000 USD of the country's total gross national product. Rabbits are not reared in significant numbers in most countries of the Near East.

A SUCCESSFUL BACKYARD RABBIT FARMING

Lukefahr and Cheeke (1991) stated that a farmer rearing ten does, fed using forage based diet and using supplements produced from the farm can yield 200 fryers annually i.e., a breeding doe could produce 20 marketable offspring from 4 litters/year. The doe production can be increased to 6 litters per year, if concentrate feeds were included in their diet. Two to five fryers could be consumed weekly, and the rest sold for income, depending on the family size and its body weight composition. A live fryer weighing an average of 2.5 kg with a 60 per cent carcass yield should produce about 1.0 kg of edible meat of which there should be approximately 200g of protein. In general, backyard rabbit farming with the size of 4 to 5 breeding does can support the family financially with low investment and operating costs. It takes little time or money to either down-scale or expand the size of the operation with minimal economic risk. The market demand should be considered before looking for the expansion of the farm commercially to avoid flooding of the market with rabbits. In addition, rabbit meat should be competitive with other meats by setting the price lower than that of broiler.

RABBITS FOR FOOD SECURITY AND INCOME

Advantage of rabbits is their ability to convert plants into animal protein by directly consuming forages, which is appropriate in traditional agriculture systems in Asia that largely maintain mixed crop and livestock farming systems, where the small holder farmers decide the economic viability of animal products. Since rabbit production is a viable agricultural enterprise, the opportunity exists with the goal to alleviate poverty. Farmers can also wish to expand their farm by re-investing their capital, but before that market needs and consumer demand should be developed. Farm expansion should depend solely to alleviate poverty and malnutrition.

RABBIT PROJECT

Rabbit projects have been developed by governmental and non-governmental organizations to target families with the aim of poverty alleviation. Basically, four reasons exist:

- Low cost to the programme for breeding stock
- Low investment and operating costs to farmers
- Early benefits to farmers and loan returns to the programme and
- More rapid rate of project multiplication

Overall, there is minimum economic risk to both the programme and to farmers because rabbit project is not expensive. It is important that the project participants should be carefully selected and trained well by the programme to ultimately become successful rabbit farmers. Because of the complex connections between the root causes and the solutions of poverty, the goal of the rabbit programme may have several aims, which are typically directed at improving family health and nutrition, enhancing food security and increasing income (Lukefahr, 2007). A farmer should first receive rabbit training, establish forage plots or a garden and construct clutches and a place for rearing.

CONCLUSION

This paper has presented the poverty status in Asia and the appropriate strategies for establishing small-scale rabbit production units for small families to overcome poverty and malnutrition. It also discusses the rabbit rearing, integration, its population and production and its role in poverty alleviation. Hence, it is concluded that the developing rabbit farming is the more practical solution to overcome the food crisis in future and to make a country nutritious.

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REFERENCES:

[1] ADB (1999). Fighting poverty in Asia and the Pacific: The poverty reduction strategy. Asian Development Bank, Manila.

[2] Bondoc, O. L., Penalba, F. F. and Arboleda, C. R. (1986). Small scale rabbit production in the Philippines. Animal Production Technology (Philippines). Volume 2, Number 2: 23-26.

[3] Cheeke, P.R. (1986). Potentials of rabbit production in tropical and subtropical agricultural systems. *Journal of Animal Sciences*, ***63****, 1581-1586.*

[4] FAO (2001). FAO recognizes the increasingly important role of rabbit breeding: Global rabbit production exceeds 1 million tons. *Press released 01/57, FAO, Rome, Italy. http://www.fao.org/waicent/ois/press_ne/presseng/2001/pren0157.htm.*

[5] Lebas, F. and Colin M. (1992). World rabbit production and research: situation in 1992. *In: Proc. 5th World Rabbit Congress, 1992 July, Corvallis, USA, Vol. A, 29-54.*

[6] Lukefahr, S.D. (2007). Strategies for the development of small- and medium-scale rabbit farming in South-East Asia. *Livestock Research for Rural Development,* ***19 (138)****. http://www.cipav.org.co/lrrd/lrrd19/9/luke19138.htm.*

[7] Lukefahr S.D. and Cheeke P.R. (1991). Rabbit project development strategies in subsistence farming systems. *World Animal Review, 6, 60-70. http://www.fao.org/docrep/U5700T/u5700T0d.htm.*

[8] Nistor, E., Bampidis, V., Pacala, N., Pentea, M., Tozer, J., Prundeanu, H. (2013). Nutrient content of rabbit meat as compared to chicken, beef and pork meat. *Journal of Animal Production Advances,* ***3,*** *172-176.*

[9] Samkol P. and Lukefahr S.D. (2008). A challenging role for organic rabbit production towards poverty alleviation in South East Asia. *9th World Rabbit Congress, June 10-13,2008, Verona, Italy,1479-14.*