

How crop protection and plant nutrition benefits potato yield

Potatoes

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Healthy, productive potato crops require careful planning and care at key points throughout the growing season.

Syngenta and Yara, two industry leaders in research and development, will this season provide farmers with tips and advice as a resource available in select publications and free online.

“Sustainable crop production practices that increase nutrient use efficiency, reduce the impacts of weeds, insects and diseases - while preserving soil structure - ultimately support grower profitability,” Syngenta Product Lead for Potatoes, Peter Werbenec said.

“The strategic use of the right type and quantity of fertiliser, alongside the right crop protection technology, should be considered industry best-practice.”

This grower resource draws upon the significant knowledge of Yara and Syngenta’s technical teams, through years of work in the field.

“The role nutrition plays in crop growth, yield and quality are well known,” Yara Agronomy and Crop Solutions Manager David McRae said.

“However, mineral nutrition also has additional and often unexpected effects on plants by altering

chemical composition, resulting in an increase or decrease in resistance or tolerance to pathogens and pests.”

The resource will be delivered in four parts. The following is an overview of the series.

Planting

Optimising the nutritional needs of potatoes is a challenge as the plant has a relatively sparse, shallow root system.

High and low soil temperatures can also reduce root growth rates and development.

This can limit access to nutrients, particularly immobile nutrients such as phosphorus and zinc. It can also increase effects of soil borne diseases.

Syngenta Technical Solutions Lead Scott Matthew said the strategic use of the right type and quantity of fertiliser, alongside the right fungicide, should be considered best practice.

“Like many soil-borne diseases, *Rhizoctonia* spp. is a relatively weak pathogen,” he said.

“They penetrate the young, succulent tissue of germinating tubers and reduce early growth and vigour.”

“Having good supplies of phosphorus and zinc will support general root development and health and, as we know, an actively growing, healthy plant is better able to resist these pathogens.”

Canopy Establishment

Establishing a healthy leaf canopy is essential for high yielding potatoes.

Potatoes are a rich source of carbohydrate in our diets, but that energy must be produced over a short period.

A good crop canopy size and leaf health are required to intercept sun light and absorb CO₂, driving the production of plant energy.

Once the new shoots emerge from the soil, the developing leaves become the primary source of carbohydrate production. The importance, or contribution, of the mother tuber drops significantly.

Good early leaf development is important for establishing a healthy leaf canopy.

It also plays an important role in weed and disease management, as shading of the ground helps to reduce weed germination and reduces the distribution of disease such as early blight (*Alternaria solani*) from rain drop splash.

Canopy Development

Balanced fertiliser programs support healthy canopy development. As the plant grows, the whole canopy must be managed to maintain an effective carbohydrate factory.

The combination of adequate nutrient supply and a protective fungicide application strategy works together to manage diseases and maximise plant health.

“Nutrients increase the plant’s own ability to fight-off disease. Nutrients can maximise the inherent defence of plants, facilitate disease escape through increased nutrient availability or stimulated plant growth and alter the external environment to influence survival, germination and penetration of pathogens,” David said.

“Here it becomes important to select and use of the right type and quantity of fertiliser at the right time.”

The value of a quality, preventative fungicide application is that it affords the plant protection beyond what nutrition alone can deliver.

Tuber bulking

Unlocking plant potential begins at planting and continues throughout the life of the crop.

Pre-row closure is a ‘last chance’ to help the potato crop, as it moves into the tuber bulking phase, and achieve the desired market specifications.

Applying a quality fungicide prior to row closure is critical for controlling a disease like target spot and helps to retain green leaf area, protecting the plant’s photosynthetic potential, which is important to tuber bulking.

[>>>Visit www.syngenta.com.au/potatopartners for updates on this series and further advice.](http://www.syngenta.com.au/potatopartners)