



# Maize growth stages

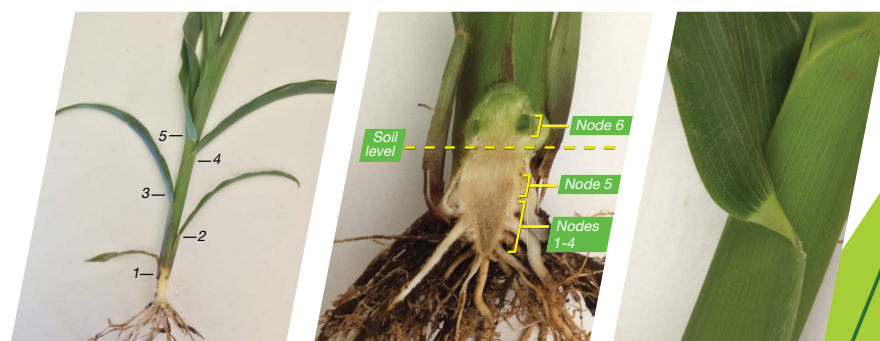
# Maize

The words “**Maize growth stages**” get thrown around the industry with the utmost of ease, but what exactly do these words actually mean? There is great value in knowing about the various growth stages of a maize plant. This knowledge allows a grower to apply the correct crop protection products (fungicides, insecticides and herbicides) as well as fertilisers at the optimal times thereby keeping the plants as healthy as possible and allowing a crop to achieve its maximum yield.

The maize growth scale is split into two different stages, namely the **Vegetative or V stages** and the **Reproductive or R stages**. The vegetative growth of the maize plant takes place right from the moment the seed germinates and emerges from the soil until the point where the foliage has reached full size and the maize plant is about to tassel. During the vegetative growth stage the maize plant is focused on gathering and storing nutrients needed for the reproductive stage. In contrast, the reproductive stage is focused on the production of kernels, redirecting energy from the vegetative growth stage to achieve its goal.

Determining the exact vegetative growth stage of a maize plant can be tricky; however it is by no means impossible. A very accurate way of determining the exact growth stage is done through counting the number of leaves which have formed a collar. The very first stage in the vegetative growth of a maize plant is the emergence stage whereby the first leaves have emerged from the soil. Two to three days after emergence a collar will be present on the seedling. When the first collar is present, it has reached **V1**. **V2** is achieved when the second collar is exposed on the seedling approximately a week later. This continues until the plant has reached full maturity at **V18** or at **Tassel (VT)**.

It is important to note that when the plant reaches the **V6** stage the stalk of the maize plant thickens significantly and some of the lower leaves may fall off in this process – thus it is important to count the number of leaves which have collars on them. If the first leaves cannot be found or it is noticed that they have died off, one can still determine the growth stage of the maize plant. Pull out a single maize plant and cut it longitudinally. Determine where the first 5 nodes are, with the 6th usually being at the surface of the soil. Start counting the number of collars, starting at 6, from the 6th node.



GROWTH STAGE	MEANING	APPROX. AGE/ TIMING	IMPORTANCE OF GROWTH STAGE	APPLICATION OF FUNGICIDES
VE	Emergence of seedling through the soil	1 week after planting	Development of primary root system, development of first true leaves.	
V1-V2		1 week after emergence		
V3-V5	Leaf and ear shoot initiation	2 weeks after emergence	Leaf and ear shoots are initiated during this stage.	<b>Nativo®</b> <ul style="list-style-type: none"> <li>• Important to protect the lower leaves, including those in the whorl.</li> <li>• Protect maize against <i>Puccinia</i> infection (common rust).</li> <li>• Create a protective barrier against infection in upper leaves.</li> <li>• Improve stalk integrity and prevent lodging.</li> </ul>
V5-V8	Determining the number of kernel rows present on the ear	3 weeks after emergence	Maximum number of kernels determined during this stage.	
V10 - V11	Rapid accumulation of nutrients and dry matter	5 weeks after emergence	The number of kernels as well as ear size are determined from this stage onwards to the end of the vegetative stages.	Avoid application of chemicals to create as little stress on the plant as possible and to prevent (as far as possible) the formation of Arrested Ear Development (AED).
V12 - V13	Brace root development	6 weeks after emergence	Start of brace root development from the 5th node.	
V14 - V15	Kernel yield determination	7 weeks after emergence	Approximately 2 weeks away from reproductive stage of growth, very critical for the number of kernels that develop silks and thus kernel yield.	
V16 - V17	Late vegetative stage	8 weeks after emergence	All leaves have been developed and are almost reaching full size.	
V18 / VT	1 week away from silking	9 weeks after emergence	Vegetative plant has reached full size, silk development.	
VT	Tasseling	10 weeks after emergence		
R1	Pollen shed and silking		<b>Fertilisation:</b> Silks emerge 1 - 3 days after first pollen shed, all silks ready for pollination within 3 - 5 days, growth of pollen tubes.	<b>Zantara®</b> <ul style="list-style-type: none"> <li>• Protect leaves against <i>Cercospora</i> (Grey Leaf Spot) and <i>Helminthosporium</i> (Northern Corn Leaf Blight).</li> </ul>
R2	Blister Stage	10 days after fertilisation	Wilting and browning of silks, kernels appear as blisters on cobs.	
R3	Milk Stage	20 days after fertilisation	Kernels are filled with a milky substance high in sugars.	
R4	Dough Stage		Conversion of sugars into starches within the kernel.	
R5	Dent Stage	40 days after fertilisation	Hardening of the top of the kernel due to high amounts of dry starch deposited, more than 90 % of the kernels will be dented in the late dough stage.	
R6	Physiological maturity	50 - 60 days after fertilisation	Maximum dry weight achieved.	

References: AED fact sheet from FAC/ Pannar. EDWARDS J. 2009. Maize Growth and Development. NSW Department of Primary Industries in association with Procrop. [http://www.dpi.nsw.gov.au/\\_data/assets/pdf\\_file/0007/516184/Procrop-maize-growth-and-development.pdf](http://www.dpi.nsw.gov.au/_data/assets/pdf_file/0007/516184/Procrop-maize-growth-and-development.pdf). RANSOM J. 2013. Corn Growth Management Quick Guide. North Dakota State University, Fargo, North Dakota. <https://www.ag.ndsu.edu/pubs/plantsci/crops/61173.pdf>. Darby H, Lauer J, n.d.. Plant Physiology - Critical Stages in the Life of a Corn Plant. <http://com.agronomy.wisc.edu/Management/pdfs/CriticalStages.pdf>



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