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FACTORS INFLUENCING PREGNANCY STATUS IN FALLOW DEER (*Dama dama*)

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Background. Deer farming has progressively grown into an industry in the United States and around the world. Venison and seed stock production have become the focus of deer production systems due to an increasing demand for leaner alternative red meat sources and a need for more diversified agriculture to complement current livestock production schemes. Deer producers, however, require information concerning the reproductive status of their herds from which management strategies may be formulated. Previous studies have shown that transrectal ultrasonography is effective for pregnancy detection as early as 33 to 35 days in fallow deer. Ultrasonography, however, requires costly equipment and persons experienced in the use of this technique. Another method which may be as effective as the ultrasound is the presence of a pregnancy specific protein that can be detected in the blood of the pregnant doe. Pregnancy-specific protein B (PSPB) is secreted from the fetal-placental unit as early as 24 to 27 days after breeding in fallow deer and is non-detectable open does. An "on-the-farm" PSPB pregnancy test is currently being developed for cattle and may also be used in deer to assess a does' reproductive status. The objectives of this study were to demonstrate the use of these two different methods for pregnancy detection, ultrasonography and PSPB, as well as to further investigate the reproductive characteristics of a production herd of fallow does in cooperation with Heart-Bar Deer Farms, Inc. (Hondo, TX).

Research Findings. In this study, five hundred fallow does of various ages, and of known previous reproductive histories were maintained in selected sire groups (Table 1) and were sampled at regular intervals following a 60-day breeding season. Each doe was monitored by ultrasound as well as PSPB analysis to try and establish a link between a does' previous reproductive history, body condition (i.e., age and weight change) and pregnancy status. Following 30 days after buck removal, pregnancy rates for ultrasonography and PSPB were 90.6% and 93.4%, respectively. The results indicated that both ultrasonography and PSPB were relatively accurate tests by 30 days after buck removal with only a 2.8% difference in pregnancy rates between them. We further found that the age of the doe and the type of sire utilized did not significantly affect pregnancy rates among fallow does (Table 1). In yearling does, fall body weight (i.e., body weight prior to the breeding season) did not influence the pregnancy rates. In mature does (does > 2 years of age), however, does with fall body weights less than 80 lbs and greater than 96 lbs had lower pregnancy rates than does between 81 and 96 lbs (Table 2).

Table 1. The effect of doe age and type of sire on pregnancy status in fallow does.

Age of Doe	Type of Buck	Pregnancy Rate	
		Number	%
Mature	1/2 Danish + Hungarian	88/100	88.0
Mature	1/2 Mesopotamian	90/100	90.0
Mature	1/4 Mesopotamian	97/100	97.0
2 years	Heart-Bar European	93/100	93.0
1 year	1/2 Mesopotamian	94/100	91.3

Another factor that significantly affected pregnancy status was previous reproductive performance. This was tested relative to whether the doe was wet (i.e., the presence of milk or significant mammary development) or dry (i.e., no milk or mammary development) following weaning prior to the breeding season monitored in this study. We found that does tested as dry the previous season had lower pregnancy rates (77.8%) than does tested as wet (94.7%). Further analysis also revealed that 84.2% of the does became pregnant on their first estrous cycle following buck exposure and that the overall incidence of embryonic mortality was relatively low (2.8%).

Table 2. The effect of fall body weight on pregnancy rate in mature fallow does (>2 years).

Body weight (lbs)	Pregnancy Rate	
	Number	%
≤ 80	31/37	83.8
81 - 95	217/230	94.3
≥ 96	26/32	81.2

Application. This information emphasizes the importance of monitoring age, weight, and previous reproductive performance of does within a herd to maximize reproductive performance and subsequently overall production capability. Results also indicate that PSPB, a pregnancy specific protein, may be as effective as ultrasonography for pregnancy detection in production-based deer herds.

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