



## Necessity for Adoption of Artificial Insemination Technique and its Implications on the Livelihood of Nigerian Turkey Farmers

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### Abstract

*This article addresses the Nigerian turkey farmer's behavior towards the practice of artificial insemination despite its numerous benefits. Turkey farming especially breeding is a profitable business in Nigeria as it being practiced by both urban and rural dwellers. In fact, large number of the populace in Oyo state especially in Ibadan now made it a side hustle or full source of their daily livelihood. However, its full potential is yet to be tapped without Artificial Insemination to augment their production. Due to high cost of management and low return as a result lower fertility and hatchability, most of the farmers are forced out of the venture. Many factors have been associated with low fertility experience by the turkey farmer such as nutrition, biosecurity, mating ratio, housing management e.t.c and has been addressed in the past yet no obvious improvement in their turnout after 28days. It is therefore deemed that Artificial insemination practice may be the appropriate promising important tools to keep turkey farmers in business that can encourage bumper harvest, however, the awareness and adoption by Nigerian turkey farmers is quite low. These problems are, however, surmountable if the prevailing poor extension services to poultry farmers in the field of animal science are materially improved. It is therefore concluded that efforts should be made by the agriculture extension experts in Nigeria to create awareness and encourage the turkey farmers on the important of AI to improve their income.*

**Keywords:** Artificial insemination; Turkey farming; livestock Extensions; Nigeria; Awareness

### Introduction

Turkey breeding is now gaining popularity among poultry farmers in Nigeria (Oyeagu *et al.*, 2022). Besides its popularity, it also produces animal products to meet a part of the domestic consumption demand and provides income for both rural and urban smallholder farmers. Turkey is one of the largest animals of the poultry species, reaching 10-15.8 kg live weight (Mozdziak, 2019). This rapid growth in the industry was made possible by intensification of production and development of large breeds with standard live weights ranging from 15 to 17 kg for males and 8 to 10 kg for females, some of which were produced from homesteads (Ajala & Adesehinwa, 2006). In Nigeria, large strains/hybrids of up to 8-12 kg live weight and of white plumage are reared (Ironkwe & Akinola, 2010). However, the challenges of lower fertility faced in turkey breeding resulting from unsuccessful mating as a consequence of large, heavily muscled birds being unable to physically complete the mating process most times can only be overcome with Artificial insemination (AI)

(Marire, 2011). This is a serious and costly problem in the production of poults which usually cause a serious loss to the turkey farmers in Nigeria, despite their species are noted for high prolificacy, rapid growth and short generation interval for the genetic gain experience over the years till present (Balogun, 2022). Although turkey do mates naturally when subjected to free range, flock mating and associative mating pattern but the frequency and the efficiency of mating are questionable considering lower fertility results usually experienced by turkey farmer when their eggs are being taken to the hatchery for incubation to hatch into poults after a maximum period of 28days which naturally lead to low return and forced many turkey farmers out of business

Conversely in Nigeria chicken production such as noiler chicken production, this technology is not really necessary. It has not been necessary to implement AI programs because natural mating still results in adequate fertility levels, except for the use of extender to reduce cost of rearing males and effective use



of elite sires, and also necessary in some special breeding work for research purposes (Balogun 2019; Balogun et al., 2022; 2023). Certainly, the use of artificial insemination in turkeys as in cattle, can improve fertility; however, the attitude of turkey farmers towards adopting this technology to improve their output is still very low despite its potential benefits.

AI was the earlier reproductive biotechnological tool applied for improvement in poultry production, as it allowed wider use of genetically superior sire with high productive performance (Mohan et al. 2018). Pioneering efforts to establish AI as a practical procedure began in Russia in 1899 by Ivanow, who studied AI in domestic farm animals including poultry (Mohan et al. 2018). Moreover, the tremendous genetic gain experience in farm animals such as chicken broilers and Holstein Frisian dairy cows (Havenstein et al., 2003; Brotherstone and Goddard, 2005) was as a result of the use of reproductive biotechnology tools such as AI. Notably, low acceptance and under-use of breeding tools especially by the developing countries have been suspected to have major retarded influence on genetic improvement of their livestock (Serradilla, 2008; Nielsen et al., 2011 and 2014), more importantly in country like Nigeria. Among the livestock that has not experience tremendous genetic improvement in Nigeria due to the less or no use of reproductive biotechnology like artificial insemination is turkey species.

It has been observed that turkey farmers in Nigeria are finding it difficult to practice artificial insemination in their farms despite its awareness probably because of the technicalities involved or the time and cost of implementing such technique as well as facilities and equipment to carry-out the practice. Obviously the benefits that could be gain in return from AI use out-ways its disadvantages. It is therefore conceivable that improving the level of extension services by the livestock extensions may be one of the strategies to increase the awareness of artificial insemination in turkey production. Sinkaiye (2005) equates help in extension to empowering all members of the farm household to ensure holistic development. Some of the advantages of artificial insemination in the turkey farming are:

1. Increased mating ratio: Normally one tom can mate up to three to five hens however, with artificial insemination this ratio could be increased fourfold (Balogun et al., 2021).
2. Easy and quick detection and culling of poor reproductive sexually matured males
3. Line breeding can be practice: Older males having outstanding performance can be used for several generations, whereas under natural mating their useful life is limited.
4. Valuable male birds having the leg injury can still be used for artificial insemination.
5. Elimination of preferential mating: When there is poor fertility caused by preferential mating, it can be eliminated.
6. Successful cross breeding: Cross breeding cannot be achieved under natural conditions in turkey production. With AI cross breeding could be successful.
7. Increase efficiency of the elite sire. Having more progeny from the elite sires
8. Predispose the female to lesser stress compare to natural mating
9. Increase income and farmers profit.
10. Proper and routine evaluation of the male reproductive ability through visual examination of the semen.

#### Commercial value of turkey

1. Turkey are used as a major source of protein (meat and eggs), and also the feathers are exclusively used for decorative purposes as did many other meso- American cultures (Wikipedia-Domestic Turkey, 2009). Turkey litter (droppings mixed with bedding material, usually wood chips) is being used as a manure for plants

#### 2. Economic potential of turkey Production

Turkey production in Nigeria has largely remained at the small holder level due to various reasons ranging from management problems to lack of incentives by the government. There is also obvious lack of information on specific requirement for turkey production in Nigeria which may be attributed to low level of research in Nigeria. Moreso, the lack of interest



on turkey production was mainly due to the government policy that liberalized turkey importation since 1977. But, the trend has changed, due to the imposed ban on importation of turkeys in Nigeria. This has actually given room to young farmers who want to venture into the production of turkeys (Be it local or the exotic breed) which has great potentials in the supply of good quality animal protein/which Nigerians are lacking according to WHO and FAO and high rate of turnover of investment

### 3. Potential Benefits

Turkey don't need much market persuasion before you can sell them. You can sell as much turkeys as possible within a day with the right market survey

- Turkey farming business in Nigeria is not capital intensive as people imagine it to be. As a young farmer, you can start small
- The more local breeds produce the less the need to import. This will enhance demand and increase supply locally.
- They have high return on investments with the proper knowledge and adequate facilities.
- Nigeria indigenous turkey are easy to manage in terms of handling and transportation.
- Empowerment, due to self-employment and employing others.

### Awareness of AI in Turkey Production in Nigeria

In South western part of Nigeria, the poultry farming is much more practice than northern and eastern Nigeria due to a better market route and awareness. The AI is more practice by close to 50% of poultry breeding farms especially in broiler breeders. However, the use of AI in turkey production is considerably low to nothing. In Oyo state, south western part of Nigeria, some of the turkey farmers are aware about AI Facility, due to awareness lectures organized by AI experts and success accrued to the use of AI. Although more farmers know about the AI facility but due to inadequate AI technicians, it is not 100% successful.

In Northern and eastern part of Nigeria, lack of awareness of AI practices is high

probably due to lack of facilities like hatchery. Overall 0% -10% of famers in this region are aware of artificial insemination techniques in poultry.

### Factors that enhance adoption of AI practices by turkey farmers in Nigeria

1. Free training on use of Artificial Insemination
2. Provision of artificial insemination facilities at affordable rate
3. Ease of access to artificial insemination facilities
4. Provision of hatchery facilities
5. Accessibility to the hatchery
6. Increase fertility and hatchability
7. Increase in income of the turkey farmers
8. Prevention of infectious diseases

### Conclusion

In Conclusion, efforts should be made by the agriculture extension experts in Nigeria to create awareness and encourage the turkey farmers on the important of AI to improve their income.

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