

## Lupin Sampling & Growth Stages

**Timing:** Begin sampling stage 2, and monitor until the end of flowering as required.

**Sample volume:** 40-50 plants; from large plants the sampling volume may be reduced 20-30 plants.

**Sampling:** Select the youngest fully expanded leaf (YFEL, the tallest leaf at rosette stage, or later, the 3rd or 4th leaf down from the growing tip of the plant). For seedlings, send entire plants. Remove the leaf blade, retaining the midrib/petiole for analysis. Remove roots and leaf blades from seedlings.

Primary Stage	Secondary Stage	Description	Comments
1			<i>Leaf development</i>
	1.1	Vegetative	1 <sup>st</sup> leaf unfolding
	1.8		8 leaves fully expanded
2			<i>Formation of side shoots</i>
	2.1		1 <sup>st</sup> side shoots detectable
	2.3		Three side shoots detectable
	2.9		End of side shoot development (nine or more)
5			<i>Inflorescence emergence</i>
	5.1	Generative	Flower cluster visible from above (green bud)
	5.3		Flower cluster raised above the youngest leaves
	5.9		First petals visible, buds still closed (yellow buds)
6			<i>Flowering</i>
	6.1	Generative	10% of flowers on main raceme open
	6.5		Full flowering: 50% flowers on main raceme open
	6.6		Lower pods starting to fill
	6.9		Flowering complete
7			<i>Fruit development</i>
	7.1	Generative	10% of pods have reached final size
	7.5		50% of pods have reached final size
	7.7		70% of pods have reached final size

*Growth Stage numbering system is in accordance to the extended BBCH, a uniform coding of phenologically similar growth stages for all plant species*

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