

The Effect of Purwoceng Extract on the Etawa Crossbreed Bucks Mating

ABSTRACT

Aims: This research aims to determine the effect of purwoceng extract on Etawa crossbreed bucks

Study design: Completely randomized non-factorial design with 4 treatments given to bucks (ethawa crossbreeds), namely Purwoceng extract

Place and Duration of Study: Ikhsan Farm, Sei Glugur Village, Pancur Batu District, Indonesia, between December 2023 and March 2024.

Methodology: The research was carried out by administering various doses of purwoceng extract to Etawa crossbreed bucks and then observing mating with Etawa crossbreed doe. The treatment given was administration of purwoceng extract in amounts P0 (0 mg), P1 (400 mg), P2 (800 mg), and P3 (1400 mg). The research parameters were the frequency of mounting does, the frequency of penetration, the number of doe mounted and the number of doe penetrated.

Results: There was an increase in the values of all parameters. The lowest frequency of mounting doe is P1, namely 17 and the highest is P3, namely 32. The lowest frequency of penetration is P0, namely 12 and the highest is 20. The lowest number of doe mounted is P0 and P1, namely 5 and the highest is P3, namely 7. The lowest number of doe penetrations is P0 and P1 are 5 and the lowest are P2 and P3, namely 6.

Conclusion: The best treatment is the addition of 800 mg of purwoceng extract (P2), Because the highest number of penetrating doe has the same value between P2 and P3, it will be more efficient if the treatment used is P2.

Keywords: Buck, Etawa crossbreed, Mating, Purwoceng extract

1. INTRODUCTION

The Etawa crossbreed goat is a local goat breed that has adapted well to environmental conditions in Indonesia [1]. However, until now the distribution of the Etawa crossbreed goat is still very limited with a total population of around 14 million heads, spread unevenly throughout Indonesia and only 57% of the population is on the islands of Java and Madura. The Etawa crossbreed goat as is a dual-purpose type of goat has a low level of productivity. Therefore, efforts to increase productivity need to be made, one of which is an approach to improving the management of raising mother and kid goats so that the child kid mortality rate can be reduced [2].

Etawa crossbreed goats are the result of a cross between Etawah goats from India and Kacang local goats, Indonesia which are 50% taller than Etawah goats. The Etawa crossbreed goat has potential to be developed as a provider of meat and milk. Etawa crossbreed goats crossed with local goats have productivity and several superior characteristics traits, namely being easy to adaptability to tropical environments [3]. Productivity is the ability of goats to produce production for each specified period, including

Comment [U1]: Mention name of the species/plants extract

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22 litter size, weaning weight, service per conception, age at first mating, kidding interval, empty
23 period [4].

24 To improve good reproductive performance, a quality plant is needed that can help
25 reproduction in mating male goats (etawa breeds), namely the purwoceng plant. Purwoceng
26 (*Pimpinella alpina* KDS or *Pimpinella pruatjan* Molk.) is a medicinal plant native to Indonesia
27 that lives endemically in the highlands. This plant is often found in mountainous areas such
28 as the Dieng Plateau and Mount Lawu in Central Java, Mount Pangrango and Mount
29 Galunggung in West Java, as well as in the Tengger and Iyang Mountains in East Java. The
30 plant has medicinal properties as an aphrodisiac, diuretic and tonic [5].

31 It is hoped that giving purwoceng extract to mating buck goats will have an effect on
32 satisfactory results from the purwoceng plant. This activity is initial research because
33 purwoceng extract has never been applied in other research related to buck goat mating.
34 Based on the background above, researchers are interested in conducting research related
35 to the administration of purwoceng extract on the mating of buck (etawa crossbreeds).
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38 2. MATERIAL AND METHODS

39 The research was carried out by administering various doses of purwoceng extract to male
40 Peranakan Etawa goats and then observing mating with female Peranakan Etawa goats.
41 The treatment given was administration of purwoceng extract in amounts P0 (0 mg), P1 (400
42 mg), P2 (800 mg), and P3 (1400 mg), respectively. The research parameters were the
43 frequency of mounting doe, the frequency of penetration, the number of doe mounted and
44 the number of doe penetrated, respectively.

45 The method used in this research was a non-factorial Completely Randomized Design
46 method with 4 treatments given to male goats (ethawa crossbreeds), namely Purwoceng
47 plant extract. The livestock samples were selected using purposive sampling, namely Etawa
48 crossbreed goats whose reproduction was not disturbed. The materials used in this research
49 were male goats (ethawa breeds) and parent goats that had given birth at least twice and
50 prospective parents (first mating). Etawa crossbreed goats are at least 10-12 months old and
51 their weight has reached 55-60 kg.
52
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54 3. RESULTS AND DISCUSSION

55 The research that was carried out showed that Etawa crossbreed buck were not given a
56 dose of purwoceng. From the results of this table 1, there were 5 male goats and 5-7 does
57 used for research on the mating of Etawa crossbreed bucks. Judging from the research
58 results, there are several differences between the 5 bucks in the frequency of mounting doe,
59 the frequency of penetration, the number of doe mounted and the number of doepenetrated..
60

Table 1. Recapitulation of Research Results

Treatment	Parameter			
	frequency of mounting doe (times)	frequency of penetration (times)	the number of doe mounted (does)	The number of doe penetrated (does)
P0	17±1.24	12±0.92	5±0.00	5±0.00
P1	22±1.34	16±1.23	5±0.00	5±0.00
P2	24±1.71	18±1.54	6±0.00	6±0.00
P3	32±1.56	20±1.61	7±0.00	6±0.00

61 Source: Research Results, 2024
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Comment [U6]: Add few lines of purwoceng chemical/phytochemical property in reproduction briefly only

Comment [U7]: Experimental materials, extract procedure, which one is used whether *Pimpinella alpina* KDS or *Pimpinella pruatjan* Molk, duration periods is not mention clearly

Comment [U8]: Not menting duration of time (hours) after administration of purwoceng extract, route of administration (oral/ injection)

Comment [U9]: Justify whether this breed is correlated in experimental breed (Etawa Crossbreed Bucks)

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Comment [U12]: Why mating ratio is 1 male:1 female, justify

Comment [U13]: No. Of buck per doe should be mention or n-nos. of animals

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63 Based on the table, at P0 to P3 there is a change in each parameter observed. From
64 the frequency of mounting does, the number of mating ejaculations and bucks being able to
65 mount does increased from P0 to P3. The increase in the observed parameters was due to
66 the administration of purwoceng extract to Etawa crossbreed bucks.

67 Purwoceng (*Pimpinella alpina* Molk) is one of Indonesia's medicinal plants which can
68 only be found endemically in the Dieng plateau, Wonosobo, Central Java. Taxonomically,
69 this plant belongs to the Apiaceae family of the genus *Pimpinella*, several other species are
70 *P. anisum*, *P. Saxifraga*, *P. thellungiana*, *P. villosa*, and others. This plant from the
71 Apiaceae family has biological activity as antimalarial, antimicrobial, antifungal and
72 antioxidant [6].

73 Purwoceng (*Pimpinella alpina* Molk) is a herbal plant from the genus Apiaceae
74 which is famous for its stamina-enhancing properties. Purwaceng is a native Indonesian
75 plant that lives in mountainous areas such as Dieng, Central Java. The root of the
76 purwaceng plant is a taproot that enlarges to form a tuber-like structure in the ginseng plant
77 with a smaller size and a brownish white color. The stem of *tanawanpurwaceng* is a
78 pseudostem that is round and soft with a pale green color. The base of the stalk of this
79 purwaceng plant is brownish red and some are greenish red. The leaves of the purwaceng
80 plant are compound leaves in pairs and face each other to form a heart with a length of ± 3
81 cm and a width of 2.5 cm. The flowers of the purwaceng plant are umbrella-shaped
82 compound flowers with cylindrical stems and are ± 2 cm long [7].

83 Based on its genetic erosion status, the purwoceng plant can be grouped into the
84 endangered or endangered category. This crisis is mainly caused by excessive exploitation
85 without being balanced by conservation efforts. Most traditional medicine (*jamu*) companies
86 take or harvest purwoceng plant material directly from their habitat without rejuvenation
87 efforts. Considering that the main ingredient of the plant being harvested is the root, the act
88 of harvesting automatically damages the plant as a whole. This crisis is also caused by the
89 destruction of conservation forests which are the purwoceng's natural habitat. Apart from
90 that, the crisis is also caused by the scarcity of purwoceng cultivation at the farmer level due
91 to theft related to the high price of this commodity. Another obstacle is the high price of
92 seeds which can reach Rp. 4,000-Rp. 10,000 per stem, even the price of seeds can reach
93 millions of rupiah per ounce [8].

94 Purwoceng is widely used as a herbal medicine which is useful in increasing
95 stamina and increasing the vitality of adult men. The ingredients in this plant include
96 aphrodisiac substances which contain derivative compounds such as saponins, alkaloids,
97 tannins and other compounds which have the effect of strengthening the body and improving
98 blood circulation [9]. Because of this, purwoceng can also be used as a medicine or potion to
99 increase or increase stamina. The aphrodisiac substance in the purwoceng plant is the focus
100 of research because it is this substance that causes increased sexual desire in adult men.
101 After research, the roots of the purwoceng plant actually contain derivatives of sterol,
102 saponin and alkaloid compounds.

103 Etawa crossbreed goats are the result of a cross between Etawah goats from India
104 and Kacang goats which are 50% taller than Etawah goats. PE goats have potential to be
105 developed as meat and milk providers [10]. PE goats crossed with local goats have
106 productivity and several superior characteristics, namely they are easy to adapt to tropical
107 environments. Productivity is the ability of goats to produce production from each specified
108 period, including litter size, weaning weight, service per conception, age at first mating,
109 kidding interval, empty period [11].

110 In terms of benefits, this livestock is classified as dual-purpose livestock which is
111 capable of producing main products in the form of milk and meat for use by humans. Etawa
112 crossbreed goats can produce milk ranging from 0.5-1 liter/day/cow at a price of IDR.
113 25,000.00/liter [10]. The specialty of goat's milk compared to cow's milk is that it has many
114 benefits, including curing various kinds of asthma, hepatitis, tuberculosis, anemia, muscle
115 and stomach problems. Apart from that, goat's milk also contains complete nutrients that

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116 humans need for growth and development, such as fat, lactose, protein and minerals. The
117 characteristics of livestock can be seen from the inside (Internal) and outside (External)
118 which are expressed by genetic expression and the environment. Genetic contributions
119 contribute 30% and the environment which includes management in the maintenance
120 process is 70% [12].

121 The type of birth influences the pre-weaning body weight of Etawa crossbreedgoats,
122 where Etawa crossbreedgoats born single have a higher body weight than Etawa
123 crossbreedgoats born twins. Apart from the type of birth, the gender of the goat is known to
124 influence weaning weight. The weaning weight of buckEtawa crossbreedgoats is 11.7 ± 1.83
125 kg and 11.5 ± 2.18 kg for doeEtawa crossbreedgoats. Other information states that the
126 weaning weight of doeEtawa crossbreedgoats is 8.30 kg and males are 9.50 kg. Weaning
127 weight at 90 days of age for buckEtawa crossbreedgoats (18.15 kg) is higher than for does
128 (14.53 kg [13].

129 Mating in goats is carried out to continue the offspring and/or to produce better
130 offspring according to expectations both in quantity and quality. Mating does that are in heat
131 should be mixed with bucks in one cage and the right time to mate goats is 12-18 hours after
132 the first heat. Sexual maturity in buck is at the age of 8 months, while in doe it is at the age
133 of 15 months. For this reason, does can begin to be bred for the first time starting at the age
134 of 15 months. Meanwhile, the ideal buck to mate as livestock is after reaching the age of
135 over 12 months [11].

136 Providing herbal extracts can improve sperm quality in bucks [14]. The quality of feed
137 ingredients, especially forage, must be in accordance with the reproductive needs of bucks
138 [15]. Nutritional during estrus also need to be considered so that they are not disturbed [16].
139 This will affect the farmer's profits [17]. The sperm quality of bucks will increase if they are
140 given herbal extracts at the right dose [18].

142 4. CONCLUSION

143 The best treatment is the addition of 800 mg of purwoceng extract (P2), because the highest
144 number of penetrating does has the same value between P2 and P3, it will be more efficient
145 if the treatment used is P2.

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Comment [U16]: Omit this sentences in results & discussion parts & put in introduction parts only related points

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Comment [U18]: Need to be strictly follows guidelines of Asian Journal of Research in Zoology journal

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