CHAPTER I
INTRODUCTION

1.1 Background and Justifications

Goats are one of small ruminants, which have a high potential to utilize low quality roughage. Goats are usually raised under harsh environmental conditions and have a unique ability to take advantage of marginal areas (Gama and Bressan, 2011) and goats can adjust well and consume natural feedstuffs. In Thailand, goats are raised by the Muslim people in the southern part of Thailand, but the number of goats in the country is still low and goat meat production is lower than the requirements of the consumers (Uriyapongsan et al., 1997). Most goats raised in Thailand are native breed, due to their environmental and nutritional adaptability. Thai native goats are similar to the Katjang breed of Malaysia. The major colors of goats were brown, (49-60%) followed by cream, black and the combination of brown, black and white (Saithanoo and Milton, 1988). Thai-native goats, classified as a non-seasonal polyestrous breed, exhibit continuous estrous cyclicity throughout the year. Thai-native does can be used for breeding when they reach 8-10 months of age and the estrous cycle in general ranges from 18-22 days (Pralomkarn et al., 1996). Female Thai-native goats reach puberty when body weight is more than 17.8 kg (Lertchunhakiat, 2012). The onset of puberty is generally more related to body weight than to age (Nutthakornkul, 2011). Boonchoo (1997) revealed that the ovulation rate varied throughout the year with the highest rate occurring in October (1.9) and the lowest rate in May and July (1.3) of the year. Although goat potentially is a highly prolific animal which has relatively short gestation period compared to other livestock species, little producer is known about reproductive management due to lack of information on the reproductive management i.e., feeding management, method of mating, time of first mating, pre- and postpartum management. In addition, lack of knowledge in management application and assortments of reproductive technology for Thai-native goat production is another major concern. These limitations therefore will mostly affect the efficiency and capacity of goat production.

In agriculture, modern techniques in assisted reproductive technology (ART) are being used for the introduction, improvement, and preservation of livestock genetics and the enhancement of animal reproductive efficiency. In particular, reproductive technologies such as estrus synchronization, artificial insemination (AI) and embryo cryopreservation are essential in conservation strategies. AI allows the expanded use of outstanding sires, a higher accuracy in selection decisions based on progeny information and the exchange of genetic material across borders (Gama and Bressan, 2011).

Due to the increased popularity of goat production in Thailand, AI and estrus synchronization has been widely used and become more important. AI is usually preceded by estrus synchronization, most commonly by applying progesterone-impregnated vaginal pessaries combined with gonadotropins (Al Yacoub et al., 2011; Motomelo et al., 2002; Whitlay and Jackson, 2004). Within the livestock industry, AI is used to enhance the production of improved offspring via the introduction of superior genotypes, maximize the use of superior small ruminant and control contagious disease within flocks (Evans and Maxwell, 1987; Kershaw et al., 2005).

Therefore, the research study was to investigate estrus synchronization and AI technique for control of reproduction of Thai-native goat, preservation, genetic improvement and sustainable utilization of goat genetic resources, including the cost reduction of goat production.

1.2 Scientific Hypothesis

1.2.1 Intravaginal controlled internal drug release (CIDR) using long-term protocol can be re-used for estrus synchronization in Thai-native goats.

1.2.2 Transcervical artificial insemination could increase conception rate and preserve Thai-native goat breeds.

1.3 Objectives

1.3.1 To compare the efficiency of estrus synchronization protocols on estrus response and ovulation rate in Thai-native goats.

1.3.2 To evaluate the efficiency of transcervical artificial insemination (TCAI) technique using different estrus synchronization protocols or semen characteristic affect on conception rate in Thai-native goats.

These objectives will indicate that the first step to be taken for the sustainable management of goat genetic resources is the identification of breeds or local populations of importance, carrying out their characterization, and establishing appropriate breeding and conservation programs.

1.4 Scope and Limitations

1.4.1 To evaluate the effect of treating Thai-native female goats using short-term and long-term synthetic progesterone or first use and re-use CIDR devices with hCG (300 IU) on estrus response and ovulation rate.

1.4.2 To study on transcervical artificial insemination (TCAI) technique using different estrus synchronization protocols or semen characteristic affect on conception rate in Thai-native goats.

1.5 Anticipated outcomes

Knowledge and informations on physiological, reproductive and AI technique related to control of estrus and ovulation, which may lead to preserve, genetic improvement and sustainable utilization of Thai-native goat genetic resources, including the reduce cost for goat small holders.