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Want to Increase Your Soybean Yield? *Manage Soybeans from the Ground Up. Part II.*

Getting more yield out of your soybeans is not an impossible task. You must consider that yield is an endpoint influenced by many, many factors including abiotic (drought, canopy architecture, population) and biotic (insects, diseases) stress. The yield potential of any field is determined by its most limiting factor, pH, water, or compaction, for example. Identify and eliminate the most limiting factor and you harvest more yield. Identify and eliminate all limiting factors, you harvest profit.

Sound impossible? Agronomists at Mississippi State University have proven that it works.

They developed the S.M.A.R.T. program (Soybean Management by Application of Research and Technology). It was initiated in 1992 to demonstrate to growers the impact increased management. Thus improved plant health, can have on improving the profitability of soybean.

Good managers identify the limiting factors in every field; poor root health being the dominant factor.

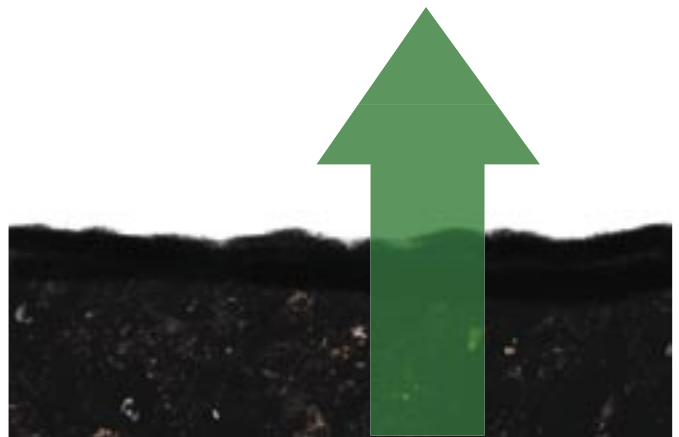
Improving Root Health

The greatest contributor to poor root health is water; either too little as in the case of Mississippi producers or too much, as is generally the case with Midwest soybean producers. Improving soil drainage can generate as much yield response as controlling a heavy infestation of insects.

Fine textured soils generally hold water for an extended period of time, resulting in increased prevalence of plant pathogenic fungi. More than 31 fungal pathogens are known to affect soybean. Of those, 15 are known to cause significant disease problems.

Phytophthora root and stem rot is one of those diseases that prevail when soils hold too much water; it is now known to occur worldwide. Its impact on the soybean crop varies with environment, but is second in yield loss estimates only to the soybean cyst nematode.

Management of Phytophthora is multi-faceted and no one practice is totally effective. Management using



cultural practices includes improving soil drainage, including elimination of compaction zones (reduces the infection period), delayed planting, tillage and crop rotation. While crop rotation does not allow for reduction of inoculum, it does slow down the buildup of the pathogen in the soil. Unfortunately, little work has been done on the affect of tiling on the presence of these fungi. Despite the low amount of research, it is widely known that growers who pattern tile those low spots harvest more yield.

Variety selection is also important in minimizing the effect of Phytophthora on soybean. Growers should select varieties with a combination of genetic and partial resistance, more commonly known as field tolerance. Genetic resistance has proven to be the most economical and efficient means of control. Partial resistance is effective in many cases, but is not effective under severely adverse conditions.

Growers wishing to produce soybeans on poorly drained fields are advised to select varieties with both genetic resistance and high levels of partial resistance to obtain consistent yield. Producers with only moderate to low problems with Phytophthora may be able to get by with only partial resistance. Only through experience will the grower know for sure.

For more information on improving soybean plant health visit www.planthealth.info.