BVR Manganese500

Contains 500 g/l (28%w/w) total manganese as manganese carbonate.

BVR Manganese500 Technical User Guide

- Manganese is involved in the function of many plant enzymes.
- Manganese deficiency reduces chlorophyll content and the ability of the plant to photosynthesize.
- Manganese is required in lignin manufacture.
- Manganese deficient plants have lower resistance to root pathogens such as Take-all in Cereals.

Manganese deficiency

Moderate to severe manganese deficiency in arable crops usually occurs on:

- Organic, peaty and marshland soils with a soil pH over 6.0, especially over pH6.5
- Sandy soils (sand, loamy sand) with a soil pH over 6.5, especially over pH7.0

Mild and transient deficiency is also commonly seen in cereal crops grown on poorly structured fine-textured soils (clay loam) with a soil pH over 7.0. Additionally, leached sand and podzolic (high clay, organic and iron contents) soils are particularly low in manganese.

Manganese deficiency is usually induced by low availability rather than being due to an absolute manganese shortage. Conditions reducing manganese availability include:

- high soil pH
- high organic matter content
- poor root development
- poor root-soil contact, in unconsolidated (fluffy) seedbeds
- low soil temperatures
- below average rainfall

The overall combination of these factors will dictate the severity of the deficiency. The higher the organic matter content, the lower the soil pH needs to be to prevent deficiency occurring. A temporary shortage of manganese is also often induced under poor soil physical conditions, especially after periods of cold, dry weather that put a poorly rooted crop under stress. Bright sunny weather conditions can also accentuate manganese deficiency, compared with dull, humid conditions.

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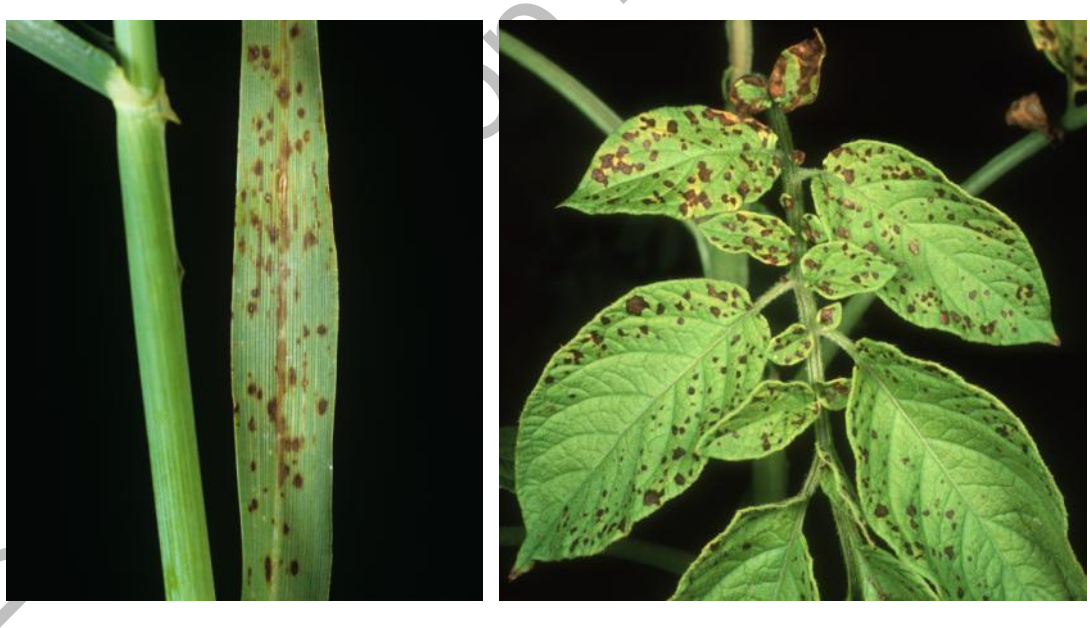
Symptoms of manganese deficiency

The most characteristic symptom of manganese deficiency in cereals is leaf interveinal chlorosis, which can quickly develop. The deficiency also appears as a general paling of the leaves, which can be confused with other agronomic problems such as poor drainage. Deficiency symptoms usually first appear in spring as patches of pale green, limp growth leading to general plant stunting and leaf spotting. All leaves are affected, starting with the oldest. Symptoms can appear at any time from about the third leaf stage until flag leaf emergence (GS13-39). Crops grown on unconsolidated soils show the most pronounced symptoms, with wheelings standing out as green lines within the field. Symptoms of extreme manganese deficiency can be evident in winter cereals as early as late autumn. Initial symptoms are similar to a spring deficiency except that if left untreated the crop suffers tiller or whole plant death.

In barley, which is less susceptible to manganese deficiency than wheat, small brown/black marks develop along the interveinal tissue.

In oats, interveinal yellowing develops together with grey/buff coloured marks on the basal halves of the leaves. The streaks may coalesce so that the leaf tissue above the affected area remains green but hangs limply. Severely affected leaves will eventually turn completely brown and wither.



Manganese deficiency (L – R) in barley and potato

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Yield response to BVR Manganese500 application

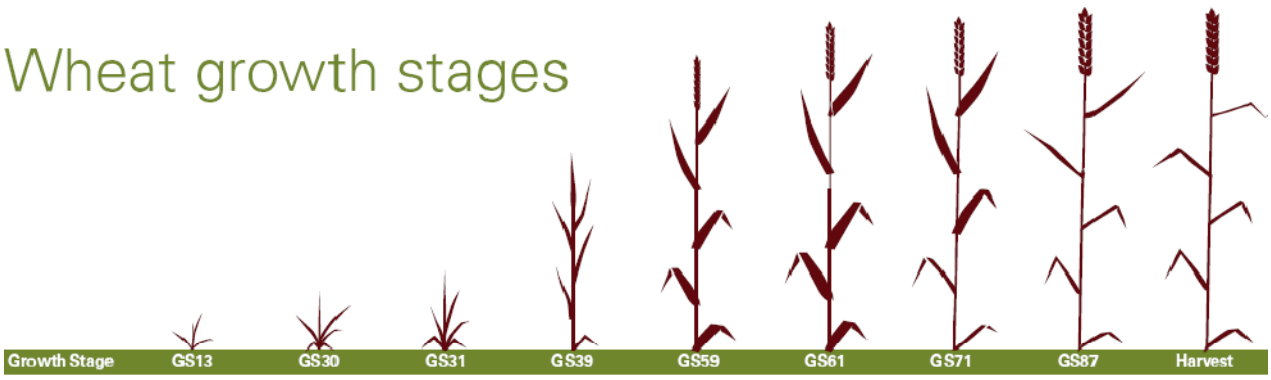
Manganese deficiency is very common in UK and Irish arable crops with up to 20% of the area treated annually. Severe manganese deficiency can result in yield losses of up to 65% in winter cereals.

A yield response to foliar manganese is not always guaranteed since transient symptoms can occur at early growth stages when crop demand is relatively high. As the crop root system develops it may eventually be able take up sufficient manganese and may "grow away" from the deficiency. No reliable test has been developed to indicate in which situations the crops will "grow away" from the deficiency. BVR Manganese500 reduces the risk of yield loss and in most cases will increase yields as yield restricting deficiency is alleviated.

Treatment with BVR Manganese500

Crop	Rates and Timing
Winter Cereals	Apply 1 l/ha at the early tillering stage (GS21 – 24) followed by a second application in the spring at 1st node detectable (GS31) and a final spray at flag leaf (GS39).
Spring Cereals	Apply 1 l/ha at the 3-5 leaf stage (GS13 – 15) followed by a second treatment between the 2nd node to flag leaf visible stage (GS 32 – 39)
Oilseed rape	Apply 1 l/ha at early stem extension
Sugar beet	Apply 1 - 2 l/ha from emergence to 6 leaf stage. Repeat after 10 –14 days in severe deficiency areas

BVR Manganese500 Treatment Timing in Winter Cereals



BVR Manganese500 application timing

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Special Notes

- A crop's nutrient status can only be determined accurately by tissue analysis. Barclay Crop Protection recommends that tissue analysis results are used whenever possible to optimise applications
- Only to be used where there is a recognised need. Do not exceed the appropriate application rates.
- BVR Manganese500 is physically and chemically compatible with a wide range of agrochemical products. The BVR Manganese500 tank mix guide is available from your distributor or from Barclay Crop Protection.
- BVR Manganese500 is incompatible with phenoxy herbicides e.g. mecoprop-p, MCPA, 2,4-D, bentazone and dicamba, and mixtures containing such herbicides, and some formulations of flurtemone.

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