

# FIXatioN FAQ

## PLANTING

### **What kind of soils will FIXatioN grow on?**

FIXatioN tolerates poorly drained soils with moderate salinity as well as heavy clay to sandy soils. FIXatioN also does well in soils with pH ranging from 4.5 - 8.0.

### **How salt tolerant is FIXatioN?**

FIXatioN tolerates soil with moderate salinity.

### **Does FIXatioN work in acidic soils?**

FIXatioN grows well in soils with a pH ranging from 4.5 - 8.0.

### **Are there any special preparations to the soil I need to do before planting?**

For best results, FIXatioN can be drilled at 1/8" to 1/4" depth or broadcast onto a prepared seed bed. Extra care should be given when seeding into soils that form heavy crusts as the crust can prevent successful emergence.

### **How soon will it come out of the ground after planting?**

Germination is dependent on soil temperature and moisture. While germination can occur in just 3 days, typical emergence will occur in about 7 days. The first stage of growth, rosette formation, is somewhat slow as the plant is using energy to develop its' root system. It is capable of producing a taproot more than 18" in length in just 45 days.

### **How shade tolerant is FIXatioN?**

FIXatioN has good shade tolerance usually needing 4-6 hours sunlight per day to achieve maximum growth.

### **How many seeds per pound are there and what size is the seed compared to other clovers?**

FIXatioN balansa clover is extremely small-seeded, similar to that of white clover. Due to changing weather conditions, the amount of FIXatioN seed per pound fluctuates, however it generally runs close to 1 million seeds per pound in its raw state. Comparatively Medium Red clover = 270,000/lb., White clover = 750,000/lb., Crimson clover 160,000/lb.

### **What are the advantages of using this over medium red clover or crimson?**

FIXatioN balansa clover is very economical on a per acre seed cost basis. FIXatioN exhibits greater cold hardiness and biomass than crimson clover under good management practices. FIXatioN has demonstrated superior establishment when broadcast seeded. Unlike red clover, FIXatioN is capable of re-seeding when flowering is allowed to be completed.

### **When is the best time to plant in my region?**

For best performance it is recommended that FIXatioN balansa clover be sown 50 days prior to continuous night time frosts. FIXatioN can also be dormant, frost, or spring seeded, however, biomass production is reduced when compared to fall-seedings.

**Should I plant in the Fall or in the Spring?** If there is sufficient moisture, either time will work.

**Can I grow FIXatioN in the South or is it just for the Northern US?** FIXatioN balansa clover has been successfully grown throughout the US.

**When should I seed this with my alfalfa?** FIXatioN balansa clover can be sown into declining alfalfa stands or when alfalfa will be frequently grazed after sowing. It will perform best when Fall seeded or frost seeded into the alfalfa.

### **Can FIXatioN be frost seeded?**

Yes, FIXatioN can be frost seeded. Performance under soils that firmly crust over can be reduced as the small seed size makes it difficult to break through thick crusts.

### **Can I use FIXatioN in Hawaii?**

Yes, however it is important to control weeds so that the juvenile plants are not smothered by weedy material. Weeds can be controlled by frequent mowing or by utilizing herbicides that are safe to use on clovers.

### **Can I drill this into my alfalfa?**

Yes, it is recommended to seed FIXatioN when alfalfa growth is slower. It is imperative that the height of the alfalfa be kept short and moisture is readily available until the FIXatioN is well established

## **FIXATION IN MIXES**

### **Does FIXatioN do well mixed with other species like cereal rye, oats and radishes?**

FIXatioN is an excellent companion crop to cereal rye, and other small grains. Be careful not to seed the cereals too heavy as they can smother the population of FIXatioN. The leafy canopy of brassicas can smother out the lower growing clover. Success is dependent on using a very low seeding rate on the brassica component, less than 2 Lbs./A. is recommended.

### **Will FIXatioN work with oats or other grains as a cover crop?**

Yes, it is an excellent companion crop to grains as it adds Nitrogen to the soil. A successful cover crop mixture is 5 Lbs./A. of FIXatioN balansa clover along with 20 Lbs./A. of rye grain.

### **What should I mix with FIXatioN if I want to use it for silage?**

FIXatioN can be substituted for red clover in silage mixes. It would combine well with Albion perennial ryegrass or with Pasture Sweet'ner HSG perennial ryegrass, or small grains.

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## **HOW TO MANAGE**

### **Will it reseed itself?**

FIXatioN is a prolific re-seeder. This can be managed by letting the plants go 30 days past flowering before cutting or grazing. If re-seeding is not desired FIXatioN should be cut, grazed or terminated when it flowers.

### **What is the best way to terminate FIXatioN so I don't have a weed/seed problem?**

FIXatioN should be terminated at flowering to prevent re-seeding. It can be killed with a non-selective herbicide, such as glyphosphate.

### **Is FIXatioN easy to terminate?**

Yes, Glyphosate and other non-selective herbicides are effective in terminating FIXatioN. In organic farm operations, tillage can be utilized.

### **How long should it take from planting to maturity for me to utilize this product?**

FIXatioN matures approximately 14 days later than Dixie crimson clover and as much as 28 days later than other commercially available balansa varieties. If planted in the fall (mid-August to early September) it will aggressively produce forage in the spring to early summer.

**What is the seed maturity?** FIXatioN clover will flower from spring to summer, or about two weeks later than crimson clover. The flowers can range from white to pink and are very attractive to pollinator insects, with pollen containing 27-29% protein (dry weight), producing a light colored honey with a very distinct and pleasing flavor.

### **Will it persist for more than a year?**

Yes, even though FIXatioN is an annual, you can allow a stand of FIXatioN to re-seed by allowing it to grow 30 days after the first bloom.

### **How long will the stand persist?**

If allowed to re-seed, FIXatioN will regenerate itself year after year needing only an occasional new planting. We recommend planting new seed every three years on re-seeded fields to maintain a nice healthy stand.

### **How does FIXatioN compare to other balansa varieties?**

Previous varieties have lacked cold hardiness and are very early in maturity. FIXatioN is a unique combination of superior cold tolerance and late maturity combined with tremendous yield. FIXatioN balansa clover has been documented to survive temperatures as low as -14 degrees Fahrenheit. The later maturity extends the grazing period by more than three weeks. The amount of forage FIXatioN produces can be more than 50% greater than other varieties.

## **At what temperature should I be concerned about losing my stand, and how long can it endure without snow cover at cold temperatures?**

Once the rosette is formed, FIXatioN has been documented to survive multiple days below freezing with no snow cover. The coldest temperature FIXatioN has been documented to survive without snow cover thus far is -14 degrees Fahrenheit.

## **How well established does the plant have to be to withstand a first frost? If the crown is set well, are we ok?**

Plants as young as 2 weeks are capable of surviving frosts. Once the rosette is formed the plant exhibits superior cold tolerance.

## **FORAGE USE**

### **Can I take a hay or silage crop off and still fix N in my soil?**

Yes, the roots and nodules will still contribute N to the soil even if the top growth is harvested.

### **What is the tonnage you get from FIXatioN for hay?**

In well-established fields, the clover can withstand multiple cuttings with yields as much as 2.5 tons of extremely digestible dry matter per cutting and intensive grazing regimens. If you desire multiple harvests, we recommend harvesting FIXatioN prior to bloom. Single cuttings in June have yielded more than 5 tons of dry matter. The plants retain actively growing leaves from the tip of the stem to the rosette at the soil surface, allowing for better recovery than crimson, arrowleaf and other annual clovers.

### **Can I use this for my horses?**

Yes, clover can be a desirable feed source for most horses whether used in pasture or in hay because it provides useful energy and acceptable protein and fiber. Clover also is a natural Nitrogen builder for soil, eliminating the need for expensive and environmentally detrimental chemical Nitrogen fertilizers. Make sure that the seed mix is not more than 10% clovers, after all, grass is a horse's natural diet.

### **Can FIXatioN cause bloat?**

Like many other legumes, there is the possibility of bloat when animals are able to over-graze in pure of dominating stands. FIXatioN is classified as a low-bloat clover. Seeding it with an appropriate grass, will help dilute the bloat potential.

### **Can I overseed my pasture with this clover?**

Yes, FIXatioN can be inter-seeded into an established perennial pasture. Recent studies from New Zealand show that it is a better component in pasture mixes than white clover. This is because the life cycle of FIXatioN ends when the grass component of the pasture becomes stressed, leaving the available moisture and nutrients for the grass. FIXatioN releases all the nitrogen it produces on an annual basis, greatly reducing any need for supplemental nitrogen to feed the grasses.

### **Is FIXatioN good for hay?**

Yes, FIXatioN can be cut for hay to produce a crop with crude protein levels ranging from 22%-28% and relative feed values ranging as high as 277. Due to the tremendous amount of potential biomass, we recommend that swaths are made as wide as possible to facilitate fast dry down.

### **Is this clover good for cows?**

Yes, FIXatioN is highly palatable to livestock as hay, silage and grazing forage. It is an excellent source of protein for livestock and wildlife, yielding high crude protein levels ranging from 22%-28.4% and relative feed values as high as 277.

### **Will FIXatioN work for grazing?**

Yes, FIXatioN balansa clover can be used for Fall or early Spring pasture. Balansa clover has shown to have excellent palatability and high amounts of protein, therefore, it is a great addition to any pasture. Keep in mind that to achieve maximum seed set for the next year, FIXatioN must not be grazed once flowering starts in the spring the first year.

### **How does FIXatioN work as a honey crop?**

FIXatioN flowers can range from white to pink and are very attractive to pollinator insects. Its pollen contains 27-29% protein (dry weight) producing a light-colored honey with a very distinct and pleasing flavor. The pollen produced by balansa clover has been documented to meet all the dietary needs of European honeybees, one of the few clover species to do so. We are conducting more research to the pollen quality of this specific variety, stay tuned for the results!

### **What is the feed quality of FIXatioN? As a monoculture? In mixes?**

FIXatioN is an excellent source of protein for livestock and deer, yielding high crude protein levels ranging from 22-28.4% and relative feed values as high as 277. FIXatioN is a great addition to any pasture or hay mix. Feed quality of FIXatioN in mixes will vary depending on what it is mixed with.

### **How does it compare with red clover and white clover in pasture use?**

FIXatioN balansa clover is a re-seeding annual clover, whereas red clover is a short-term perennial and white is a long-term perennial. As an annual clover FIXatioN produces tremendous amounts of forage, balancing the spring growth of pasture grasses. FIXatioN balansa clover is capable of re-seeding and regenerating itself year after year. FIXatioN will set seed and die off during the summer drought periods leaving the limited rainfall for the grasses. In the Fall, when moisture becomes available, seed will germinate and begin to improve the pasture once more. While perennial clovers keep most of the Nitrogen they produce for their own usage; when annual clovers die they release the nitrogen to be used by the grasses. The grasses benefit from the influx of nitrogen and are more productive as a result.

## **COVER CROP USE**

### **How much N will it fix if it is fall planted and terminated in the spring?**

Nitrogen contribution is dependent on the amount of biomass produced at the time of termination...the more the better. Typically, FIXatioN planted in early fall and terminated in the Spring will contribute 100 Lbs/A. of N or more.

### **Does FIXatioN work for weed suppression?**

Yes, FIXatioN creates a thick mat of top growth that is effective at suppressing weeds.

### **Is FIXatioN easy to terminate?**

Yes, Glyphosate and other non-selective herbicides are effective in terminating FIXatioN. In organic farm operations, tillage can be utilized.

## **WHERE TO BUY**

### **Can I buy FIXatioN directly from Grassland Oregon?**

We have a fantastic distribution system of loyal, knowledgeable partners who are able to provide you with recommendations and advice specific to your region, soils, and climate conditions. They also are able to offer you competitive pricing and lower freight costs.

### **Where can I order small amounts of FIXatioN?**

Currently FIXatioN comes to our partners in a 50 pound package that is enough to plant 6.25 - 10 acres (depending on application and use). We are confident our distributors will accommodate your needs. Should you need smaller, please visit [outsidepride.com](http://outsidepride.com)

### **Is FIXatioN available in Canada?**

Because we believe this product is so special, we are currently working out the patent process in Canada, as well as other countries. We hope to have good news for you soon about from whom and where you can buy FIXatioN in Canada. Watch for announcements in our newsletter, on our website, and in our other media!

### **Where can I buy that awesome honey it produces?**

We are so sorry, but we are not selling the honey at this time. We will continue to explore avenues and markets for FIXatioN and its byproducts and will certainly let you know if/when it becomes available commercially.

### **Is there anything comparative to FIXatioN on the market?**

Balansa clovers have been marketed around the world for over sixty years. Previous varieties have lacked cold tolerance and are very early in maturity. FIXatioN is a unique combination of superior cold tolerance and late maturity combined with tremendous yield. FIXatioN balansa clover has been documented to survive temperatures as low as -14 degrees Fahrenheit. The later maturity extends the grazing period by more than three weeks. The amount of forage can be more than 50% greater than other varieties.