

Training of emu birds for semen collection

P TENSINGH GNANARAJ¹, K THILAK PON JAWAHAR², T SIVAKUMAR³ and R PRABAKARAN⁴

Tamil Nadu Veterinary and Animal Sciences University, Chennai, Tamil Nadu 600 007 India

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Emu (*Dromaius novaehollandiae*), a large and flightless bird, is native to Australia. Now it is reared in Indian sub continent for the production of leather, meat and oil. Emus are primarily monogamous (Davies 1963) that completely restricts the emu breeders to mate an elite male with not more than one female in a breeding season. Hence, an equal number of males and females have to be retained in the breeding flock. The obvious alternative to overcome this problem is the artificial insemination technology (AI). In addition, AI facilitates the use of good quality semen from proven fertile males and bred to many females thereby reducing the cost of production (Etches 1996) of emu chicks. Successful AI depends on the quality and quantity of semen that can be harvested from proven males regularly. For this, development of a reliable method of semen collection is highly essential.

The practice of semen collection in birds is confined mainly to domestic species, particularly domestic fowl and turkey. In domestic poultry species semen can be harvested by adopting manual massage technique (Lake and Stewart 1978), electroejaculation (Chelmonska *et al.* 1962) and use of artificial vagina (Pawluczuk and Grunden 1984).

The male emus weigh about 60 to 80 kg so that the amount of labour and approach required for either manual massage or electroejaculation technique is more invasive. In addition, the presence of intromittent phallus (King 1981) in males suggests that artificial vagina method can be a safe and better approach to harvest semen successfully. Moreover semen collection by artificial vagina has several advantages over the other methods that good quality and quantity of semen can be harvested with less urinary, fecal and other organic components (Tan 1980, Setioko and Hetzel 1984, Malecki *et al.* 1997). The major disadvantage is that the males need to be trained. However, this can be overcome by understanding Emu's sexual behaviour and developing favourable behaviour patterns under training. Since, the male

emu birds attempts to mount at a human, this behaviour could be exploited for semen collection (Malecki *et al.* 1997). Hence, a study was taken to train the male emus to donate semen in artificial vagina.

The work was carried out at Lotus Emu Farm, Tindivanam, Tamil Nadu. Adult male birds (4) aged between 24 and 36 months of age that did not have previous sexual experience with females were selected for training. Two breeder laying females were selected as teasers. The birds were maintained in individual paddocks, provided with balanced emu breeder ration diet formulated at the farm and given access to *ad lib.* water.

The artificial cloaca (AC) described by Malecki *et al.* (1997) with slight modifications was used as shown in the plate. The artificial cloaca was made of thick rubber hose (20 cm long and 5 cm diameter) with an inner rubber liner. The space between the hose and liner was filled with warm water (38°C). The director cone made of latex liner was connected to one end of the artificial vagina hose. The collection tube was attached to the narrow end of the director cone.

The male birds and the female teasers were selected by observing the degree of acceptance of trainer. The teaser females were trained to contort their neck into an "S" shape, elevate the feathers in front and produce booming sounds of sexually active females when followed by the trainer-cum-collector. The teaser females were encouraged to sit by the trainer and presented to the male to induce sexual stimulation. When the male emu mounted on the teaser female, the phallus was allowed to enter in to the open end of the artificial cloaca held by the semen collector. The role of semen collector was very important, as the phallus touched the warmth surface of the artificial cloaca, the male emu evinced further erection and ejaculated the semen. Thus, the male birds were stimulated sexually with teaser females.

Whereas, in the absence of teaser females the collector had to spent some time with each male in the paddock by walking inside, feeding, stroking their feathers and knelt near the birds in crouching state until they exhibited sexual display towards the collector. As the male attempted to mount on

Present address: ¹Associate Professor, ³Professor and Head, Department of Livestock Production and Management; ²Associate Professor, Department of Animal Genetics and Breeding; ⁴Dean, Madras Veterinary College, Chennai 600 007.

the collector's back the artificial vagina was placed on the partially erected phallus to induce full erection and ejaculation. Immediately on collection, the semen was evaluated for its quantity and quality.

Of the 4 males selected for semen collection using artificial vagina, 2 were trained successfully for donating semen using female teasers and 2 without teasers. The dominant male birds that did not exhibit fear and not afraid of the human beings when they were approached alone, were selected. The suggestions provided by Malecki *et al.* (1997) made training for semen collection successful without any failure.

While training the birds for semen collection using teasers, the male birds began courtship on entering the teaser pen. The male approached and walked for a distance along with the teaser. When the teaser crouched for the female the male walked around the teaser for two or three times and then knelt behind the teaser. If the teaser did not crouch, the role of trainer-cum-collector is very important. The trainer approached the teaser and by applying little pressure on the back of the teaser to make it crouch. Then the male approached the teaser on kneeling position exhibiting mating postures. When the intromittent phallus evaginated partially the male raised its body and brought the phallus close to the cloaca of the teaser. At this point also the role of trainer-cum-collector was crucial. The collector should knelt and closely watch for the erected intromittent phallus. Then the collector had to place the open end of the artificial cloaca directly on the evaginated phallus and on touching the warmth surface of the artificial cloaca, the male exhibited frequent intromissions repeatedly and ejaculated by claspings and pecking the neck of the teaser by producing peculiar sound. Immediately on ejaculation the male dismounted and ran away with partially invaginated phallus.

While training the birds for semen collection without teasers, the male birds began courtship when the trainer-cum-collector entered into the pen. The male approached and pushed the trainer by exhibiting mating behaviour. Then the trainer slowly knelt down and showed his back for the male. The male bird slowly sat near the trainer and approached near him on its hocks. At this juncture, for effective sexual stimulation the trainer had to turn sideways by partly facing the bird and directed the male to mount on his back by extending his shoulder and arms. When the male mounted on his shoulder the trainer further moved his hand down towards the vent by bending his back to look for partially evaginated phallus. When the phallus evaginated partially the collector transferred the artificial cloaca to the other hand to place the open end of the artificial cloaca directly on the evaginated phallus. Immediately on touching the warmth surface of the artificial cloaca, the male exhibited frequent intromissions repeatedly and ejaculated by claspings and pecking the collectors back, hairs, ears, neck or his free hand by producing peculiar sound. Immediately on ejaculation the male dismounted and ran away with partially invaginated phallus.

Though both the methods were successful for collecting semen from emu, considering the behavioural characteristics of the teasers, the second method i.e. semen collection without teaser was more easy and successful than collection using a teaser. The crouching behaviour exhibited by the teaser was a strong sexual stimulus for all the male birds to ejaculate. Some teasers they readily crouched for the collector, some required little force and many did not respond to crouching behaviour. Once the trainer trained the teaser to exhibit crouching behaviour then the teaser could crouch at any time whether she was receptive or not. Shein and Hale (1974) stressed that receptiveness would further enhance the sexual arousal of the male. While expressing similar views Tan (1980) also concluded that the receptiveness of the female was very important for successful ejaculation. While training the emu for semen collection using teaser Malecki *et al.* (1997) also opined the same. Moreover semen collection in emu without teaser took less time and the only disadvantage was regarding the temperament of the bird. The male exhibited claspings and pecking the collector's back, hairs, ears, neck or his free hand by producing peculiar sound at the point of ejaculation. However, this could be overcome by a complete understanding of individual temperament of the birds and also by adopting more patient and flexible approach on handling the birds (Malecki *et al.* 1997).

It is concluded that both the methods adopted for semen collection in emu are non invasive and not stressful to the birds and can safely be used routinely for collecting semen for the purpose of artificial insemination.

SUMMARY

Emus are primarily monogamous and completely restrict the emu breeders to mate an elite male with not more than one female in a breeding season. The obvious alternative to overcome this problem is the artificial insemination technology (AI). Successful AI depends on the quality and quantity of semen that can be harvested from proven males regularly. For this, development of a reliable method of semen collection is highly essential. The presence of intromittent phallus in males suggests that artificial cloaca method can be a safe and better approach to harvest semen successfully. Hence, the present study was conducted to investigate the feasibility of semen collection in emu by artificial cloaca. It is concluded that both the methods adopted for semen collection in emu are non invasive and not stressful to the birds and can safely be used routinely for collecting semen for the purpose of AI.

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