I. INTRODUCTION

The management techniques used on pure legume stands have changed dramatically in the past ten years. University and industry scientists have developed new production practices to meet the demands of modern farmers for higher yielding, better quality forage legumes. Band-seeding, seeding without a companion crop, improved varieties and more intensive harvest management are examples of new developments that have emerged.

Nutritional requirements have changed with these new practices. Fertilizer management plays an integral part in the success or failure of modern legume production. An improved legume variety under intensive management and yielding 18,000 kg/ha will not have the same nutrient requirement as one managed to yield 9,000 kg/ha.

The purpose of this chapter is to review some of the latest research on established legume fertilization as it relates to modern production practices. Much of this research has been conducted on alfalfa, thus a large proportion of the examples and references will deal with this legume.

II. FACTORS AFFECTING YIELD AND NUTRIENT REQUIREMENTS

A. Stage of Growth

Nutrient concentration in legumes is associated with stage of growth. Younger plant tissue generally has a higher concentration of nutrients than older tissue. Blaser and Kimbrough (1968) noted that alfalfa harvested in the prebloom stage was 62% higher in K than at full bloom. Table 1 shows how the nutrient concentration for several elements change as alfalfa matures. Ca, Mg, P, and K concentrations declined from pre-bud to the full bloom stage. Some of the quality factors such as crude protein and carotene are also higher in the younger plant tissue. Reid, Post, and Jung (1970) found the P, K, Ca, Mg and micronutrient content of red clover and alfalfa declined with maturity. These results are consistent with that observed for