

Foraging Around



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High yields of alfalfa, 8 tons or more per acre, in Pennsylvania are no longer a myth. They're a reality - as proven by 7 years findings in the Pennsylvania Alfalfa Growers' Program. Data gained from the program also clearly shows that producers with high yields generally have lower unit costs and higher net returns per acre compared with low yield producers.

But high yielding, profitable alfalfa stands don't just happen. They're the result of putting a lot of production know-how to work. And a sound fertility program is certainly an important link in your alfalfa production chain.

To begin with, a sound alfalfa fertility program must include lime. Alfalfa has a sweet tooth. It struggles in "sour" or acid soil and

thrives in "sweet" soil. It may grow at a lower PH, but, for many reasons, it yields best when the PH is 6.7-7.0. And, based on many years of research, best results come from correcting your PH problem well in advance of establishing the stand.

So much for lime. Just accept the fact it is important.

Let's turn our attention to several of the important plant nutrients required to grow a good alfalfa crop.

It's well known that those 7-8 ton yields remove lots of plant nutrients. How much? Look at the nutrient uptake in the following table at several yield levels as summarized by L.L. Lanyon from 5 years data in the Pennsylvania Alfalfa Growers' Program.

Yield Group
(tons/A @ 10% H₂O)
up to 4
4-5
5-6
6-7
7-8
over 8

Yield Group	lbs. removed/acre						
	N	P ₂ O ₅	K ₂ O	Ca	Mg	S	B
up to 4	203	51	229	88	15	16	.20
4-5	226	66	301	108	19	20	.25
5-6	313	78	352	132	24	25	.30
6-7	373	92	423	145	26	29	.33
7-8	429	108	503	167	30	34	.37
over 8	499	124	585	202	35	42	.43

It's obvious that the uptake of nitrogen (N) and potash (K₂O) is the greatest of all nutrients. Of course, alfalfa is a legume and is among the most efficient fixers of N from the air. Thus N rarely limits alfalfa production.

Potash, however, which is taken up in even larger amounts, must come from the soil. Thus, if soil fertility and 7 to 8 ton alfalfa yields are to be maintained, these heavy demands for potash (nearly 65 lbs. removed per ton) must be anticipated and incorporated into the soil fertility program on your farm.

Phosphate (P₂O₅) is also very important to profitable alfalfa production. Even though uptake is only about one-fifth as much as for N and K₂O (about 15 lbs. per ton of P₂O₅) you must provide for phosphate needs in your alfalfa fertility program.

Alfalfa also takes up calcium (Ca), magnesium (Mg), and sulfur (S) in substantial amounts which in the harvested forage are more

than doubled as top yields are achieved. Sufficient quantities of Ca & Mg have often been indirectly maintained through a good liming program. In the past, sulfur has been added to many soils when ordinary superphosphate was applied. In general this source of sulfur may no longer be significant. Thus, sulfur status is one you should watch, especially on coarse-textured, low organic matter soils or those that do not receive manure.

The uptake of the micronutrient boron (B) looks, and is, small compared with the so called major nutrients. But boron is very important and needs to be applied annually to your alfalfa crop in order to achieve maximum production.

Let's put this all in perspective in terms of a fertility program for top alfalfa production.

To begin with top producers in the alfalfa growers' program used soil tests as their guide to developing a sound long range

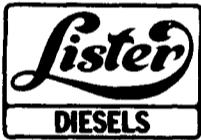
fertility program. And soil tests from many of the fields in the program indicate a high level of fertility at the time the alfalfa seeding was made. Furthermore, most top producers, mainly dairymen, used lots of cow manure in the corn phase of their corn - alfalfa rotation, assuring high levels of potash in the soil.

Results from the program, together with several research studies, indicate that for top yields and long lived stands (based on nutrient removal) you should apply up to 100 pounds of phosphate and 400 pounds of potash per acre annually. That's more than is generally recommended for yield levels of 5 to 6 tons per acre. There is evidence to suggest at these rates split applications of the potash, after first and last cutting, results in more efficient use of this nutrient.

Boron at the rate of 2 to 3 pounds per acre should also be applied on an annual basis.

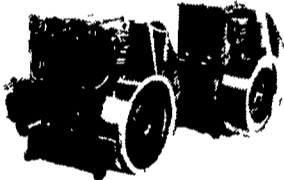
Based on cost of production records from the alfalfa growers' program, fertilizer represents nearly 20% of the annual cost of growing an acre of alfalfa. But there's also plenty of evidence to suggest you can expect a \$2 - \$3 return for each dollar invested in a sound fertility program.

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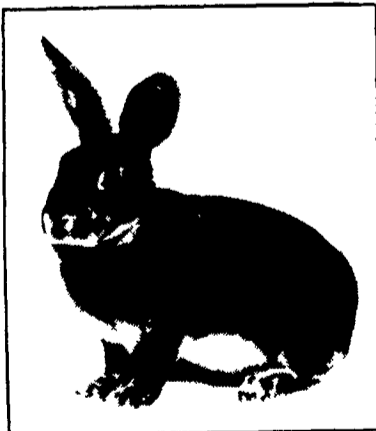


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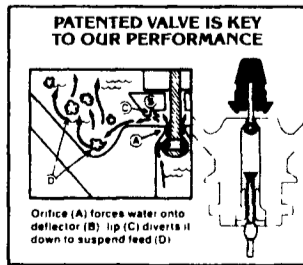
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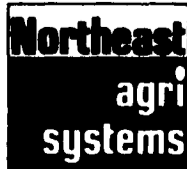
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