CHAPTER 1

Introduction

1.1 Principles and Rationale

The livestock sector is mostly huge agriculture sector in developing countries including Thailand. Department of Livestock Development showed that Thailand has 3,011,997 housing agriculturists in 2014, approximately 4,300,000 beef cattles and 500,000 dairy cows. As demand for forage sources is much by ruminant livestock such as beef cattle, dairy cow, sheep and goat that are showed the high values. However, the forage producers showed the lower housing than the farmers (approximately 27,000 forage farmers). Access to a permanent forage base is a physiological priority for ruminants and an economic priority for farmers (Dunière et al., 2013). All life stage, the agriculturists have to responsible for feed cost about 80 percentages of all cost especially during dry season when availability of quality forage often become limited. The inadequacy of feeds is one of the reasons conditional on the price which affect feed capital, that cause the farmers can't regularly apply to animals. The quality of forages is a directly effect to animal performance and production especially ruminants. Due to incongruous of demand and supply may become the high price, therefore, there should have this opportunity promoting and supporting for the new way to the farmers. In addition, producing quality forage and preserved forage become to solved the annually insufficient quality source of forage that affected to high feed cost in the dry season.

Thailand has many promising forage grasses such as pangola, napier, ruzi, purple guinea. Pangola grass (*Digitaria eriantha Steud.*, synonym *D. decumbens*) is one of highest quality tropical grasses that have been favourably introduced to Southeast Asia. It is usually used as ruminant feed for cut-and-carry, grazing, hay and silage long time. There are some conditions that mainly affect to quality forages. The firstly best way to produce quality forage is selecting proper regrowth stage cutting because of physical

change affected to chemical and nutrient composition mainly balancing of quality and quantity. Crude protein contents of pangola grass are commonly 5-14 % following regrowth age. Proper regrowth stage results good quality pangola grass that can analyze with nutrition method such as proximate analysis which is used to consider animal gain. As the result, the nutrient composition of selective regrowth stage cutting of fresh and preserved pangola grass can be used promoting proper cutting age and preserved process for the stability of producing and distributing pangola grass. Moreover, the selective proper regrowth stage cutting, mainly affect to chemical composition of fresh and preserved Pangola grass, will be a way to improve and become highest forage evaluation.

1.2 Objectives

To evaluate nutrient compositions of fresh and preserved pangola grass using *in vitro* gas production, *in vitro* digestibility (Daisy^{II} Incubator) and *in sacco* digestibility at the same cutting age

1.3 Expected outcome

To be a baseline forage data for introduction and promotion proper regrowth stage cutting of fresh and preserved pangola grass to smallholder farmers.

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