



June 2025

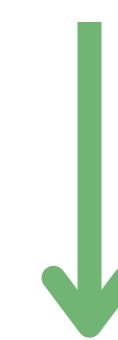
INTRODUCTION

Tannins are phenolic compounds naturally found in many forage plants. Their effects on cattle nutrition can be either beneficial or harmful, depending on type, concentration, and animal's physiological status.

When used correctly, they may improve animal health, productivity, and environmental impact.

IMPACTS OF MISUSE

- Reduced feed intake (astringency, bitterness)
- Lower digestibility of nutrients
- Risk of nutritional imbalances if not properly managed
- Potential toxicity at high concentrations



Recommended safety limits (EFSA):

- Do not exceed **15,000 mg tannins/kg** total feed in adult ruminants
- Maximum of **1,500 mg/kg** in young animals

 Exceeding these levels may cause toxicity, liver/kidney issues, and digestive disorders.

OBJECTIVES

- Analyze the positive and negative effects of tannin-rich plants in cattle feed.
- Understand their influence on digestion, nutrient metabolism, and productive performance.
- Evaluate their practical applicability in livestock systems.
- Explore their potential to promote more efficient and sustainable cattle nutrition.

BENEFICIAL EFFECTS

- Improved protein utilization (rumen bypass)
- Antiparasitic and antimicrobial properties
- Prevention of frothy bloat
- Antioxidant effects
- Reduction of methane emissions

CONCLUSIONS

- Tannin-rich plants can offer important nutritional and functional benefits in cattle feed.
- Misuse may impair digestibility and animal health.
- Responsible use is key.
- More research and farmer training are needed.

Practical **informative triptych** to summarize key recommendations for farmers:



RECOMMENDATIONS

 Do not exceed **5%** tannins of total diet dry matter (DM)

 Safe doses:

- **2-4%** tannins of DM

Introduce gradually over 2-3 weeks

Combine with other forages to maintain diet balance

CT (condensed tannins) are safer and more effective than **HT** (hydrolysable tannins)

Some of the most common tannin-rich species:

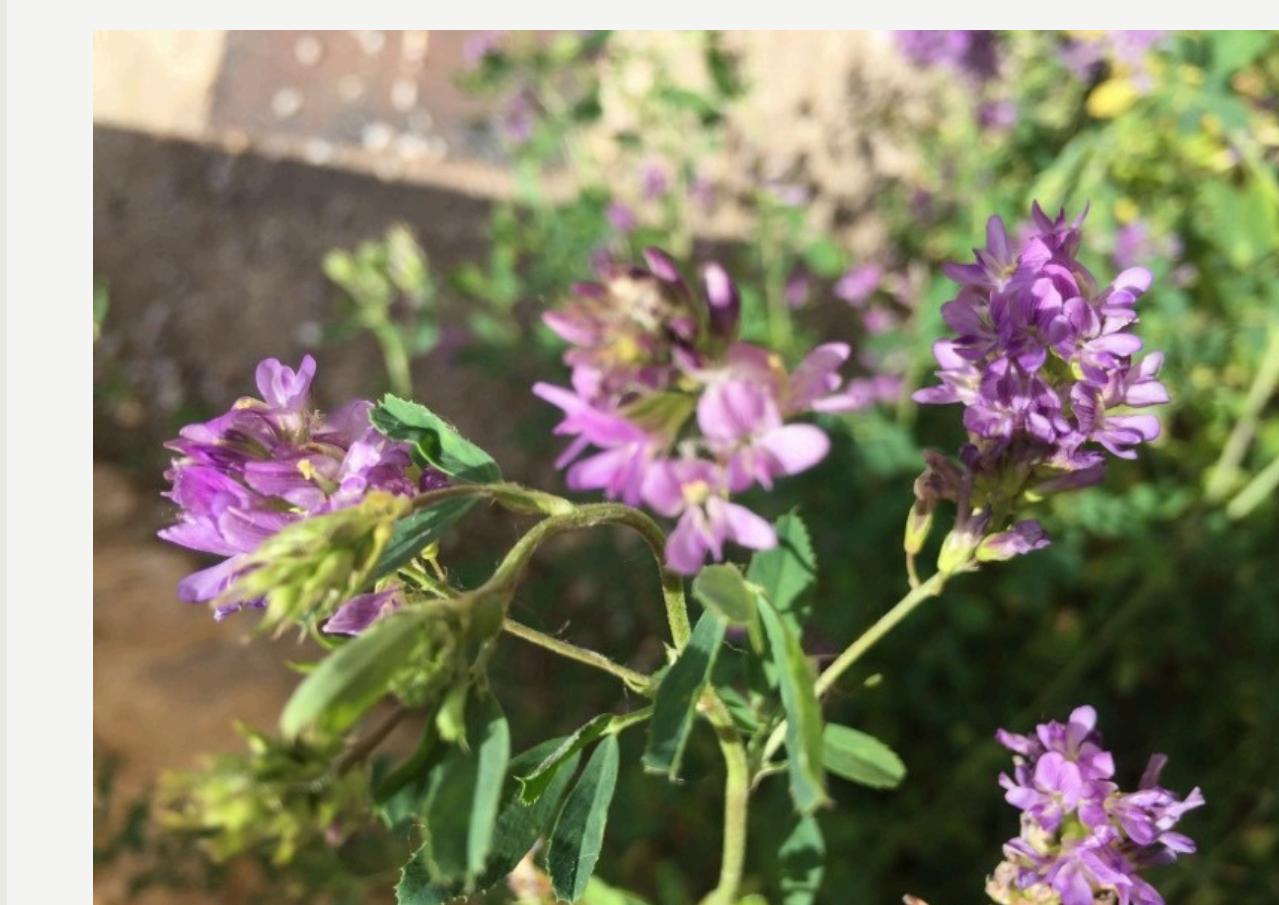


Fig. 1: Alfalfa (*Medicago sativa*)

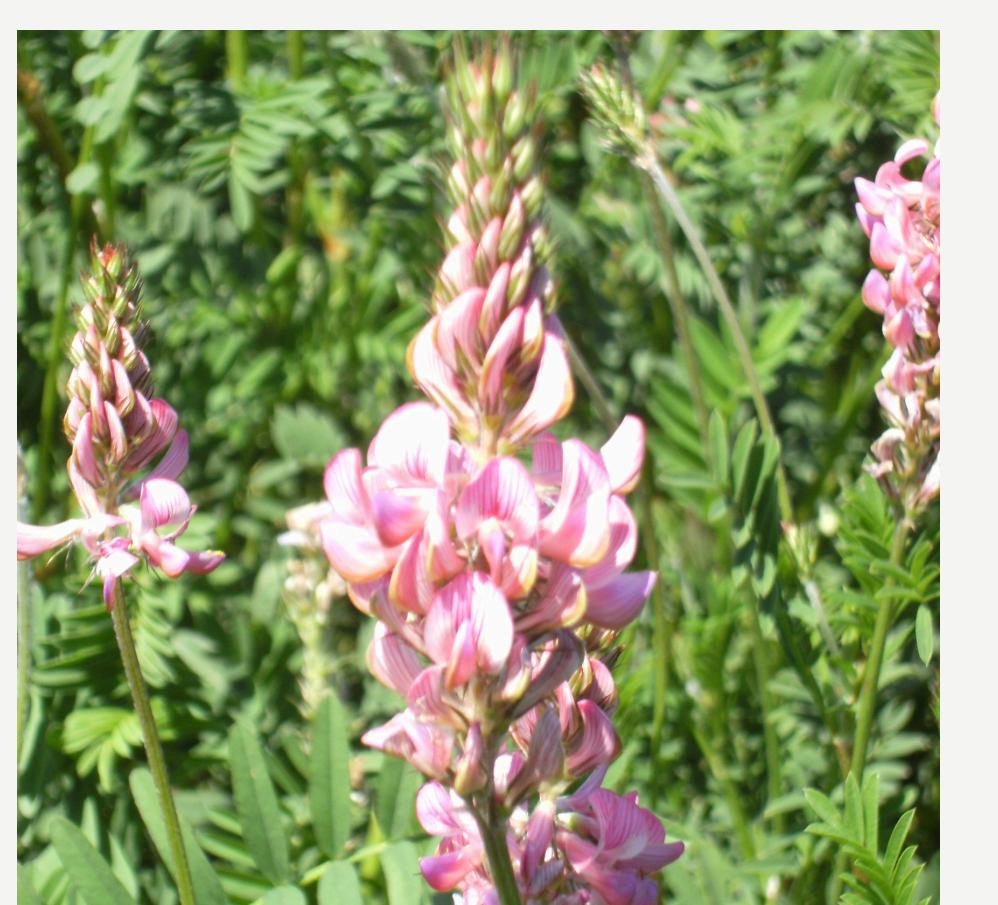


Fig. 2: Sainfoin (*Onobrychis viciifolia*)

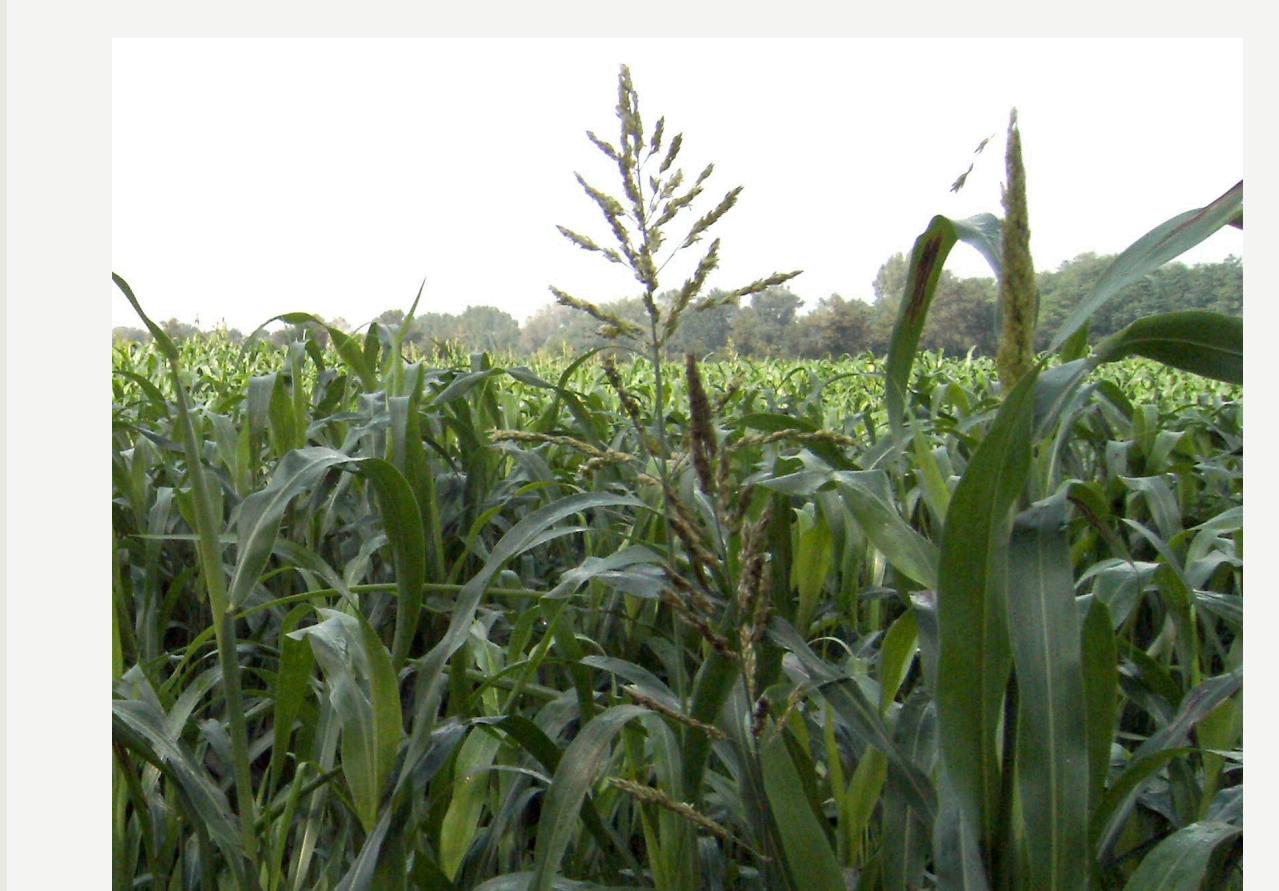


Fig. 3: Sorghum (*Sorghum spp.*)

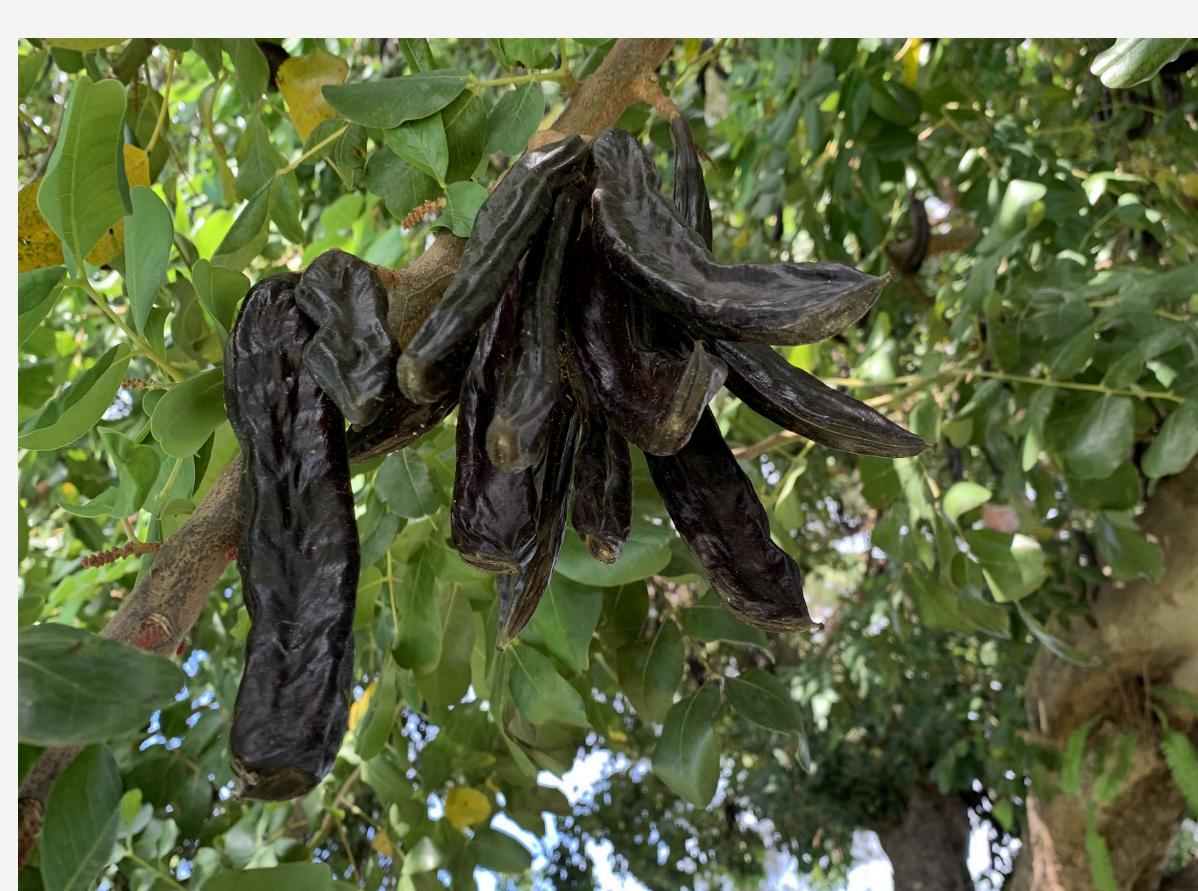


Fig. 4: Carob (*Ceratonia siliqua L.*)