

Competency Needs of Secondary School Graduates in Breeding for Entry into Pig Production Occupation in Benue State

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Abstract: *The study identified the competency needs of secondary school graduates in breeding for entry into pig production occupation in Benue State. Five research questions were answered for the study. Survey research design was adopted for the study. The population of the study is 231 persons comprising 208 agricultural science teachers and 23 agricultural extension agents in the State. All members of the population were used. The data for this study was collected through a self-structured questionnaire titled Competency Needs in Breeding for Entry into Pig Production Questionnaire (CNBEPQ). The questionnaire was structured in a four-point scale of strongly of H.N-highly needed, MN- Moderately needed, S.N-slightly needed, NN- not needed with a corresponding value of 4, 3, 2 and 1 respectively. Validation of the instrument was established with the aid of three validates. The reliability test yielded 0.86. The instrument was administered by the researcher and two research assistants. 220 copies of the instrument were retrieved while 11 were lost. Mean and standard deviation were used to analyze the data for answering all the research questions. The competencies in breeding needed by secondary school graduates for entry into pig production occupation are: breeding stock selection (5items), detection of pigs in oestrus (5items), mating procedure (5items), care of the piglets (13items) and weaning (5items). It was further recommended among others that the identified breeding competencies should be used to train the graduates in vocational training centers by extension agents and that the graduates should seek personal development by participating in training to acquire the skills so they could be gainfully employed in pig production.*

Keywords: *Competency, needs, occupation, breeding and pig production*

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Introduction

Benue State is known as the food basket of the nation due her fertile land and the fact that majority of the populace take farming as an occupation. Occupation is a position with an array of responsibilities or tasks. This can also be regarded as job depending on hoe it is being used. Gracia (2021) asserted that a job includes a number of tasks, a position or a cluster of positions in a group structure. This implies that a lot of occupations exist in pig production. Farmers Trend (2016) emphasized that pig production occupation can extend to large highly specialized pork

production systems requiring sufficient unique competency different from other livestock production.

Competency was defined by Maxime et al (2020) as knowledge, skills and attitudes required in a job. The author added that competencies are measurable knowledge, skills, attitudes, behaviours and other characteristics that an individual needs in order to perform work roles or occupational functions successfully. Competencies specify the 'what' to do of the job and the 'how' the job tasks should be performed successfully. John (2011) said that students who graduate from secondary schools need to acquire basic or rudimentary knowledge and skills of pig breeding in order to enter into the occupation. For secondary school students of Agricultural Science in Benue State to be competent to enter into pig production occupation, they need to acquire basic or rudimentary competencies. These basic competencies are herein referred to as "entry-level competencies". Entry-level competencies in the opinion of John (2011) are essentially the knowledge and skills possessed by individuals as they make transition to the world of work. They serve as points of entry into occupations or jobs. In the context of this study, entry-level competencies are those beginning, or basic knowledge, skills and attitudes that secondary school graduates of Agricultural Science need to acquire in breeding for entry into pig production occupation in Benue State. "Need" in the view of Asogwa (2013) was defined as lack of something that is required for survival.

Entry-level competencies in pig breeding is therefore needed for use by teachers in teaching the students the basic knowledge and practical skills in breeding for success in pig production as an occupation. Students graduate from the curriculum of Agricultural Science in Secondary Schools without acquiring the basic practical skills in the various content areas including pig breeding. This is due to lack of basic or entry-level competencies in pig production to be acquired by students in the curriculum of agriculture in secondary schools. Therefore, if entry-level competencies in pig breeding are identified and used for teaching the secondary school students of Agricultural Science in Benue State, they would acquire them to fit into pig production occupation after graduation and gradually progress by it especially as breeding is one of the most technical aspects of pig production.

These competencies in pig breeding cuts across all the stages of breeding pigs from mating throughout the pregnancy period till farrow and care of the piglets till weaning. Akinbola (2019) mentioned that beginning farmers need to be able to possess some basic breeding skills including, identification of breeds, differentiating between sow and doe, mating methods and techniques. According to John (2017) the basic competencies needed by beginners in pig breeding are selection of suitable breeding stock, detection of oestrous, mating and care of the piglets. As beginning livestock farmers, secondary school graduate need to be able to carry out basic tasks in pig production from where they can grow in experience. In the context of this study, the competencies needs of secondary school graduates in breeding for entry into pig production occupation are classified into selection of breeding stock, detection of pigs on Oestrus, mating Procedures Management of Piglets and weaning.

The first step in the breeding of pigs is the selection of suitable breeding stock. Guy, Thomson and Hermes (2012) emphasized that not all healthy looking breeds are suitable for breeding, maintaining that farmers need to be competent in identifying matured sow for breeding

based on some predetermined external qualities south for and based on the pedigree. Secondary school students studying agricultural science in the state, therefore, need to know the ideal meat-type of pigs to enable them enter into pig production occupations after graduation. Muhanguzi, Lutwama and Mwiine (2012) outlined the desirable features of an ideal meat type pig (porker) to include; maximum development of muscles with low content of fat, or high yield of dressed carcass, greater thickness through the rear quarters and shoulder than through the back, wide, deep well-developed and full hams, full back with well-arched ample width, sides that are long, deep and smooth

In addition to having desirable conformation, ideal pigs should also have accurate breed and sex characteristics. Sex characteristics, are those features that adopt the animal for reproduction (Ryan, Fraser & Weary, 2015). Further, Francis, Denis, Jean and Marie (2016) pointed that selection of good stock for breeding requires that farmers learn how to keep standard and accurate record of all the characteristics of the stock available in the farm at any particular point in time. FAO (2009) noted that prior to selection of breed, farmers are to compare performance records or data of sows and select the stock with the 'best' performance records

The next stage of breeding is the detection of pigs on Oestrus. Following successful selection of breeding stock with desirable traits, knowledge of sexual maturity and thus periods and signs of oestrus (heat) in maiden gilts and breeding sows is essential (Ukoha, 2023). The secondary school Agricultural Science students in Benue State should be able to detect these signs in a herd. Oestrus period is the time the sow or gilt is willing to be mated by the boar. It starts before conception and can continue after weaning. Mutua et al (2011) said that daily checks should be made of the sow's oestrus condition. This should not be done before but sometime after feeding. Initial signs of oestrus as outlined by the authors include: (1) redness and swelling of the vulva (most obvious in gilts than in sows); (2) nosing the vulva by the boar and prodding the sow in the stomach; (3) the sow stands rigid to be mounted by the boar with the back legs slightly apart (the standing reflex). They added that without a boar the standing reflex can be initiated in a good oestrus sow. The animal should be approached quietly and prodded gently with the fist in the flank, after which the back is pressed with both hands (Farm Animal Welfare Council, 2009). If the sow permits this, the pig breeder can try to sit astride gently on the sow's back (not for gilts). If the animal does not move from her position, then oestrus is convincingly demonstrable. The length of the oestrus cycle averages 21 days but may range between 19 and 23 days (Nwangbo, 2021). The author outlined signs of oestrus to include the following (1) restlessness and walking around the fences (or walls); (2) swelling of the vulva; (3) mounting other pigs; (4) mucus discharge from the vulva; (5) frequent urination and (6) standing rigidly when pressure is applied to her loin or rump area. They stressed that animals showing signs of heat should be bred. Nwangbo (2014) outlined signs of oestrus under two major stages namely: pro-oestrus and oestrus. Pro-oestrus is indicated by the following signs: (1) the vulva swells in gilts (2) the vulva becomes congested or red (3) the udder develops in gilts (4) the female becomes nervous and easily disturbed (5) she is ridden by other sows but does not stand (6) vaginal walls become reddened (congested) (7) clitoris becomes more prominent (8) vaginal fluids thicken; produce strands between fingers. The second stage marks the actual oestrus with the following signs: (1) the vulva reddening starts to subside (2) there is a slight mucus discharge in the vulva (3) the female becomes more restive (4) the female starts to mount other sows and if mounted starts to

stand (5) emission of a characteristic high-pitch grunt (6) she actively seeks boars (7) has a decreased appetite (9) stands to back pressure, particularly in the presence of a boar (10) has a clean vulva in outdoor units (post-service) (11) rubs and is attracted to stock people (12) allows coitus.

Mating is the next competency need by secondary school graduates for entry into pig production occupation. This is the process of bringing the sow and boar together for reproduction purpose after oestrus detection as discussed above. Two systems of mating as recognized by Yunes, Vonkeyserlingk, Hotzel and Brazilian (2017) are commonly used in pig breeding. They include pasture or pen mating and hand mating. Pasture mating is a system whereby the boars are allowed to run with a group of females and free to mate each one as it comes on heat. This takes place outside in the pasture or in the pen. In hand mating, the boars and sows are housed separately. The stockman identifies the signs of heat in the females and generally brings the boars to the sows or vice versa. Ogba (2013) recognized artificial insemination as another system of mating. The authors defined artificial insemination (AI) as the deposition of spermatozoa in the female genitalia by artificial rather than by natural means. Nweze (2007) identified three main stages in artificial insemination to include (i) collecting the semen (ii) processing the semen, and (iii) insemination. The authors explained that semen collection involves ability to: (a) simulate for the boar the natural condition » found in the female reproductive organ. Two principal methods are used in collecting the semen - (i) the artificial vagina and (ii) the electro-ejaculator. Processing the semen involves the following activities: (a) cooling it to the storage temperature (b) 1 diluting the semen if one ejaculate is to be used to provide semen for a number of sows especially if the insemination service is to be extended to the rural areas. The actual insemination of the semen involves inserting a disposable plastic pipette with a -tip modified by a short bend which aids in the penetration of cervix. The pipette is connected to a 50 ml syringe. The author warned that a fresh stockman should seek the assistance of a trained veterinarian in carrying out artificial insemination. In his own contribution, Thomson (2010) asserted that the stockman should consider the age of the animal selected for breeding prior to mating. He added that boars of 9-12 months and gilts of minimum of 7 months of age should be selected for mating. The author also said that (i) gilts should be mated after the 3rd and 4th oestrus for the first time (ii) confirmation of pregnancy is necessary in gilts prior to the next mating and (iii) boars must be separated from the sow after mating among others.

After mating, it is expected in practical terms that under normal health condition, pigs should farrow in 3 months, 3 weeks and 3 days. The care of the piglets after birth is a very important stage *that beginners need. FAO (2009) described farrowing as the process of giving birth to a litter. They added that farrowing takes place between 112 and 115 days after mating and successful fertilization of the male and female gametes. Two major signs are imminent during the period of farrowing: (i) the sow becomes restless and makes a nest (ii) the vulva swells and her udder fills with milk. The authors advised that the sow should be left undisturbed at this critical period. The sow should not be given food until a few hours following farrowing. Water, however, must be made available to her. Guy, Thomson and Hermesh (2012) outlined the following management guides at the farrowing period: (a) clean and disinfect farrowing units one week prior to farrowing (b) keep following unit at 21 - 26°C (c) use supplemental heat if necessary at farrowing time to raise the temperature to the range of 32 - 35°C in the pig's sleeping area (d)

isolate farrowing house for disease control (e) use foot-bath at the entrance of the farrowing unit (f) wash gilts or sows with disinfectant prior to farrowing (h) do not feed on following day (i) as part of pre-farrowing care, supply limited laxative feed. Addition of rice bran to the feed gives the desired laxative feed (j) give intravenous injection of iron to the piglets 2-3 days after farrowing (k) keep farrowing unit draft-free (l) clip off needle teeth (remove half of the teeth) (m) use farrowing crates or rail guards (n) keep record of farrowing. Ezeibe (2010) stated the dangers/difficulties associated with farrowing can lead to high mortality rates and of both sows and piglets. The author emphasized that the skill of the stockman is to learn to recognize what constitutes a normal farrowing so that any departure from normal can be detected and corrected. According to the author, two sure signs that mark the commencement of farrowing include: (i) the sow will show increased restlessness. This is a direct contrast to the peaceful behaviour exhibited at late pregnancy. The sow then starts to make a nest by rearranging her bedding (ii) distended udder and turgid ripples. Milk can be withdrawn from the udder about 12 hours prior to the start of farrowing. The author recommended that sows farrowing under intensive confinement conditions should be supervised by the best stockman in the unit. This is not practicable under extensive conditions when sows are generally better able to farrow unaided. Nella (2020) maintained that two major problems encountered during pregnancy include: (i) the process may become painful particularly for gilts if the piglets are relatively large. This can result in the sow savaging her litter. He advised that if this is observed, the stockman should remove all piglets until farrowing is completed, and then gradually re-introduce them under close supervision, (ii) delayed farrowing - after farrowing has started, any time-gap of greater than 30 minutes between presentation of piglets probably means that a piglet has been stuck in the birth canal. The stockman should disinfect and soap his arm and pass it gently into the birth passage to release the stocked piglet. Alternatively, a simultaneous injection of oxytocin can release the entrapped piglet thereby making farrowing to proceed again normally. Passage of the after birth is the only sure sign to indicate the completion of farrowing. Imminent signs of farrowing in the opinion of Bonneau et al (2011) are (1) the temperature may rise a few days before farrowing (2) almost 24 hours prior to following, the sows become extremely restless (3) milk can be expressed in profuse ; amounts from the teat 8 to 16 hours prior to farrowing (4) sows begin to arrange a nest at least 5 hours before farrowing if bedding is available (5) abdominal contractions may be noticed about 3 hours before following begins (6) within 2 hours of following, blood or bloody fluid will be expelled from the vulva. Farm animal welfare council (2009) added that imminent onset of farrowing is characterized by the following signs: K (i) swelling of the vulva which starts 3 or, 4 days before birth (ii) appearance of mammary secretions with the presence of colostrum at the teats (iii) swelling of the whole udder (iv) increased respiration, and (v) grunting. Liquid flows out between each birth about 15 minutes and farrowing (parturition) may last from 2 to 8 hours. Nwangbo (2014) added that infra-red heaters should be introduced in the creep area of the pen in order to prevent crushing of the piglets by the dam immediately after farrowing. In an area where there is no electricity supply, gas or petrol heaters should be made available. The heaters attract piglets and save their lives particularly during night time farrowing when surveillance is not possible. Emeya (2017), gave the following management guides during the farrowing period: (i) farrowing facilities must be cleaned and disinfected before the sows are placed in them (ii) traffic through the farrowing house should be kept at a minimum (iii) sows must be washed with soap and warm water before they are put in the clean stalls or pens at least

one day before they are due to farrow (iv) use guard rails and artificial heat to protect and warm the baby pigs. Maxime et al (2020) is of the view that good management is of utmost importance during the farrowing time. A good and well-designed farrowing environment is necessary for the following reasons: (i) it reduces the likelihood of the piglets being crushed or savaged by the dam (ii) it provides a relatively hygienic environment, and (iii) it facilitates good stockmanship.

Successful farrowing is immediately followed by care and management of the sow till weaning stage. The young pigs should be managed with utmost care before weaning. Enem, Owoleke and Suleiman (2010) opined that the new born piglets are unable to control their body temperature efficiently and are prone to chilling and low blood glucose (hypoglycaemia). The authors advised that an external source of heat be provided to maintain constant body temperature. The temperature of the farrowing pen should be maintained at about 32°C until the piglets are weaned at 5 to 6 weeks of age. This may be done by installing electric heat lamps (one 250 watt bulb per litter) in the creep area provided for the piglet. The authors added that it is also necessary to ensure that the piglets start suckling as soon as possible after birth and that they receive colostrum within the first 24 hours of post-natal life. This is because it is only within this period that the intestinal wall of the piglet can absorb the immune globulins (complex protein molecules) without breaking them down to their constituent amino acids. One of the management practices to be carried on piglets is cutting the umbilical cord at birth. Maxime et al (2020) said that piglets are born with long Umbilical cord measuring up to 30 cm. They explained that the umbilical cord should tie off (ligatured) in order to prevent loss of blood and cut within 24 hours after birth so that only 5 cm remains. The point of excision should be disinfected with iodine solution. Eventually, the stump on the piglet dries up and falls off leaving a clean uninfected navel. The authors also added that piglets at birth have 4 pairs of wolf or needle teeth (two pairs on either jaw). These can irritate the sow's udder during nursing. These should be removed within 4 days of birth using sterile pliers. Piglets should be identified as early as possible usually 2 to 4 days after birth for purposes of adequate records. A common method of identification is ear-notching which consists of clipping out pieces of the ear using specially designed ear-notching pliers to indicate numbers. Iron supplementation is a vital management practice for piglets. Bonneau et al (2011) pointed that the rapid growth of piglets demands an increased amount of haemoglobin with its basic iron content. He explained that a piglet requires 7 mg of iron per day during the first three weeks of its life. The birth reserve of iron is approximately 45mg and the iron provided by the milk is about 1 mg per day. This implies that without iron supplementation, the iron supply will be used up and the piglet will show symptoms of deficiency (anaemia). These symptoms include the following: (i) weakness (ii) rough hair (iii) wrinkling of the skin over the shoulders, neck and legs (iv) lack of vigour (v) poor mucous membranes (vi) white diarrhoea (vii) lowered resistance to infection and (viii) sudden death. In order to avoid the manifestation of the above symptoms and possibly death of the piglets, the author outlined the following ways of iron supplementation to the baby pigs: (i) rooting in the soil for 7pigs maintained on pasture (ii) clods of soil placed in the pen or creep (iii) oral dose of iron paste to be given on the 3rd and 10th days (iv) a solution of ferrous sulphate painted on the sow's udder each day (v) intravenous injection of iron in a single dose of solution containing at least 100 mg iron (vi) iron fumarate in a cereal base scattered on the floor from the 3rd to the 27th days of life. Nwangbo (2014) Buttressed that iron should be given to piglets within 3 to 5 days of birth to avoid iron- deficiency anaemia. They

added that this can be done in one of three ways: (i) by lswabbing the sow's udder daily for about 7 weeks with a solution of iron sulphate (0.5kg) in 4.55 litres of water), so that the piglets ingest some iron when they are nursing (ii) by the intravenous injection of iron compounds such as iron dextran at about 3 days of age (iii) by placing some clean earth in the creep area for the piglets to eat. By so doing, they imbibe some iron where the soil is reddish brown. A good management of piglets also includes creep feeding. Farm Animal Ware Fare Council (2009) revealed that the name creep feed derives from the fact that the feed is placed in a section of the pen called the creep area where the piglets, but not the sows, can have access. They added that creep feeding should commence from around 10 to 14 days of age and continued until weaning in order to encourage dry feed consumption and k maximum mass gains during the suckling period. Castration (removal of testicle in the male piglet) is also an important management practice. Meat and poultry fact (2017) is of the pointed that male pigs not required for breeding should be castrated at about 3 weeks of age.

Nwangbo (2014) said that piglets should be weaned at any age from one to eight weeks, noting that with good management practice when the pigs weigh 13-16 kg. Ukoha (2023) outlined the following management considerations for weaning: (i) pigs should be handled and disturbed as little as possible immediately weaning. Any essential management task should be carried out at least two before weaning (ii) sow should be removed from the pen leaving only the piglets (iii) ad-libitum feeding (giving feed to the young animal as often as it requests it) is recommended in order to capitalize on the high growth potential of the young Feed intake should, however, be restricted as soon as any scours are seen (iv) at weaning, batches of pigs should be made up by selecting them from different litters according to body weight, transferring the weaned piglets to rearing pens at weaning. A technique of 'split' weaning can also be beneficial whereby the large piglets are weaned first and the small ones left with the sow for a further week, (vii) fresh water must be available at all times to the piglets. This encourages higher intake of creep feed. Weaning at 7 weeks, in the opinion of Emeya (2017) is recommended under tropical conditions due to reasons including: difficulties associated with providing well-balanced pre-weaning diets because of the very high price of dried milk, the impossibility of pelleting feeds, etc. John (2017) said that weaning takes place when the piglets are eight weeks old and weigh about 13 - 16 kg. The sow should be removed and the piglets left in the pen to lessen the stress to the young piglets. The author added that a few days after weaning there should be a gradual change of the feed from creep meal or pellets to sow and weaner meal. After one week the young piglets should be dewormed and moved to the fattening pen. The sow is expected to come on heat again 2-7 days after weaning. Breed selection, farrowing, and weaning discussed above form the three essential aspects of pig breeding management. The views and opinions of the authors cited above on pig breeding management will help the researcher develop job entry level competencies in this aspect of pig production.

Statement of the problem

The Benue State Ministry of Agriculture (2016) reported that the state is endowed with the potentials for large-scale livestock production. Therefore, there is the opportunity of rearing farm animals such as pigs in a large-scale. The researcher observed that presently pig production in the state is carried out by traditional farmers who rear pigs for: obtaining table meat (pork), creating job opportunities for people, and as gifts during ceremonies. The level of production by the

traditional farmers does not meet the increasing demand of pork by consumers in the state and its environs. The reasons for the low production by these farmers, as observed by the researcher include: old age, Religion, Nature of the job, shame conservatism and lack of adequate fund to invest into large-scale pig production enterprise. Moreover, the teaming unemployed school leavers who should take advantage of the high demand for pock to venture into pig production lacks the requisite competency in breeding which is the key component of required to begin pig production.

More so, the National curriculum for senior secondary schools (2014) specified the objectives of the senior secondary school Agricultural Science among others to; stimulate and sustain students' interest in agriculture, enable students acquire basic knowledge and practical skills in agriculture and prepare students for occupations in agriculture. Despite these, the school leavers lack the competencies in pig breeding and there has been no previous study to this effect in the context of Benue State hence the need for this study.

Purpose of the study

The study determined the competency needs of secondary school graduates in breeding for entry into pig production occupation in Benue State. Specifically, the study sought to determine the competencies in:

1. Selection of Breeding Stock
2. Detection of pigs on Oestrus
3. Mating Procedures
4. Management of Piglets
5. Weaning the Piglets

Research questions

The following research questions were asked and answered for the study

- 1 What are the competency needs of secondary school graduates in selection of Breeding Stock?
- 2 What are the competency needs of secondary school graduates in Detection of pigs on Oestrus?
- 3 What are the competency needs of secondary school graduates in Mating Procedures?
- 4 What are the competency needs of secondary school graduates in Management of Piglets?
- 5 What are the competency needs of secondary school graduates in Weaning the Piglets?

Methodology

The study adopted survey research design. The areas of the study is Benue State, Nigeria. The area was chosen for the study because; there is high demand for pig products especially pork and the participation in the production is on steady decline among the teaming unemployed school graduates. The population of the study is 231 persons comprising 208 agricultural science teachers and 23 agricultural extension agents in the State. All members of the population was used as they were accessible and manageable. The data for this study was collected through a

self-structured questionnaire titled Competency Needs in Breeding for Entry into Pig Production Questionnaire (CNBEPPQ). The questionnaire was structured in a four-point scale of strongly of H.N-highly needed, MN- Moderately needed, S.N-slightly needed, NN- not needed with a corresponding value of 4, 3, 2 and 1 respectively. Validation of the instrument was established with the aid of three validates from Ebonyi State University, Abakaliki. To test the reliability, Cronbach alpha coefficient was used to analyze data collected from 20 similar respondents in Nasarawa State and an internal consistency of 0.86 was obtained. The instrument was administered by the researcher and two research assistants. 220 out of the 231 copies distributed were retrieved while 11 were lost. Mean and standard deviation were used to analyze the data for answering all the research questions. A cut- off point of 2.50 was established. This means that any item that has mean of 2.50 and above was regarded as skill required or otherwise.

Results

Research question 1: What are the competencies needed by secondary school graduates in selecting breeding stocks?

Table 1: Mean rating and standard deviation of respondents on the competency needed by secondary school graduates in selection of breeding stock

S/N	Ability to:	\bar{X}	S	RMK
1.	Identify a matured sow for breeding based on pedigree and external qualities	3.28	.81	N
2.	Record matured performance characteristics of the boar and sow.	2.97	.73	N
3.	Compare performance records or data of sows	3.33	.83	N
4.	Select the stock with the 'best' performance records	3.27	.81	N

Keys: x-mean, S-standard deviation N-needed. Source: field survey; 2024

Data presented in Table 1 shows that all the items had their mean above the cut off mean of 2.50, implying that the respondents agreed that all the items are the competencies needed by secondary school graduates in selecting pig breeding stock. The standard deviations are not far from each other and close to the mean, meaning that the responses of the respondents are not far from each other.

Research question 2: What are the competency needs of secondary school graduates in detection of pigs on Oestrus?

Table 2: Mean rating and Standard Deviation of the Respondents on the Competencies Needed by Secondary School Graduates in Detection of Oestrus in Pigs

S/N	Ability to:	\bar{X}	S	RMK
1	Diagnose redness and swelling of the vulva (especially in young gilts).	3.11	.77	N
2	Observe nosing of the sows vulva by the boar.	2.88	.70	N
3	Notice producing of the sow's vulva by the boar.	3.00	.73	N
4	Observe General restlessness of the boar and the prominent.	3.17	.78	N
5	Identify when the sow's clitoris becomes more prominent.	2.97	.72	N

Keys: x-mean, S-standard deviation N-needed. Source: field survey; 2024

Data presented in Table 2 shows that all the items had their mean above the cut off mean of 2.50, implying that the respondents agreed that all the items are the competencies needed by secondary school graduates in detection of oestrus in pigs. The standard deviations are not far from each other and close to the mean, meaning that the responses of the respondents are not far from each other.

Research question 3: What are the competency needs of secondary school graduates in mating procedure?

Table 3: Mean Rating and Standard Deviation of Respondents on the Competencies Needed by Secondary School Graduates in Mating Procedure

S/N	Mating Procedures	\bar{X}	S	RMK
1	Use boars for service at 9-12 months of age	3.34	.83	N
2	Serve gilts at 7-8 months of age	3.27	.81	N
3	Mate gilts after the third oestrus for the first time	3.42	.83	N
4	Check gilts for conformation of pregnancy before next mating	3.17	.78	N
5	Separate boar from the sow after mating	3.24	.80	N

Keys: x-mean, S-standard deviation N-needed. Source: field survey, 2024

Data presented in Table 3 shows that all the items had their mean above the cut off mean of 2.50, implying that the respondents agreed that all the items are the competencies needed by secondary school graduates in mating procedure for pigs. The standard deviations are not far from each other and close to the mean, meaning that the responses of the respondents are not far from each other.

Research question 4: What are the competency needs of secondary school graduates in management of piglets?

TABLE 4: Mean Rating and Standard Deviation of Respondents on the Competencies Needed by Secondary School Graduates in Management of Piglets

S/N	Management of Piglets	\bar{X}	S	RMK
1	Assist the sow when farrowing to make the piglets come out alive.	3.13	.77	N
2	Remove the piglets from the sow after farrowing	3.27	.82	N
3	Cut piglets' umbilical cords within 24 hours of birth leaving about 5 centimeters.	3.42	.85	N
4	Disinfect the cut area with iodine solution.	3.24	.80	N
5	Help piglets to suck from their mother's udder immediately	3.41	.85	N
6	Provide sucking equipment for piglets that have no teat selected from the sow.	3.42	.85	N
7	Provide an external source of heat to maintain a constant body temperature for the piglets,	3.13	.77	N
8	Remove piglet's needle teeth within 4 days of birth using pliers.	3.37	.84	N
9	Give iron supplements within the first three weeks of life,	3.28	.81	N
10	Ear-notch piglets by clipping out pieces of the ear with- notching pliers for identification..	2.97	.73	N
11	Provide creep feed 14-21 days before weaning in the creep, area of the pen.	2.99	.73	N
12	Castrate male piglets not required for breeding at about 3 weeks of age with the assistance of an experienced stockman	3.11	.77	N
13	Disinfect the cut area with iodine solution after castration.	3.41	.85	N

Keys: x-mean, S-standard deviation N-needed

Source: field survey, 2024

Data presented in Table 4 shows that all the items had their mean above the cut off mean of 2.50, implying that the respondents agreed that all the items are the competencies needed by secondary school graduates in management of piglets after farrowing. The standard deviations are not far from each other and close to the mean, meaning that the responses of the respondents are not far from each other.

Research question 5: What are the competency needs of secondary school graduates in weaning of piglets

Table 5: Mean Rating and Standard Deviation of Respondents on the Competencies Needed by Secondary School Graduates in Weaning of Piglets

S/N	Weaning the Piglets	\bar{X}	S	RMK
1	Wear at 7-8 weeks of age	3.34	.83	N
2	Wean by removing the sow from the pen	3.27	.81	N
3	Select batches of piglets according to body weight	3.42	.83	N
4	Transfer the weaned piglets to rearing pens at weaning	3.17	.78	N
5	Sort the piglets into groups of ten (10) for fattening after 8 weeks of weaning	3.24	.80	N

Keys: x-mean, S-standard deviation N-needed. Source:

Field survey, 2024

Data presented in Table 5 shows that all the items had their mean above the cut off mean of 2.50, implying that the respondents agreed that all the items are the competencies needed by secondary school graduates in weaning of pigs. The standard deviations are not far from each

other and close to the mean, meaning that the responses of the respondents are not far from each other.

Discussion of the findings

The result of the study in research question 1 revealed that there are 4 competency items needed by secondary school graduates in selection of breeding stock. The finding is in line with Ryan, Fraser and Weary (2015) and Francis, Denis, Jean and Marie (2016) who found that selection of good stock for breeding requires that farmers learn how to keep standard and accurate record of all the characteristics of the stock available in the farm at any particular point in time. In line with this finding also, FAO (2009) noted that prior to selection of breed, farmers are to compare performance records or data of sows and select the stock with the 'best' performance records.

The finding of the study in research question 2 revealed that there are 5 competency items needed by secondary school graduates in oestrus detection in pigs for entry into pig production. This finding agrees with Ukoha (2023) who opined that knowledge of sexual maturity and thus periods and signs of oestrus (heat) in maiden gilts and breeding sows is among the essential competency needed for entry into pig production occupation. The finding is also in keeping with Nwangbo (2014) who identified the skills needed required of a stockman during oestrus to include observing the restlessness and walking around the fences (or walls) by the sow and swelling of the vulva.

The findings of the study in research question 3 revealed that there are 5 competency items needed by secondary school graduates in mating procedure for pigs. This finding agrees with Thomson (2010) who asserted that boars of 9-12 months and gilts of minimum of 7 months of age should be selected for mating and that gilts should be mated after the 3rd and 4th oestrus for the first time. In line with the findings of the study also, Schneider and Nepembe (2011) noted that confirmation of pregnancy is necessary in gilts prior to the next mating.

The findings of the study in research question 4 revealed that there are 13 competency items needed by secondary school graduates in management of the piglets. This finding agrees with Guy, Thomson and Hermesh (2012) who outlined the management skills that would guide beginning farmers at the farrowing period to include giving intravenous injection of iron to the piglets 2-3 days after farrowing, keeping farrowing unit draft-free, clipping off needle teeth (removing half of the teeth), using farrowing crates or rail guards and keeping record of farrowing. In keeping with the findings further, Nwangbo (2014) added that infra-red heaters should be introduced in the creep area of the pen in order to prevent crushing of the piglets by the dam immediately after farrowing.

The result of the study in research question 5 revealed that there are 5 competency items needed by secondary school graduates in weaning of piglets. The finding is in line with Nwangbo (2014) who recommended that piglets should be weaned at any age from one to eight weeks, noting that with good management practice when the pigs weigh 13-16 kg. In line with the findings also, Ukoha (2023) mentioned that pigs should be handled and disturbed as little as possible immediately weaning.

Conclusion

Based on the findings of the study, it was concluded that there are 32 competencies in breeding needed by secondary school graduates for entry into pig production occupation in Benue State.

They are: breeding stock selection (5items), detection of pigs in oestrus (5items), mating procedure (5items), care of the piglets (13items) and weaning (5items).

Recommendations

Based on the findings of the study, the following recommendation were made

1. The identified breeding competencies should be used to train the graduates in vocational training centers by extension agents
2. The graduates should seek personal development by participating in training to acquire the skills so they could be gainfully employed in pig production
3. Ministry of education through the Nigeria Education research and development council should build the identified needed competencies into the curriculum of animal production or agricultural science in secondary schools so student could be well equipped for occupation in pig production before graduation.

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