

Forage Legume Notes

Alfalfa (*Medicago*)



Introduction

- *Medicago sativa* – purple flowered, *Medicago falcate* – yellow flowered
- World wide distribution – most widely used forage legume in the world
- First introduced into Canada in 1871, the variety was a winter hardy germplasm from Europe
- Does best on irrigated fertile soils in the dry climates of western North America. In the East, higher rainfall and frequent periods of wet soil and high humidity causes increased losses from root rots and foliar diseases
- Many cultivars have been developed. Since 1960 over 440 cultivars have been approved for seed production

Growth and Morphology

- Perennial, 5 to 25 stems per plant, reaches height of 60 - 90 cm
- The crown of the plant occurs at a basal node. The crown is the site of perennial meristem activity – bud formation, stem development
- Regrowth following harvest can occur from either the crown or auxiliary stem buds depending on height of cutting and plant type
- Winter hardy types grown in the Maritimes usually regrow from the crown
- Alfalfa has a deep, well developed tap root, can go down into the soil 7 – 9 meters (30 feet) or more
- Root system can be extremely branched
- The fibrous roots are in the upper 20 cm of soil and bear most of the nodes for nitrogen fixation

Adaptation

- Alfalfa does best on deep fertile soils with adequate moisture and a pH of 6.5 – 7.0. Alfalfa will not tolerate acid conditions, it is sensitive to aluminum toxicity – also rhizobia bacteria associated with alfalfa are sensitive to lower pH's
- Alfalfa does not do well on shallow, poorly drained soils

Culture and Management

- Known as the “Queen of Forages”
- High Feeding Value – producing more CP per hectare than any other forage crop
- At harvest, slightly more than half the yield is leaves. The leaves contain most of the CP digestible nutrients and vitamins
- Alfalfa has a high leaf to stem ratio
- Often fed in combination with corn silage – CP complements the high energy in the corn
- Alfalfa is used mostly for hay and silage
- Sown most frequently with timothy or brome grass or orchardgrass
- Seed in the spring – late summer and early fall seeding are more susceptible to winter injury and kill
- Phosphorus and potassium fertility management is important to yield and persistence
- Cutting management – must consider forage yield/forage quality and stand persistence
- Early bloom (10% bloom) is a compromise between forage yield and stand persistence
- Producers who want quality will harvest at the late bud, however, it will reduce persistence
- Two cut versus Three cut system:
 - 2 cut system alfalfa will persist much better. Need a 4 – 6 week rest period between last harvest and killing frost (-3°C). Fall rest period is critical
 - Stand less than 3 years old on well drained highly fertile soils are much more tolerant to a 3 cut system than older stands that are under stress
- If winter injured, then cut higher to give better regrowth and reduce strain on the plant reserves
- New alfalfas with spreading root systems have been released that are more tolerant to grazing – rotational grazing is best, gives the plant a rest period (30 to 40 days) to build up root reserves
- As the plant matures, apical dominance is broken and new stems elongate from buds at crown or stem base – look for these when deciding whether to cut
- Several serious diseases, (more than 20) cause problems for alfalfa
- Resistant cultivars exist for fungal/ bacterial wilts (verticillium wilt), leaf spot disease and crown/root rot

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