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Abstract: A study was carried out to characterize papers published in the books of proceedings of conferences of the Nigerian Society for Animal Production (NSAP) over a period of ten years (1998-2007). Data obtained were analysed using descriptive statistics. The results of the study showed that a total of 1503 papers were published during the period reviewed with 1998 book of proceedings taking the lead in number of papers published (327). Based on content, scientific research took the lead (1143 articles) while review papers had the lowest number of publication (30 articles). Articles on animal nutrition and management constituted the bulk of publications reviewed (288 articles) while those on wildlife management and production had the least publication (3 articles). Most studied type of animal was monogastric animals (575 papers) followed by ruminants (431 papers) and microlivestock (272 papers). In descending order, the species studied were ranked as poultry (469 papers) > rabbit (187 papers) > cattle (132 papers) > goats (144 papers) while crickets, clams, giant rat, bee, guinea pig, donkeys and monkey were the least studied species with a paper each. In conclusion, most papers published in NSAP proceedings between 1998 and 2007 were scientific research in content and animal nutrition and management received the greatest attention from scientists; thus making it the most studied specialty. It is, therefore, recommended that specialties like animal biotechnology, animal waste management and wildlife management and production should be encouraged to grow by emphasizing them in our curricula, staff training and research works.

Key words: Animal production · Conference · Nigerian Society for Animal Production · Proceedings · publication

INTRODUCTION

Conferences are avenues where research works are presented and opened for discussion [1]. Presentation of research results is the most effective way of passing new information to the public; therefore, papers published in books of proceedings of conferences are ways of exchanging and disseminating research knowledge and innovative practices related to the broad spectrum of a particular discipline [2]. The main objective of the Nigerian Society for Animal Production (NSAP) is to promote animal production in Nigeria through the dissemination of research findings. From the inception of the Society up till 1997, research findings were disseminated through books of abstracts which present a summary of the major findings without going into the details of how the work was carried out.

In its 1998 conference, which marked the silver jubilee anniversary of NSAP and the inauguration of the West African Society for Animal Production (WASAP), a book
of proceedings was adopted as the medium of dissemination of research findings. This book of proceedings consists of a compilation of four-paged full papers on a particular subject with sections on introduction, materials and methods, results and discussion and conclusion in addition to the abstract. Since 1998 this approach has been maintained as the mode of dissemination of research findings presented at NSAP conferences. This study is, therefore, aimed at classifying papers published in NSAP books of proceedings according to content, type of animal, species and specialty between the years 1998 and 2007.

**MATERIALS AND METHODS**

**Materials:** All publications in the books of proceedings of the Nigerian Society for Animal Production (NSAP) conferences between 1998 and 2007 formed the basis of this work. The books were sourced partly from active members of the Society and partly from institutional libraries.

**Methods:** All papers published in the books of proceedings of the Nigerian Society for Animal Production (NSAP) conferences between 1998 and 2007 were counted and classified based on the following criteria.

**Content:** Papers were classified based on content according to the following criteria.

**Case Report:** These are detailed reports of diagnosis, treatment and follow up of patient [3]. It includes information like age, breed, sex, clinical signs and doctor’s comment; mostly reporting cases of incidence of disease in animals.

**Scientific Research:** These are systematic observation of phenomena for the purpose of learning new facts or testing the application of theories to known facts [4], example research works conducted in the laboratory and field experiments.

**Survey:** These are the collection of data from a given population for the purpose of analysis of a particular issue [5]. In this type of study, data is often collected from only a sample of a population. An example is a paper that involves the use of questionnaires for data collection over a period of time.

**Review Paper:** The paper summarizes the current state of knowledge of the topic by synthesizing the results from several literatures to produce a coherent argument about a topic or focused description of a field [6].

**Specialty:** Papers were classified based on various areas of specialization in animal production on which studies were conducted. They include: animal health (AH); animal biotechnology (AB); animal breeding and genetics (ABG); Animal nutrition and management (ANM); animal production system (APS); microlivestock production (MP); livestock products and processing (LPP); rural sociology, livestock economics and extension (RSLEE); pasture production and range management (PPRM); animal waste management (AWM); and wildlife management and production (WMP). This classification was based on the objectives of the paper, not necessarily based on the classification adopted in the respective books of proceedings.

**Type of Animal:** Classification was done as stated below.

**Ruminant Animal:** Any cud-chewing ungulate, including antelope, camels, cattle, deer, giraffes, goats, okapis, pronghorn and sheep [7].

**Monogastric Animal:** These are animals having only one digestive cavity [8]; examples include dogs, cats, rats, poultry, e.t.c.

**Microlivestock/Minilivestock:** Many small animals, vertebrates and invertebrates, homoiotherms (endotherms) and poikilotherms (ectotherms), used by man since he gathers, hunts or collects them in the wild, bred under controlled conditions in captivity, little known in animal production and having a potential benefit either nutritionally for food or economically for animal-feed or revenue and currently not being utilized to their full potential [9]. Examples include, but not limited to, rodents, guinea pig (Cavia porcellus), giant African land snails, annelids (living in litter and manure convert vegetable refuse to animal protein which can be used as feed for pigs and poultry), frogs, insects, e.t.c.

**Unclassified/General:** In this case, animals were not the focus of the paper or the paper was of a general nature.

**Mixed Type:** This is where an assortment of animals were the focus of the study; example a paper that reports findings on ruminant and monogastric animals together.
Species of Animals: Papers were classified based on species as goat, sheep, cattle, camel, etc.

The data was collected after each paper was read thoroughly and extractions were made for each year. The total for the year was recorded and the total number of publications between 1998 and 2007 was collated and analyzed using descriptive statistics. The data herein is presented without quoting names, provinces, institutions or regions.

RESULTS

Distribution of Publications According to Conference Year: Figure 1 presents the distribution of publications in NSAP books of proceedings according to year. A total of 1503 papers were published in the books of proceedings of NSAP conferences between 1998 and 2007. Book of proceedings for the year 1998 had 327 papers, making it the highest in terms of publication in the years being reviewed while book of proceedings for the year 2005 with 75 papers had the lowest publication.

Distribution of Publications According to Content: Figure 2 shows the distribution of papers published in NSAP books of proceedings according to content. Scientific research had the highest number of papers published (1143 papers). Surveys and case reports had 250 and 80 papers, respectively while reviews had the least (30 papers).

Distribution of Publications According to Specialty: Figure 3 highlights the distribution of papers published in NSAP books of proceedings according to specialty for the entire period of the study (1998-2007). Animal nutrition and management (ANM) took the lead with 571 papers published, followed by rural sociology, livestock economics and extension (RSLEE) which had 208 papers published. Others include animal physiology and reproduction (APR) (94 papers), livestock products and processing (LPP) (72 papers) and pasture production and range management (PPRM) (50 papers). Animal production systems (APS), animal biotechnology (AB), animal waste management and wildlife management and production (WMP) had 21, 11, 4 and 3 papers, respectively.

Distribution of Publications According to Type of Animal: Figure 4 presents the distribution of papers published in NSAP books of proceedings between 1998 and 2007 according to type of animal. Monogastric...
Fig. 3: NSAP conference proceeding papers according to specialty (1998-2007)

Fig. 4: NSAP conference proceeding papers according to type of animal (1998-2007)

Fig. 5: NSAP conference proceeding papers according to species (1998-2007)
animals had the lion share of the papers published (572 papers). Ruminants, microlivestock and papers in the general/unclassified category had 431, 272 and 144 papers, respectively. The least was the mixed type publications which had 81 papers.

**Distribution of Publications According to Species:**

Figure 5 shows the distribution of papers published in NSAP books of proceedings for the entire period under study (1998-2007). Poultry (which include all avian species) had the highest number of papers published with 469 papers, followed by rabbit which had 187 papers. Other species such as cattle and goats had 132 and 144 papers, respectively while papers in the general/non-species category had 145 publications. Crickets, clams, giant rat, bee, donkey, guinea pig and monkey had the least with only a paper each.

**DISCUSSION**

The number of papers published in the NSAP books of proceedings varied with the year of conference. For instance, conference held at the University of Agriculture, Abeokuta in 1998 had the highest number of papers (327) published. This could be attributed to the fact that it coincided with the silver jubilee celebration of NSAP and the inauguration of the West African Society for Animal Production (WASAP). Foreign papers mainly in French formed part of the publications in the 1998 book of proceedings probably due to attendance of scientists from neighbouring francophone West African countries. These papers were translated to facilitate categorization.

This study also revealed that, between 1998 and 2007, there has been consistency in organizing NSAP conferences and also publishing of books of proceedings. However, the number of papers published fluctuated. This could be attributed to poor infrastructure and lack of funds, which greatly affect the rate of research work [10]. Other factors could be the quality of research work as one of the objectives of NSAP is to disseminate quality information to members. Therefore, for any research work to be published in the books of proceedings it should satisfy this objective.

Scientific research had the highest number of papers published based on content. This could possibly be an indication of the effort being made by NSAP scientists to develop the animal production sector of the Country [11]. It could also be attributed to the desire of NSAP members to go into research work because it adds value to their profession and also give them a chance of being promoted or honoured by the Society.

Animal nutrition and management was the most studied specialty. This trend could imply an attempt by NSAP scientists to improve on the efficiency of livestock species per unit area and also to improve on the quality and quantity of animal products. Moreover, studies on nutritional requirements are of less duration to yield applicable results than in breeding, health and disease control [12].

NSAP scientists that specialize in Rural Sociology, Livestock Economics and Extension (RSLEE) work directly with the farmers to test new technologies in practice and also assess their acceptability and affordability. They take the livestock farmers into confidence and utilize the farmers’ traditional knowledge in providing a better solution to his/her problems. Therefore, investigating the acceptability of a technology born out of research could go a long way in providing a priority list of areas that need improvement in terms of research and development. Their central role in taking research results to the remote corners of the world and feeding back scientists could be attributed to the moderate publication rate observed in the current study.

The present study revealed an awakening in rabbit research, however, more research needs to be carried out in the area of microlivestock production (MP) as some important minilivestock have been marginalized by not making them subjects of in-depth research. Reasons for research into this important area could be due to the need to augment the animal protein intake of Nigerians and the biting inflation rate in the Country which has raised prices of meat cuts, egg and milk beyond the reach of the average Nigerian [13]. For a long time, cut portion of animal blood which has been boiled to coagulate have been sold in our markets and for some people, cow skin processed into “ponmon” is the part that can be accommodated within the household budget [13]. These could limit access to a healthy nutritional pattern. The low level of microlivestock production research as revealed by the present study needs improvement and could be attributed to unavailability of the animals for research work, lack of adequate information about the animals, lack of acceptability by consumers and lack of interest on the part of scientists. The microlivestock animals such as guinea pig, clam, snail, cricket etc, provide the most needed protein to humans. Some countries, like Peru, derive more than five percent of her meat from guinea pig [14].

Livestock products and processing (LPP) recorded low publications in the books of proceedings reviewed. This could be due to underdevelopment of modern animal products processing in Nigeria as a result of low
technological input and low level of private investment [15]. Very little work has been done on Nigerian livestock, regarding their meat production characteristics or grade standard to stimulate marketing and even processing. A system of identifying differences in value and acceptability of beef, poultry and milk might have increased consumer confidence and lead to the production of increased animal products [15].

Animal biotechnology (AB) had a record of papers in the current study. During the last few decades, especially in developed economies, the use of biotechnology has contributed to increased agricultural efficiency [16]. Food and Agriculture Organization (FAO) and International Atomic Energy Agency (IAEA) recognize that biotechnology can complement traditional animal science methodologies to improve livestock and fish productivity [16]. There are well-trained Nigerian researchers who when supplied with tools in biotechnology and financial support to carry out well focused or coordinated research can help propel the country towards self-sufficiency in animal production [16]. The way forward is to adopt biotechnologies adapted to Nigerian needs and requirements.

Animal Waste Management (AWM) and Wildlife Management and Production (WMP) were also identified as one of the neglected areas. Animal waste generally refers to manure but also includes wastewater, urine, bedding, poultry litter and animal carcasses. Animal waste; which can be used to improve soil fertility and also as a means of generating biogas [11], is yet to be exploited by Nigerian scientists. The low research interest in Wildlife Management and Production (WMP) could be due to lack of skilled personnel, equipment for game cropping and inadequate finance to carry out research on the wild animals [17].

Monogastric animals were the most favoured by NSAP scientists and researchers. This could be due to fact that the animals are readily available, equipments and costs of production are relatively affordable and results are obtainable at a faster rate. Ruminant animals ranked second to monogastric animals in terms of papers published, which could also be due to their availability. However, the cost of carrying out research with ruminant animals is higher and also requires more time to obtain optimal result. According to Oyenuga [17], a number of University teaching and research farms at present are grossly inadequately financed and are thus, seriously starved of funds which reduces their competency to contribute to the National food production programme even when they can or have obtained the land.

CONCLUSION AND RECOMMENDATIONS

The present study has shown that NSAP scientists focus their attention more on scientific research work. The most researched specialty was animal nutrition and management (ANM). However, specialties such as animal biotechnology, animal waste management (AWM) and wildlife production and management (WPM) received less attention from scientists. These specialties should be encouraged to grow by emphasizing them in our curricula, staff training and research works.

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REFERENCES