



University of Idaho
College of Agriculture
Cooperative Extension Service
Agricultural Experiment Station

Current Information Series No. 228

April 1974

LIBRARY

MAR 6 1984

UNIVERSITY OF IDAHO

Marshall J. Lebaron

Superintendent, University of Idaho
Research and Extension Center, Twin Falls

A Description

Developmental Stages of the Common Bean Plant

Accurate descriptions of stages of development of the common bean plant (*Phaseolus vulgaris* L.) are needed to improve communication among persons working in different geographic areas or who have varied interests in the plant.

This has recently been done for soybeans by W. H. Fehr et al. * The same system works well for common bean and limited observations indicate it will work also for the lima bean (*Phaseolus lunatis*) and southern pea (*Vigna sinensis*). The procedure and terminology used here to describe the common bean generally follow that of Fehr et al.

Plant development is divided into vegetative (V) and reproductive (R) stages in this description. Vegetative stages are determined by counting the number of nodes on the main stem including the primary leaf node. This is V1.

Reproductive stages must be described with pod and seed characters in addition to nodes. The first pod developing on the plant is described and followed to full size. At the time of first bloom (R1), secondary

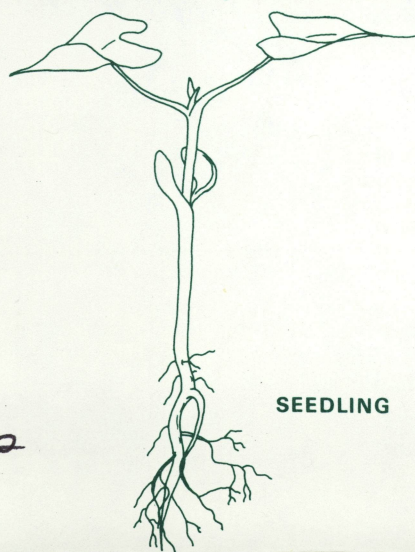
branching begins in the axils of the lower nodes which will produce secondary or later groups of blooms, pods and even tendrils. The secondary branching may be confusing if you do not follow the main stem and its flowering sequence correctly. The main stem is readily discernible on both determinate and indeterminate plants of the common bean.

A node is counted when the leaves extended from it are unrolled (when the leaf edges of each leaflet no longer touch). The number of nodes (Vn) present when

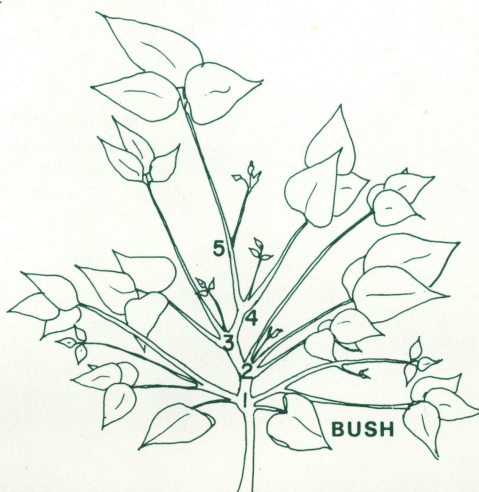
Stage No.	GENERAL DESCRIPTION Vegetative stages	Bul. 322* stages	Avg. days from planting	Days between stages	Nodal Count
V1	Completely unfolded leaves at the primary (unifoliate) leaf node.		10		1
				9	
V2	First node above primary leaf node. Count when leaf edges no longer touch.	1	19		2
				10	
V3	Three nodes on the main stem including the primary leaf node. Secondary branching begins to show from branch of V1.	2	27		3
V(n)	n nodes on the main stem, but with blossom clusters still not visibly opened.		A new node each 3 days		
	V5 Bush (determinate) plants may begin to exhibit blossom and become stage R1.	3	50		5
	V8 Vine (indeterminate) plants may begin to exhibit blossom and become stage R1.		40		8

* W. H. Fehr, C. E. Caviness, D. T. Burmood, J. S. Pennington. Stage of development descriptions for soybeans, *Glycine Max* (L.) Merrill. Crop Science Vol. II November, 1971.

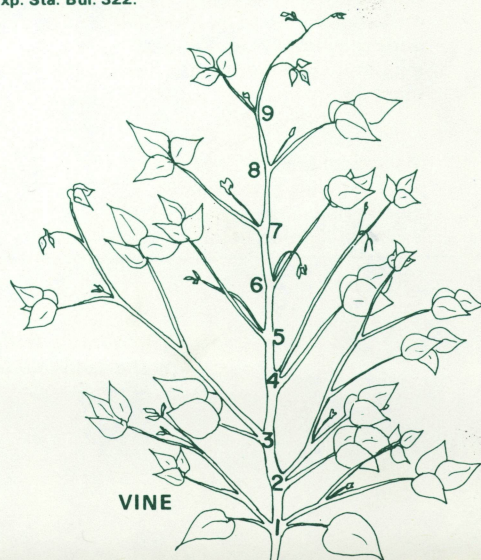
* Woodbury, George, and LeBaron. 1959. A study of simulated hail injury in beans. Idaho Agr. Exp. Sta. Bul. 322.



SEEDLING



BUSH



VINE

the first flower appears will vary with varieties and is based on plant type (bush or semi-vining) and maturity. First blossom will be found in the area of the nodes 2 to 5 with normal plant populations.

A bean plant may have the same number of nodes in each of two geographically different areas of bean production. However, because of difference in length of internodes, the plants may be twice as tall in one area as the other. The plant size will largely be controlled by environment.

Stage no.	BUSH DESCRIPTION Reproductive stages	Bul. 322 stages	Avg. days from planting	Days between stages	Nodal count
R1	One blossom open at any node.	3	50		6
				3	
R2	Pods 1/2 inch long at first blossom position. Usually node 2 to 3.		53		
				3	
R3	Pods 1 inch long at first blossom position. Secondary branching at all nodes, so plant is becoming denser but not taller. 1/2 bloom		56		
				3	
R4	Pods 3 inches long - seeds not discernible. Bush dry types may be shorter.		59		
				5	
R5	Pods 5-6 inches long, maximum length. Seeds discernible to feel in garden varieties. Bush dry; pods 3-4 inches. Seed discernible.	4	64		
				2	
R6	Seeds at least 1/4 inch over long axis.		66		
				6	
R7	Oldest pods 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.	5	72		
				18	
R8	Leaves yellowing over half of plant, very few small pods and these in axils of secondary branches, small pods may be drying. Point of maximum production has been reached.		90		
				15	
R9	Mature, at least 80% of the pods showing yellow and mostly ripe. Only 40% of leaves still green color.		105		

The descriptions used here are based on data and observations taken from plants grown in southcentral Idaho. The bush description is rather broad in order to cover the great variation in bean seed development and maturity among varieties of garden beans.

For the benefit of crop hail insurance adjustors, these descriptions are compared to some older hail data, to days from planting and to node counts. These comparisons should help in stage growth identification.

Stage no.	VINE DESCRIPTION Reproductive stages	Bul. 322 stages	Avg. days from planting	Days between stages	Nodal count
R1	One blossom open at any node. Tendril will begin to show.	3	40		8
				3	
R2	Pods 1/2 inch long at first blossom position. Node 2 to 5 most plants. Blossom would have just sluffed.		43		9
				3	
R3	Pods 1 inch long at first blossom position. Pods are showing at higher nodes when blossom sluffs. 1/2 bloom.		46		10
				4	
R4	Pods 2 inches long at first blossom position.		50		11
				6	
R5	Pods 3 plus inches long, seeds discernible by feel.	4	56		12
				4	
R6	Pods 4-5 inches long with spurs (maximum length). Seeds at least 1/4 inch in long axis.		60		
				10	
R7	Oldest pods have fully developed green seeds. Other parts of plant will have full length pods with seeds near same size. Pods to the top and blossom on tendril, nodes 10-13.	5	70		
				12	
R8	Leaves yellowing over half of plant, very few small new pods/blossom developing, small pods may be drying. Point of maximum production has been reached.		82		
				12	
R9	Mature, at least 80% of the pods showing yellow and mostly ripe. Only 30% of leaves are still green.		94		

Published and Distributed in Furtherance of the Acts of May 8 and June 30, 1914, by the University of Idaho Cooperative Extension Service, James L. Graves, Director; and the U.S. Department of Agriculture, Cooperating.