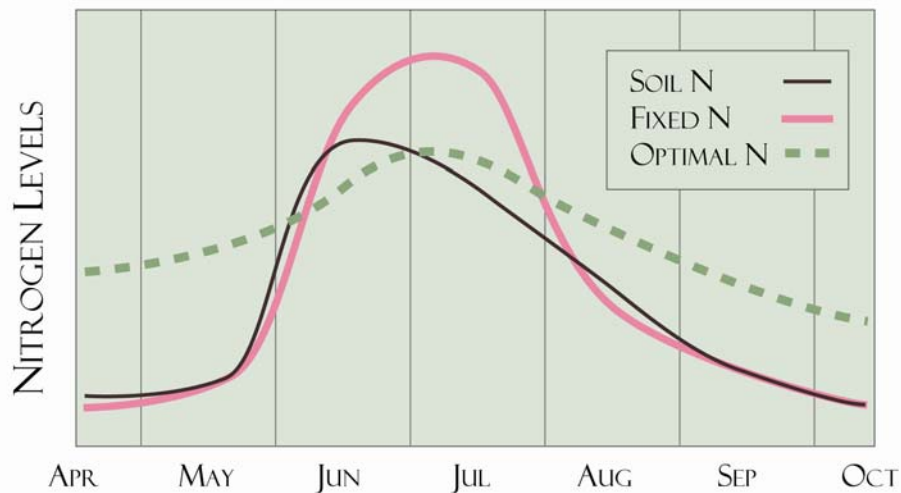


Building Better Beans:

- **Soybeans nodulate as early as V1**, but normally nodulation occurs around V2 or V3. These nodules continue to increase in number, size and rate of fixation, but early season nitrogen may not be available to the growing soybean. **An early season starter fertilizer, which contains nitrogen, may be necessary to obtain maximum soybean yields if not enough nitrogen is being released from the soil.**
- Around 65-75% of the Nitrogen required by soybeans is made available by the fixation of N₂ gas by the *Rhizobium japonicum* bacteria which infect soybean roots and form nodules. **The amount of nitrogen fixation is dependant on environmental conditions and health of the soil.** Active nodules are pink in color inside where non-active ones are green or brown.
- Plants can appear quite normal and yet at the end of the year yields maybe lower than expected. **Hidden hunger** can be the culprit: **just enough nutrient to grow but not enough of a shortage to show a deficiency.** This is where a regular plant tissue testing program can safeguard against hidden hunger. Early detection can lead to treatment, which can relieve stress caused by a lack of an essential nutrient.



Building Better Beans:

- From **R2** (full bloom) to **R6** (full pod) is the **critical time for nutrient uptake root expansion** and redistribution of nutrition from leaves and stems to pods and beans with **nutrient uptake declining at R6**.
- **Redistribution of nutrients** from older plant parts to newer locations is **the primary source for certain nutrients**. Some nutrients are very mobile such as Nitrogen, Phosphorus and Sulfur. Other nutrients are very immobile such as Calcium and redistribution later in the season of mobile nutrients leaves calcium behind and causes an increased concentration in the leaves.
- The remaining nutrients range in mobility of from highly mobile Nitrogen to immobile Calcium. Zinc and Copper are redistributed but not as much as Nitrogen. Manganese, Magnesium, Iron, Boron are immobile but not as much as Calcium. **Two of the most responsive nutrients to foliar feeding are Manganese and Magnesium due to their relative immobile nature.** Foliar feeding of Manganese, Magnesium and some Boron have often shown the greatest yield response

