

A Visual Description of the Common Bean Plant Four Major Growth Periods

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The common bean plant can be categorized into four major growth periods. These growth periods can easily be identified visually by a grower or crop consultant. This material was developed to aid growers in the recognition and management of production problems. Effective management decisions concerning culture, timing of irrigation

I. GERMINATION AND STAND ESTABLISHMENT



- Day of planting.
- Hypocotyl emerging from soil (crook stage).
- Cotyledons above ground.
- Completely unfolded leaves at the primary (non-foliate) leaf node.
- First node above primary leaf node. (Count when leaf edges no longer touch.)
- Three nodes on the main stem including the primary leaf node. Branching begins to show in leaf axis of V1.

II. RAPID VEGETATIVE GROWTH



- Vegetative growth in determinate plants terminates in a flower cluster. They seldom develop to more than V-7 on the main stem. Vegetative growth continues between V-5 or V-6 to R-1 as branches which develop in leaf axis at each node. A new node on the main stem or on the branches is developing each three days.

III. FLOWERING AND POD DEVELOPMENT



- One blossom open at any node.
- Pods 1/2 inch long at first blossom position. Usually node 2 to 3.
- Pods 1 inch long at first blossom position. Branching at all nodes, so plant is becoming denser but not taller. 1/2 bloom.
- Pods 2-3 inches long at first blossom position. Seeds not discernible.
- Pods 3-4 inches long at first blossom position. Seed discernible by feel.
- Pods 5-6 inches long at first blossom position (maximum length). Seed at least 1/4 inch in long axis.

IV. POD FILL AND MATURATION



- Oldest pods will have developed seeds. Other parts of plant will have full length pods with seeds almost as large as first pods. Pods will be developing over the whole plant.
- Leaves yellowing over half of plant, very few small pods and these in axis of secondary branches, small pods may be drying. Point of maximum production has been reached.
- Mature, at least 80% of the pods showing yellow and mostly npe. Only 40% of leaves still green color.

	Date	Notes
VP	_____	
VE	_____	
VC	_____	
V1	_____	
V2	_____	
V3	_____	
— VEGETATIVE		
V4	_____	
V5	_____	
V6	_____	
V7	_____	
R1	_____	
R2	_____	
R3	_____	
R4	_____	
R5	_____	
R6	_____	
— REPRODUCTIVE		
R7	_____	
R8	_____	
R9	_____	

Developmental Stages of the Determinate (Bush) Dry Bean

and scouting for disease, insect and season long weed control problems are based on different stages of plant development. For example, peak water use for the bean plant occurs during flowering and pod development. Chemical control for white mold is applied when 50 to 100% of plants have bloomed (Stage R3). Decisions to apply chemicals for rust control is based on degree of severity and stage of plant growth prior to physiological maturity (Stage R9).

Progressive growers and consultants are asking for this material to be packaged for use in the field so they can document dates of plant development and climatological events, and to relate management inputs to the developing crop in regions such as western Nebraska and eastern Colorado. This material was adapted from Idaho information and is presented here for input from BIC readers to improve the utility of these figures for growers and consultants.

I. GERMINATION AND STAND ESTABLISHMENT



- Day of planting.
- Hypocotyl emerging from soil (crook stage).
- Cotyledons above ground.
- Completely unfolded leaves at the primary (non-foliate) leaf node.
- First node above primary leaf node. (Count when leaf edges no longer touch.)
- Three nodes on the main stem including the primary leaf node. Branching begins to show in leaf axis of V1.

II. RAPID VEGETATIVE GROWTH



- A new node will develop on the main stem about every three days with blossom clusters present but not visibly open. Branches continue to develop. Tendrils will begin to show just prior to flowering.

III. FLOWERING AND POD DEVELOPMENT

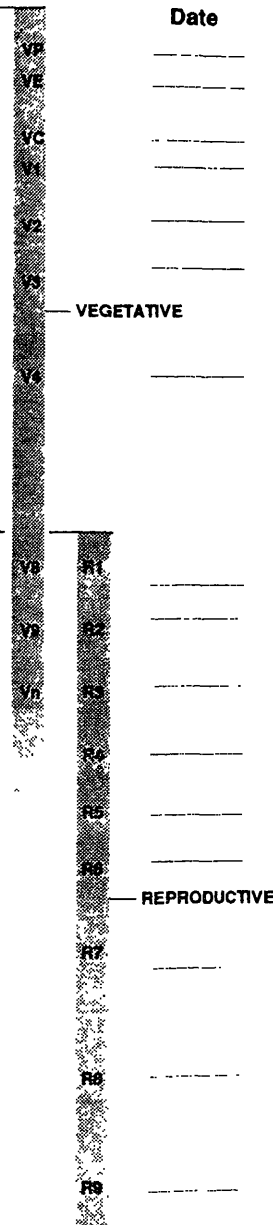


- One blossom open at any node.
- Pods 1/2 inch long at first blossom position. Node 2 to 5 most plants. Blossom would have just sluffed from this pod.
- Pods 1 inch long at first blossom position. Pods are showing at higher nodes as blossoms sluff. 1/2 bloom.
- Pods 2 inches long at first blossom position.
- Pods 3 plus inches long, seeds discernible by feel.
- Pods 4-5 inches long with spurs (maximum length). Seeds at least 1/4 inch in long axis.

IV. POD FILL AND MATURATION



- Oldest pods have fully developed green seeds. Other parts of plant will have full length pods with seeds near same size. Pods to node 9. Blossoms beyond node 10 seldom produce seed.
- Leaves yellowing over half of plant, very few new pods developing from open blossoms. Existing small pods may be drying. Point of maximum production has been reached.
- Mature, at least 80% of the pods showing yellow and mostly npe. Only 30% of leaves are still green.



Date **Notes**

Developmental Stages of the Indeterminate (Vining) Dry Bean