



United States

Department of
Agriculture

Agricultural
Marketing
Service

Fruit and
Vegetable
Division

Processed
Products
Branch

Grading Manual for Frozen Green Beans and Frozen Wax Beans

Effective OCTOBER 1996

Frozen Green and Wax Beans
Grading Manual
October 1996

This manual is designed for Processed Products Branch Personnel of the U.S. Department of Agriculture. Its purpose is to give background information and guidelines to assist in the uniform application and interpretation of U.S. grade standards, other similar specifications and special procedures.

The citation of any data, criteria, techniques, illustrations, copyrighted material, or pictorial representation accredited to private authorship is used with the permission of the individuals or sources cited. Unless a specific reference is cited, the information in this manual has been compiled or developed from sources available to the public as well as from technical knowledge of personnel in the Department.

Following the suggested guidelines in this manual does not excuse failure to comply with the Federal Food, Drug, and Cosmetic Act or any other applicable Federal or State laws or regulations.

Except for official USDA inspection aids or devices and color guides (or standards) produced under license of the Department, the mention of any supplier, patented device, product, brand name or equipment does not imply endorsement by the Department over any other similar, or equally effective material.

Address inquires to:

Chief, Processed Products Branch
Fruit and Vegetable Division, AMS
U.S. Department of Agriculture
STOP 0247, P.O. Box 96456
Washington, DC 20090-6456

TABLE OF CONTENTS

	Page No.
SAMPLING PROCEDURES	1
SUGGESTED ORDER OF GRADING	3
Non-quality Factors	3
Prerequisite Quality Factors	5
Grading of Specified Defects	8
PROCEDURES FOR GRADING MIXED QUALITY LOTS	25
PROCEDURES FOR SINGLE SAMPLE UNITS (UNOFFICIAL SAMPLES)	26
TIME SAMPLING AND SEGREGATION PROCEDURES	37

TABLES

Table I, Minimum Sampling Rates	1
Table II, Sampling Rates for Small Containers	2
Tables III, IIIa, IIIb, IV, IVa, & IVb Acceptance Numbers (400 PLAN)	15
Tables V, Va, & Vb Acceptance Numbers (500 PLAN)	21
Tables VI, Acceptance Numbers for Character (100 PLAN)	24
Table VII, Acceptance Numbers for Decay	25
Tables VIII, VIIIa, & VIIIb, Acceptance Numbers for Unofficial Samples & Mixed Quality (400 PLAN)	27
Tables IX, & IXa, Acceptance Numbers for Mixed Quality (100 Plan)	30
Table X - XV, Time Sampling Acceptance Numbers -- 400 Plan	35
Table XVI - XVIII, Time Sampling Acceptance Numbers -- 200 Plan	41

Frozen Green and Wax Beans
Grading Manual
October 1996

SAMPLING PROCEDURES

Follow the general procedures and instructions as outlined in File Codes 109-A-1 and 120-A-1.

Follow the procedures in File Code 130-A-1; File Code 128-A-10 (Net Weight); File Code 130-A-34 (Thawing Procedures); File Code 130-A-41 (Product Storage Temperatures); File Code 130-A-67 (Small Units of Alien Vegetables); File Code 130-A-38 (Cooking Procedures); and File Code 135-A-12 (Enzyme Inactivation).

Follow the procedures in Condition of Container File Code 125 when a formal condition of container is required.

Follow Table I and Table II Minimum Sampling Rates for Frozen Green Beans and Frozen Wax Beans when sampling this product. Except for small containers, Officially Sampled - Minimum sample size - 3. Maximum sample size - 29. Unofficial Samples - minimum 400 units (all styles except French) or 500 grams (French style).

When additional containers are required in Group 1, **draw and separately identify (mark)** all of the containers. For example, using Table II, if the sampling rate specifies six (6) containers, and the total number of containers needed is 12, **draw** two (2) adjacent containers per sample unit. **Identify** the containers as 1a, 1b; 2a, 2b; etc.

Table I
Minimum Sampling Rates for Frozen Green Beans and Frozen Wax Beans

	Group 1 ^{1/}	Group 2	Group 3
Number of Sample Units	Up to One (1) Pound, Case, No. of Containers	Over One (1) Pound to 2-1/2 Pounds, Number of containers	Any Type of Container Over 2-1/2 Pounds
3	2,400 or Less	1,200 or Less	Convert to Equivalent Number of 2-1/2 Pound Containers and Use Group 2
6	2,401 - 9,600	1,201 - 4,800	
13	9,601 - 31,200	4,801 - 15,600	
21	31,201 - 67,200	15,601 - 33,600	
29	67,201 - 116,000	33,601 - 58,000	

^{1/} SEE TABLE II OF THIS MANUAL TO INSURE THAT SUFFICIENT PRODUCT IS SAMPLED FOR GRADING PURPOSES.

NOTE: THE SAMPLING RATES IN THE FOLLOWING TABLE ARE DESIGNED TO INSURE THAT SUFFICIENT PRODUCT IS DRAWN FOR GRADING PURPOSES.

Table II

**Sampling Rates for Small Containers
of Frozen Green and Frozen Wax Beans**

Container Size	Sampling Rate	Minimum Units of Product Needed	Total Number of Containers Needed (Other than French Style)	Action Draw and Separately Identify (Mark) <u>1/</u>
10 oz	6	600 <u>2/</u>	12	2 adjacent cartons per sample unit.
10 oz	13	1200 <u>3/</u>	17	4 extra cartons throughout the lot.
10 oz	21	1200 <u>3/</u>	21	N/A
10 oz	29	2400 <u>4/</u>	34	5 extra cartons throughout the lot.

1/ Identify the containers as 1a, 1b; 2a, 2b; etc.

2/ 1500 grams for French style.

3/ 3000 grams for French style.

4/ 6500 grams for French style.

SUGGESTED ORDER OF GRADING

A. Non-quality Factors.

1. **Record** the following applicable information on the tally sheet.
 - a. Name and address of applicant.
 - b. Size and kind of container.
 - c. No. of cases in lot (page 1 only).
 - d. Contract (Cont. No.) or Purchase Order (P.O. No.).
 - e. Label -- or attach a copy -- (page 1 only).
2. **Select** the containers to be used for non-quality and prerequisite evaluation.
Note: For small containers (8 oz), select 1a, 2a, 3a, etc.
3. **Arrange** the containers on the grading table in chronological order by code.
4. **Record** the codes, on the tally sheet, including case codes if available.

NOTE: THE FINAL/AVG COLUMN (COLUMN 8) ON PAGE 1 OF THE TALLY SHEET SHALL BE USED FOR THE SUMMATION OF THE GRADING RESULTS OF THE LOT. COLUMN 9 MAY BE USED ON SUCCEEDING PAGES FOR RECORDING INDIVIDUAL CONTAINER DATA.

IF THERE IS INSUFFICIENT SPACE IN THE CODE SECTION OF THE TALLY SHEET FOR SINGLE LINE INK JET CODES, RECORD THEM AS A DOUBLE LINE CODE. REFER TO THE BACK OF THE TALLY SHEET AND SHOW AN EXAMPLE OF THE ACTUAL CODE THERE.

5. **Determine and record** the net weight of each container using Branch procedures for determination of tares and reading of scales. **Enter** the sum and average of all the net weights on the tally sheet.

NOTE: THE PRODUCT MAY ALSO BE VISUALLY EXAMINED FOR THE PREREQUISITE FACTORS OF "VARIETAL CHARACTERISTICS" (SEE PREREQUISITE FACTORS BELOW).

6. **Empty** the product into the individual grading trays.

SUGGESTED ORDER OF GRADING

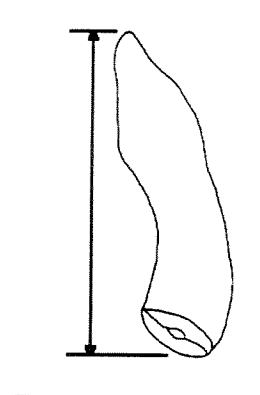
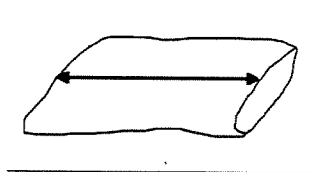
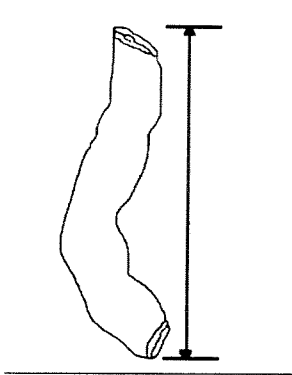
7. **Randomly select** 25 beans from each grading tray to determine, sieve size, length of cut, and style.
8. **Record**, if applicable:
 - a. **Type** - by **circling** the applicable information on the tally sheet.
 - b. **Sieve size(s) and percentage of each.**

NOTE: USING A SIEVE SIZER, DETERMINE THE SIEVE OPENING (SIEVE SIZE) THAT THE NARROWEST WIDTH OR DIAMETER OF EACH BEAN UNIT AT ITS THICKEST PORTION WILL PASS THROUGH WITH NO RESISTANCE.

- c. **Length of cut.**

NOTE: IN CUT STYLE, 5%, BY COUNT, MAY EXCEED THE MAXIMUM LENGTH ALLOWANCE OF 70 MM (2.75 IN).

THE FOLLOWING ILLUSTRATIONS SHOW THE CORRECT METHOD OF MEASURING THE LENGTH OF FROZEN GREEN BEANS AND FROZEN WAX BEANS.



SUGGESTED ORDER OF GRADING

- d. **Style** - by placing a check (✓) mark in the applicable style box on the tally sheet.

NOTE: THE LOT SHOULD BE GRADED FOR THE STYLE IT IS OFFERED.

IF THE LOT CONSISTS OF MORE THAN ONE STYLE, THE APPLICABLE STYLE FOR EACH CONTAINER SHOULD BE RECORDED IN THE "TYPE" COLUMN.

B. Prerequisite Quality Factors.

1. **First, thaw** the sample units in water. Also, prepare a pot of boiling water to be used to determine flavor and odor. In IQF French style only, you may find it easier to segregate short pieces prior to thawing.

Evaluate and grade, on a container-by-container basis, the following prerequisites (sections a. - d.). **Recording** the letter grade, as applicable, for each prerequisite in the appropriate place on the tally sheet.

a. Varietal characteristics.

- (1) **Grade A** should be assigned to those sample units containing beans of similar varietal characteristics.
- (2) **SStd** should be assigned to those sample units containing beans of dissimilar varietal characteristics in accordance with File Code 130-A-67 (Small Units of Alien Vegetables).

- #### b. Brightness - use
- the following guidelines in assigning a grade for brightness. The brightness should be evaluated immediately upon thawing as frozen products tend to oxidize rapidly after thawing and any drying of the surface will give a dull appearance. Brightness applies to "regular process" only. "Extended blanch" beans are expected to have a dull appearance and therefore brightness is not a quality factor for the extended blanch process.

- (1) **Good overall brightness "Grade A"** means the beans are bright in color and not affected by dullness.
- (2) **Reasonably good overall brightness "Grade B"** means the beans are reasonably bright in color and may be slightly affected by dullness.

SUGGESTED ORDER OF GRADING

- (3) **Fairly good overall brightness "Grade C"** means the beans are materially but not seriously affected by dullness.
 - (4) **Poor overall brightness "SStd"** means the sample unit fails the requirements for Grade C appearance.
- c. **Sloughing.** Sloughing is defined as the separation of the outer surface layer of tissue and the pod. When this gives a ragged, feathery appearance to the overall sample unit, it is considered serious. A slight amount of sloughing on an occasional bean unit is considered insignificant. Record the letter grade (A, C, or SStd) in the prerequisite section of the tally sheet.

NOTE: THIS FACTOR SHOULD BE EVALUATED EARLY IN THE GRADING PROCESS AS HANDLING OF THE UNITS TENDS TO ENHANCE THE TENDENCY OF THE UNITS TO SLOUGH.

- (1) **Grade A** should be assigned to those sample units containing no more than a slight amount of sloughing.
 - (2) **Grade C** should be assigned to those sample units that are materially affected by sloughing.
 - (3) **SStd** should be assigned to those sample units in which the units are seriously affected by sloughing (the beans have a ragged feathery appearance).
- d. **Flavor and odor.** The U.S. grade standards require that flavor and odor (normal or off) is determined after cooking. All frozen sample units must be cooked for flavor and odor evaluation. Cook a representative sample and include any "suspect" units for flavor evaluation. Definite "off-flavor or off-odor" is substandard. Record the letter grade (A or SStd) in the prerequisite section of the tally sheet.

SUGGESTED ORDER OF GRADING

- (1) **Good "Grade A"** should be assigned to a sample unit that, after cooking, has a "typical" (or normal) flavor and odor.
- (2) **Fairly good "Grade C"** should be assigned to a sample unit that, after cooking, may be lacking in good flavor and odor but is free from objectionable flavors and odors.
- (3) **Poor "SStd"** should be assigned to a sample unit that fails to meet Grade C and has an off-flavor or off-odor.

The tally sheet should show, for French style, for example:

Package:	No.1	No.2	No.3
Varietal Characteristics	A	A	A
Brightness	A	A	A
Sloughing	A	A	A
Flavor and odor	A	A	A

SUGGESTED ORDER OF GRADING

C. Grading of Specified Defects. The following steps are determined on a "sample as a whole" basis.

1. **Determine** the total units of product available in the non-quality/prerequisite samples.

a. **Total** the net weights and **enter** this sum on page 1 of the tally sheet.

NOTE: THE AVERAGE NET WEIGHT MAY ALSO BE CALCULATED AND RECORDED AT THIS TIME.

b. **Count** the number of beans or **establish** a count to weight relationship for styles other than French style. To establish a count to weight relationship:

(1) **Count** 100 beans, weigh, and multiply times four for weight of 400 beans. If sieve sizes change, reweigh and establish new count-to-weight relationship. or;

(2) For 13 or more sample units, **determine** the average weight of 5 random 100 count sub-samples selected from different grading trays. and;

(2) **Use** the following formula to determine the number of units available on a weight basis.

$$\frac{\text{Total Net Weight of all Sample Units}}{\text{Average Weight of 100 Units}} = \text{Number of Units of Product}$$

2. **Refer** to the applicable acceptance numbers table in the standards or this manual, and **select** the Units of Product or Grams of Product column -- as applicable for the style -- that will use the maximum amount of product available.

Note: For 10-ounce container sizes refer to the tables in this manual.

For other container sizes and sampling rates, refer to the tables in the standards.

SUGGESTED ORDER OF GRADING

3. **Record** the Units of Product or Grams of Product selected in the "Units of Product Used in the applicable spaces on page 1 of the tally sheet.

NOTE: THE NUMBER OR WEIGHT OF UNITS EVALUATED FOR CHARACTER MAY BE TAKEN FROM TABLE VI OF THIS MANUAL (100 PLAN CHARACTER).

4. **Count or weigh out** a uniform amount of product from each grading tray to arrive at the sample size selected for the lot as a whole. Use a flat sheet of plastic or stiff paper to pick up the beans and pieces from the tray bottom.

NOTE: WHEN USING ONE-HALF OR MORE OF THE PRODUCT FROM ANY CONTAINER, ALL THE EVM IN THE CONTAINER IS TO BE RECORDED.

WHEN THERE IS INSUFFICIENT PRODUCT FOR EVALUATING SPECIFIED DEFECTS ADD THE PRODUCT FROM SAMPLE 1B, THEN 2B, THEN 3B, ETC. UNTIL SUFFICIENT PRODUCT IS OBTAINED.

FOR THESE EXTRA CONTAINERS, YOU NEED NOT EVALUATE THE NON-QUALITY OR PREREQUISITE QUALITY FACTORS. HOWEVER, IF IT IS OBVIOUS THAT SOME OF THESE ADDITIONAL CONTAINERS DEVIATE EXCESSIVELY FROM THE SAMPLE AS A WHOLE, YOU SHOULD: RECONSIDER THE EXAMINATION (E.G., ONE OF THE CONTAINERS NOT IN THE PREDETERMINED NUMBER TO CHECK FOR NON-QUALITY FACTORS IS OBVIOUSLY "SLACK FILLED"). FOLLOW BRANCH GUIDELINES AND OTHER INSTRUCTIONS THAT COVER THE DEVIATION IN QUESTION IF YOU RECONSIDER THE EXAMINATION.

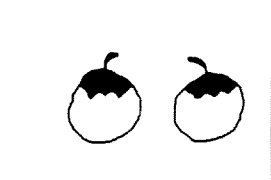
5. **Record** in the "(No.) (Wt.) of Units Used from Each Container" column, the count or weight of product -- as applicable for the style -- to be used from each grading tray

SUGGESTED ORDER OF GRADING

NOTE: BY SEPARATING EACH CATEGORY OF DEFECTS INTO SEPARATE AREAS THE FOLLOWING STEPS MAY BE DONE SIMULTANEOUSLY AS YOU EXAMINE THE PRODUCT IN EACH GRADING TRAY.

IF THERE IS MORE THAN ONE (1) CATEGORY OF DEFECTS ON A SINGLE UNIT, PLACE THE UNIT IN THE FIRST APPLICABLE CATEGORY IN THE FOLLOWING SEQUENCE OF GRADING AND THEN TRANSFER IT TO THE OTHER AFFECTED CATEGORIES DURING THE RECORDING PROCESS.

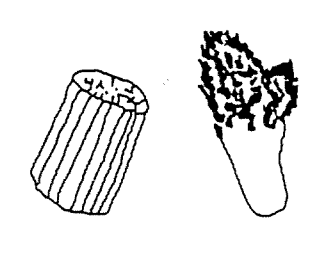
- 6. Evaluate the units for Extraneous Vegetable Material (EVM) and record the number of pieces of EVM on the tally sheet. The following are examples of extraneous vegetable material:**



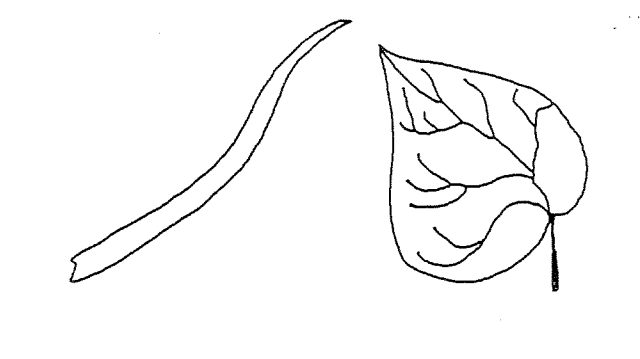
Nightshade Berries



Bitterweed Pod



Pigweed



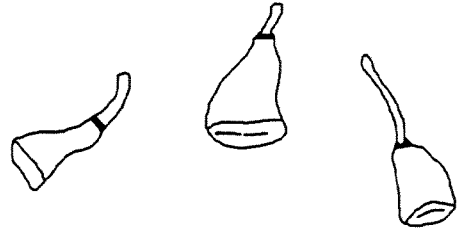
Green Leaves and Grass

SUGGESTED ORDER OF GRADING

7. **Separate the Stems. Count and record** on the tally sheet the number found. These include detached stems, unstemmed units and tough or hard unsnipped units as illustrated below.



Detached Stems



Unstemmed Units



Tough or Hard Unsnipped Units

SUGGESTED ORDER OF GRADING

8. **Evaluate the units for major blemishes. Count and record** on the tally sheet the number of units found.

Major blemish means any unit which is affected or damage by discoloration or any other means to the extent that the appearance or eating quality of the unit is more than slightly affected.

9. **Evaluate the units for minor blemishes** - tally with major blemishes and **record** as "Total Blemish."

Minor blemish means any unit which is affected by scars, pathological injury, insect injury or other means in which the aggregate area affected exceeds the area of a circle 3 mm (0.125 in) in diameter or the appearance or eating quality of the unit is slightly affected.

NOTE: EVEN THOUGH A BEAN UNIT HAS MORE THAN ONE MAJOR OR MINOR BLEMISHED AREA ON IT, ONLY ONE MAJOR AND ONE MINOR DEFECT SHOULD BE COUNTED AGAINST IT.

Total blemish means the total of the major and minor blemishes.

10. **Separate, count, and record the mechanical damage** - not applicable to French style.

Mechanical damage means a unit, in all styles except French, that is broken or split into two parts (equals 1 defect), is crushed, or is damaged by mechanical means to such an extent that the appearance is seriously affected; and for whole and cut styles has very ragged edges that are greater than 8 mm (5/16 in).

11. **Count and record the short pieces** (Whole and Cut Styles) **and small pieces** (French Style only).
 - a. **Cut style** - units less than 13 mm (0.50 in) in length.
 - b. **Whole style** - units less than 44 mm (1.75 in) in length.

SUGGESTED ORDER OF GRADING

- c. **French Style Only, weigh and record the small pieces.**

Small pieces and odd cuts mean pieces of pod less than 19 mm (0.75 in) in length or pieces of pod not conforming to the normal appearance of a sliced lengthwise bean unit.

12. **Separate and record the number of units with edible fiber** - Edible fiber means fiber developed in the wall of the bean pod that, after cooking, is noticeable upon chewing, but can be consumed with the rest of the bean material without objection.

NOTE: LOOK FOR UNITS HAVING JAGGED CUT EDGES IN THE FOLLOWING STEP.

13. **Separate and record the units with inedible fiber** - Inedible fiber means fiber developed in the wall of the bean pod that, after cooking, is objectionable upon chewing and tends to separate from the rest of the bean material.
14. **Evaluate the color defective units** - unit(s) that vary markedly from the color that is normally expected for the variety and grade.
15. **Separate decay** - The tolerance for decay which has been positively identified as such should not exceed the tolerance for extraneous vegetable material (EVM). The AQL for EVM in Whole Style is 0.162 and the acceptance number for 5200 green beans is 13 units of decay. The AQL for decay in French Style is 0.153. See Table VII for acceptance numbers.

NOTE: EXTREME CARE SHOULD BE EXERCISED WHEN DETERMINING DECAY. BE SURE NOT TO COUNT A UNIT UNLESS DECAY IS POSITIVELY IDENTIFIED. UNITS AFFECTED BY DECAY ARE SCORED UNDER DECAY ONLY AND NOT AS DECAY AND MAJOR BLEMISHES.

SUGGESTED ORDER OF GRADING

16. **Evaluate the units for character** - based on appearance -- the non "A" grade quality units. **Split open** these suspect units and **classify** them as "B", "C", or "SStd" in character.

NOTE: FLESHINESS REFERS TO THE AMOUNT OF TISSUE BETWEEN AND AROUND THE SEED CAVITIES OF THE POD AND TO THE DEGREE OF BREAKDOWN OF THE FLESH. ROUND BEANS CONTAIN MORE FLESH THAN ROMANO OR ITALIAN BEANS.

GENERALLY, WAX BEANS WILL HAVE MORE BREAKDOWN OF FLESH THAN ROUND GREEN BEANS AT THE SAME STAGE OF MATURITY. THIS SHOULD BE CONSIDERED WHEN EVALUATING WAX BEANS FOR CHARACTER.

AS BEANS BECOME MORE MATURE, THE SEEDS TEND TO ENLARGE AND BECOME MORE MEALY OR STARCHY. THE TEXTURE OF THE SEEDS WILL BECOME MORE CRUMBLY AS THE STARCH CONTENT INCREASES.

17. **Verify** and count or weigh (as applicable for the style) the defects from each grading tray, making sure that units having more than one type of defect are properly counted.
18. **Record** the number or weight of specified defects, as applicable for the style, that were found in each grading tray.
19. **Determine** the total amount of defects found in each category of specified defects and **enter** these figures in the "Final/Average column on page 1 of the tally sheet.

NOTE: ALSO ENTER THE FINAL GRADES FOR THE PREREQUISITE QUALITY FACTORS ON PAGE 1.

20. **Compare** the number or weight of specified defects found with the acceptance numbers from the applicable tables in the standards or this grading manual.

NOTE: SEE "PROCEDURES FOR MIXED QUALITY LOTS" -- THIS MANUAL -- ON LOTS THAT MEET THE ACCEPTANCE NUMBERS BUT YET HAVE POCKETS OF OBVIOUSLY LOWER QUALITY.

21. **Enter** the "Lot Grade" on the tally sheet based on the lowest grade assigned to any prerequisite or specified quality factor.

Frozen Green and Wax Beans
Grading Manual
October 1996

Table III
Acceptance Numbers for Whole, and Cut Style Frozen Green Beans and Wax Beans

Grade A

Sample Units x Sample Unit Size		1x400	1.5x400	3x400	6x400	13x400	21x400	29x400
Units of Product		400 1/	600 2/	1200	2400	5200	8400	11600
TOL	AQL 3/	Acceptance Numbers						
0.25	0.162	2	2	4	7	13	19	26
0.75	0.58	5	6	11	20	39	60	81
1.25	1.02	7	10	18	33	65	101	136
3.75	3.30	19	27	50	94	193	304	415
3.00	2.60	16	22	40	75	154	242	330
20.00	19.10	89	130	251	490	1040	1664	2285
8.50	7.90	41	59	111	212	444	706	966
1.75	1.48	10	14	25	45	91	142	193
0.10	0.05	1	1	2	3	5	7	10
5.50	5.00	27	39	73	138	286	454	620
10.75	10.10	50	72	138	266	561	894	1225
1.25	1.02	7	10	18	33	65	101	136
0.10	0.05	1	1	2	3	5	7	10

1/ For unofficial samples.
2/ For use with small container sizes only.
3/ AQL calculated from tolerance (TOL) at 5200.

Table IIIa
Acceptance Numbers for Whole, and Cut Style Frozen Green Beans and Wax Beans

Grade B

Sample Units x Sample unit Size		1x400	1.5x400	3x400	6x400	13x400	21x400	29x400
Units of Product		400 <u>1</u> /	600 <u>2</u> /	1200	2400	5200	8400	11600
TOL	AQL <u>3</u> /	Acceptance Numbers						
.50	0.366	3	4	8	13	26	40	53
1.50	1.25	8	12	21	39	78	122	165
2.50	2.17	13	19	34	64	130	204	278
6.75	6.20	33	47	88	169	352	559	763
6.00	5.50	30	42	79	151	314	498	680
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
12.50	11.80	58	84	160	309	652	1040	1426
4.50	4.00	22	32	59	112	232	366	500
1.50	1.25	8	12	21	39	78	122	165
10.75	10.10	50	72	138	266	561	894	1225
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
10.75	10.10	50	72	138	266	561	894	1225
1.25	1.02	7	10	18	33	65	101	136

1/ For unofficial samples.
2/ For use with small container sizes only.
3/ AQL calculated from tolerance (TOL) at 5200.

Table IIib
Acceptance Numbers for Whole, and Cut Style Frozen Green Beans and Wax Beans

Grade C

Sample Units x Sample unit Size		Acceptance Numbers											
Units of Product		1x400	1.5x400	3x400	6x400	13x400	21x400	29x400					
TOL	AQL	3/	Quality Factors	400 1/	600 2/	1200	2400	5200	8400	11600			
1.00	0.80		Extraneous Vegetable Material	6	8	15	26	52	80	108			
3.00	2.60		Stems	16	22	40	75	154	242	330			
3.75	3.30		Major Blemishes	19	27	50	94	193	304	415			
12.75	12.00		Total Blemishes (Major + Minor)	58	85	162	314	663	1057	1449			
10.75	10.10		Mechanical Damage	50	72	138	266	561	894	1225			
N/A	N/A		Short Pieces, Whole Style	N/A	N/A	N/A	N/A	N/A	N/A	N/A			
18.25	17.40		Short Pieces, Cut Style	82	119	230	448	950	1519	2085			
8.50	7.90		Edible Fiber	41	59	111	212	444	706	966			
3.75	3.30		Inedible Fiber	19	27	50	94	193	304	415			
17.75	16.90		Color Defectives	80	116	224	435	923	1476	2027			
N/A	N/A		Character - "B"	N/A	N/A	N/A	N/A	N/A	N/A	N/A			
N/A	N/A		Character - "C"	N/A	N/A	N/A	N/A	N/A	N/A	N/A			
10.75	10.10		Character - "SStd"	50	72	138	266	561	894	1225			

1/ For unofficial samples.
2/ For use with small container sizes only.
3/ AQL calculated from tolerance (TOL) at 5200.

Table IV
Acceptance Numbers for Short Cut, and Mixed Cut Style Frozen Green Beans and Wax Beans

Grade A

Sample Units x Sample unit Size		Acceptance Numbers									
Units of Product		1x400	1.5x400	3x400	6x400	13x400	21x400	29x400			
TOL	AQL <u>3/</u>	400 <u>1/</u>	600 <u>2/</u>	1200	2400	5200	8400	11600			
Quality Factors											
0.25	0.162	2	2	4	7	13	19	26			
0.75	0.58	5	6	11	20	39	60	81			
1.25	1.02	7	10	18	33	65	101	136			
3.75	3.30	19	27	50	94	193	304	415			
3.00	2.60	16	22	40	75	154	242	330			
1.75	1.48	10	14	25	45	91	142	193			
0.10	0.05	1	1	2	3	5	7	10			
5.50	5.00	27	39	73	138	286	454	620			
10.75	10.10	50	72	138	266	561	894	1225			
1.25	1.02	7	10	18	33	65	101	136			
0.10	0.05	1	1	2	3	5	7	10			

1/ For unofficial samples.
2/ For use with small container sizes only.
3/ AQL calculated from tolerance (TOL) at 5200.

Table IVa
Acceptance Numbers for Short Cut, and Mixed Cut Style Frozen Green Beans and Wax Beans

Grade B

Sample Units x Sample unit Size		1x400	1.5x400	3x400	6x400	13x400	21x400	29x400
Units of Product		400 <u>1</u> /	600 <u>2</u> /	1200	2400	5200	8400	11600
TOL	AQL <u>3</u> /	Acceptance Numbers						
Quality Factors								
0.50	0.366	3	4	8	13	26	40	53
1.50	1.25	8	12	21	39	78	122	165
2.50	2.17	13	19	34	64	130	204	278
6.75	6.20	33	47	88	169	352	559	763
6.00	5.50	30	42	79	151	314	498	680
4.50	4.00	22	32	59	112	232	366	500
1.50	1.25	8	12	21	39	78	122	165
10.75	10.10	50	72	138	266	561	894	1225
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
10.75	10.10	50	72	138	266	561	894	1225
1.25	1.02	7	10	18	33	65	101	136

1/ For unofficial samples.
2/ For use with small container sizes only.
3/ AQL calculated from tolerance (TOL) at 5200.

Table IVb
Acceptance Numbers for Short Cut, and Mixed Cut Style Frozen Green Beans and Wax Beans

Grade C

Sample Units x Sample unit Size		Acceptance Numbers									
Units of Product		1x400	1.5x400	3x400	6x400	13x400	21x400	29x400			
TOL	AQL <u>3/</u>	400 <u>1/</u>	600 <u>2/</u>	1200	2400	5200	8400	11600			
	Quality Factors										
1.00	0.80	6	8	15	26	52	80	108			
3.00	2.60	16	22	40	75	154	242	330			
3.75	3.30	19	27	50	94	193	304	415			
8.50	7.90	41	59	111	212	444	706	966			
10.75	10.10	50	72	138	266	561	894	1225			
8.50	7.90	41	59	111	212	444	706	966			
3.75	3.30	19	27	50	94	193	304	415			
17.75	16.90	80	116	224	435	923	1476	2027			
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A			
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A			
10.72 5	10.10	50	72	138	266	561	894	1225			

1/ For unofficial samples.
2/ For use with small container sizes only.
3/ AQL calculated from tolerance (TOL) at 5200.

Table V
Acceptance Numbers for French Style Frozen Green Beans and Wax Beans
Grade A

Sample Units x Sample unit size		1x200x2.5	1.5x200x2.5	3x200x2.5	6x200x2.5	13x200x2.5	21x200x2.5	29x200x2.5
Grams of Product		500 1/	750 2/	1500	3000	6500	10500	14500
TOL	AQL 3/	Acceptance Numbers						
0.25	0.153	1	1	2	4	7	10	14
0.75	0.541	3	4	6	11	20	30	41
1.25	0.961	10	15	25	43	83	128	170
2.50	2.05	18	25	45	83	163	253	343
10.0	9.0	63	88	165	313	648	1025	1400
5.50	4.80	38	50	95	175	358	563	765
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
6.75	6.00	45	63	115	215	440	695	945
1.75	1.40	13	18	33	58	115	178	240

1/ For unofficial samples.
2/ For use with small container sizes only.
3/ AQL calculated from tolerance (TOL) at 2600.

Frozen Green and Wax Beans
Grading Manual
October 1996

Table Va
Acceptance Numbers for French Style Frozen Green Beans and Wax Beans
Grade B

Sample Units x Sample unit size		1x200x2.5	1.5x200x2.5	3x200x2.5	6x200x2.5	13x200x2.5	21x200x2.5	29x200x2.5
Grams of Product		500 <u>1</u> /	750 <u>2</u> /	1500	3000	6500	10500	14500
TOL	AQL <u>3</u> /	Quality Factors						
		Acceptance Numbers						
0.50	0.325	Extraneous Vegetable Material (No. of Pieces)	2	2	4	7	13	20
1.50	1.16	Stems (No. of stems)	5	6	11	20	39	60
2.50	2.05	Major Blemishes (Grams)	18	25	45	83	163	253
3.75	3.20	Total Blemishes [(Grams) Major + Minor]	25	38	65	120	245	383
15.0	13.9	Small pieces & odd cuts (Grams)	90	128	243	465	978	1553
10.75	9.80	Color Defectives (Grams)	68	95	178	338	703	1113
N/A	N/A	Character - "B"	N/A	N/A	N/A	N/A	N/A	N/A
20.00	18.80	Character - "C" (Grams)	118	168	320	620	1305	2078
5.50	4.80	Character - "SStd" (Grams)	38	50	95	175	358	563

1/ For unofficial samples.
2/ For use with small container sizes only.
3/ AQL calculated from tolerance (TOL) at 2600.

Table Vb
Acceptance Numbers for French Style Frozen Green Beans and Wax Beans
Grade C

Sample Units x Sample unit size		1x200x2.5	1.5x200x2.5	3x200x2.5	6x200x2.5	13x200x2.5	21x200x2.5	29x200x2.5
Grams of Product		500 1/	750 2/	1500	3000	6500	10500	14500
TOL	AQL 3/	Acceptance Numbers						
1.00	0.733	3	4	8	13	26	40	53
Extraneous Vegetable Material (No. of Pieces)								
3.00	2.50	8	12	21	39	78	122	165
Stems (No. of stems)								
3.75	3.20	25	38	65	120	245	383	520
Major Blemishes (Grams)								
10.75	9.80	68	95	178	338	703	1113	1520
Total Blemishes [(Grams)Major + Minor]								
20.0	18.8	118	168	320	620	1305	2078	2848
Small pieces & odd cuts (Grams)								
17.75	16.60	105	150	285	550	1158	1843	2523
Color Defectives (Grams)								
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Character - "B" (Grams)								
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Character - "C" (Grams)								
12.50	11.50	75	108	205	390	813	1293	1768
Character - "SStd" (Grams)								

1/ For unofficial samples.
2/ For use with small container sizes only.
3/ AQL calculated from tolerance (TOL) at 2600.

Table VI
Acceptance Numbers for Character Defects
for All Styles
(100 Plan)

Units of Product (100*3, 6, 13, 21, 29)	Grade A					Grade B					Grade C				
	3 0 0	6 0 0	1 3 0 0	2 1 0 0	2 9 0 0	3 0 0	6 0 0	1 3 0 0	2 1 0 0	2 9 0 0	3 0 0	6 0 0	1 3 0 0	2 1 0 0	2 9 0 0
"B" Character	3 9	7 2	1 4 9	2 3 5	3 1 9	NO LIMIT									
"C" Character	6	1 0	1 9	2 9	3 8	3 9	7 2	1 4 9	2 3 5	3 1 9	NO LIMIT				
"SStd" Character	0	1	2	3	3	6	1 0	1 9	2 9	3 8	3 9	7 2	1 4 9	2 3 5	3 1 9

Table VII
Acceptance Numbers for Decay

Units of Product	400	600	1200	2400	5200	8400	11600
All Styles except French Style	2	2	4	7	13	19	26
Grams of Product	500	750	1500	3000	6500	10500	14500
French Style	1	1	2	4	7	10	14

NOTE: IF THE ACCEPTANCE NUMBERS ARE EXCEEDED, THE LOT IS GNC (GRADE NOT CERTIFIED).

PROCEDURES FOR GRADING MIXED QUALITY LOTS

If an inspection lot is encountered with individual (suspect) sample units in the sample which seem to be of lower quality than the sample as a whole, take the following action:

- A. Assemble** 400 (if available) or 100 (minimum) units of product from the "suspect" container(s) regardless of code.
- B. Compare** the number or weight of defects found, as applicable to the style, with the acceptance numbers from the applicable table in this manual and determine the grade of the suspect sample units.

NOTE: USE TABLES VIII, VIIIA, VIIIB, ETC., AS APPLICABLE FOR THE STYLE, FOR 400 UNITS (500 GRAMS FOR FRENCH STYLE). USE TABLES IX, IXA, ETC., AS APPLICABLE FOR THE STYLE FOR 100 UNITS.

- C. **Compare** the grade of the suspect sample units to the grade of the sample as a whole. If the grade of the suspect sample is more than one grade below the grade of the sample as a whole, **certify** to the lowest grade. Otherwise **certify** to the grade of the original inspection results.

NOTE: IF THE APPLICANT REQUESTS CERTIFICATION OF THE "NONSUSPECT" PORTION OF THE SAMPLE, RESAMPLE THE LOT IN ACCORDANCE WITH TABLE II OF THIS MANUAL.

PROCEDURES FOR SINGLE SAMPLE UNITS (UNOFFICIAL SAMPLES)

Branch regulations provide for grading of samples submitted by an applicant. These samples are "unofficial samples" and do not represent a lot. When requested to perform grading on unofficial samples, use the following guidelines:

- A. Each unofficial sample must stand on its own.
- B. Each unofficial sample must contain 400 beans for all styles other than French style, and 500 grams for French style.
- D. **Grade** the sample as outlined in this manual. **Apply** the acceptance numbers from the "Table of Acceptance Numbers for Unofficial Samples", as applicable for the style, found on the following pages of this manual.

Table VIII

**Acceptance Numbers for Specified Defects
 Whole Style Frozen Green and Wax Beans**

(400 Plan)

(Use for Mixed Quality Lots and Unofficial Samples Only)

Units of Product (400)	Grade A	Grade B	Grade C
Extraneous Vegetable Material	2	3	6
Stems	5	8	16
Major Blemishes	7	13	19
Total Blemishes (Major + Minor)	19	33	58
Mechanical Damage	16	30	50
Short Pieces	89	NO LIMIT	
Edible Fiber	10	22	41
Inedible Fiber	1	8	19
Color Defectives	27	50	80
"B" Character	50	NO LIMIT	
"C" Character	7	50	NO LIMIT
"SStd" Character	1	7	50

Table VIIIa

**Acceptance Numbers for Specified Defects
 Cut, Short Cut, & Mixed Cut Styles, Frozen Green/Wax Beans**

(400 Plan)

(Use for Mixed Quality Lots and Unofficial Samples Only)

Units of Product (400)	Grade A	Grade B	Grade C
Extraneous Vegetable Material	2	3	6
Stems	5	8	16
Major Blemishes	7	13	19
Total Blemishes (Major + Minor)	19	33	58
Mechanical Damage	16	30	50
Short Pieces (Cut Style Only)	41	58	82
Edible Fiber	10	22	41
Inedible Fiber	1	8	19
Color Defectives	27	50	80
"B" Character	50	NO LIMIT	
"C" Character	7	50	NO LIMIT
"SStd" Character	1	7	50

Table VIIIb

**Acceptance Numbers for Specified Defects
 French Style Frozen Green/Wax Beans**

(500 Gram Plan)

(Use for Mixed Quality Lots and Unofficial Samples Only)

Units of Product (500 grams)	Grade A	Grade B	Grade C
Extraneous Vegetable Material (No. of pieces)	1	2	3
Stems (No. of stems)	3	5	8
Major Blemishes (Grams)	10	18	25
Total Blemishes (Major + Minor) (Grams)	18	25	68
Color Defectives (Grams)	38	68	105
"B" Character (Grams)	NO LIMIT		
"C" Character (Grams)	45	118	NO LIMIT
"SStd" Character (Grams)	13	38	75

TABLE IX

**Acceptance Numbers for Specified Defects
 Whole Style Frozen Green/Wax Beans**

(100 Plan)

(Use for Mixed Quality Lots Only)

Units of Product (100)	Grade A	Grade B	Grade C
Extraneous Vegetable Material	0	1	2
Stems	2	3	5
Major Blemishes	3	4	6
Total Blemishes (Major + Minor)	6	10	17
Mechanical Damage	5	9	15
Short Pieces	25	NO LIMIT	
Edible Fiber	3	7	12
Inedible Fiber	0	3	6
Color Defectives	8	15	23
"B" Character	15	NO LIMIT	
"C" Character	3	15	NO LIMIT
"SStd" Character	0	3	15

Table IXa

**Acceptance Numbers for Specified Defects
 Cut, Short Cut, & Mixed Cut Styles Frozen Green/Wax Beans**

(100 Plan)

(Use for Mixed Quality Lots Only)

Units of Product (100)	Grade A	Grade B	Grade C
Extraneous Vegetable Material	0	1	2
Stems	2	3	5
Major Blemishes	3	4	6
Total Blemishes (Major + Minor)	6	10	17
Mechanical Damage	5	9	15
Short Pieces (Cut Style Only)	12	17	23
Edible Fiber	3	7	12
Inedible Fiber	0	3	6
Color Defectives	8	15	23
"B" Character	15	NO LIMIT	
"C" Character	3	15	NO LIMIT
"SStd" Character	0	3	15

Table IXb

**Acceptance Numbers for Specified Defects
 French Style Frozen Green/Wax Beans**

(300 Gram Plan)

(Use for Mixed Quality Lots Only)

Units of Product (300 grams)	Grade A	Grade B	Grade C
Extraneous Vegetable Material (No. of pieces)	1	2	4
Stems (No. of stems)	4	6	12
Major Blemishes (Grams)	6	10	15
Total Blemishes (Major + Minor) (Grams)	10	15	38
Color Defectives (Grams)	20	38	60
"B" Character (Grams)	NO LIMIT		
"C" Character (Grams)	25	67	NO LIMIT
"SStd" Character (Grams)	7	20	43

TIME SAMPLING AND SEGREGATION PROCEDURES

AUTHORIZATION TO USE TIME SAMPLING

The Officer-in-Charge or area supervisor shall determine whether a plant can qualify to use the time sampling procedures outlined below. This determination shall be based on a review of the plant's quality control records and the ability of the plant to pack product consistently within a desired quality level. The supervisor shall not authorize time sampling for a plant which historically produces product which is determined to have erratic quality levels during a production period.

SOURCE OF SAMPLES

All sample units must be officially drawn from "finished product." Finished product means product that has been processed, cooled, and taken from the container(s) to be graded. Line checks shall not be used in lieu of finished product.

TIME SAMPLING RATES PER INSPECTION PERIOD

Sample units are to be selected on a random time basis averaging within the parameters outlined below so that each sample unit has an equal chance of being selected.

The sampling rate for each product graded is to be **predetermined**, based on knowledge of **previous** production volume for the product per basic inspection period and the **on-line** sampling plans in the "Regulations."

Sampling rates and frequencies for frozen green and wax beans are based on the following table:

Predetermined Production Rate	Sampling Frequency	Deviants Allowed
Low Volume (3)	400 units per 60 min. (per 90 min., optional)	0
Medium Volume (6 or 13)	400 units per 45 min.	0
High Volume (21 or more)	400 units per 30 min. (per 15 min., optional)	0

MINIMUM SAMPLE SIZE TO CERTIFY A PORTION OF PRODUCTION

For specified defects, 1200 units of product **from three (3) sample units** is the minimum sample size under time sampling. For grading small portions of production or small containers, inspectors may need to draw a few extra containers to assure that 1200 units are available.

PROCEDURES FOR GRADING MIXED QUALITY WITHIN THE PRODUCTION PERIOD

As provided for lot inspection under individual attributes, there is a similar provision to address pockets of low quality within a production period under time sampling. If during the production period, a sample unit(s) is encountered for one or more specified defects that falls **more than one grade below the indicated grade** for the production period, **certify the production period to the lowest grade**. For the next period of production, the inspector **must** use the lot inspection rate in the Regulations. After grading one production period at the lot inspection rate and finding no pockets of low quality, the inspector may again use time sampling procedures and make note of each occurrence in the Daily Inspection Report under "Remarks".

SEGREGATION PROCEDURES

If at any time during production, a portion of production falls into **the next lower grade**, the entire production fails at that point unless the offending portion can be segregated by codes. Plant management has two options--one, to request segregation of the offending portion or two, to continue production without segregation anticipating better quality product will offset the offending portion. If plant management requests that a portion of failing production be segregated, all defects found that are associated with the failing portion shall be excluded from the tally of the remaining portion. The failing portion may be re-inspected as a new lot only under appeal inspection or after the product has been reworked in an effort to eliminate or reduce the defects from the failing portion.

OTHER REQUIREMENTS

The following are separate but equally important requirements that must be followed when using time sampling for frozen green and wax beans. Inspectors cannot switch back and forth between on-line single sampling rates and time sampling **unless it is due to mixed quality sample units within a production period**. The inspector must indicate that "time sampling" is being used on each tally sheet.

**TABLE X -- Time Sampling Acceptance Numbers For Whole & Cut Style -- 400 Plan
GRADE A**

Units of product	EVM	Stems	Blem (Major)	Total Blem (Mj+Mn)	Mech Damg	Short Pieces (Whole)	Short Pieces (Cut)	Edible Fiber	Inedible Fiber	Color Defective	Char "B"	Char "C"	Char "SStd"
(AQLs)	0.162	0.58	1.02	3.30	2.60	19.10	7.90	1.48	0.05	5.00	10.10	1.02	0.05
1x400*	2	5	7	19	16	89	41	10	1	27	50	7	1
1.5x400	2	6	10	27	22	130	59	14	1	39	72	10	1
2x400	3	8	13	35	28	171	76	17	1	50	95	13	1
3x400	4	11	18	50	40	251	111	25	2	73	138	18	2
4x400	5	14	23	65	52	331	145	32	2	95	181	23	2
5x400	6	17	28	79	64	411	178	38	2	116	224	28	2
6x400	7	20	33	94	75	490	212	45	3	138	266	33	3
7x400	8	23	37	108	87	569	245	52	3	159	309	37	3
8x400	9	25	42	122	98	648	279	58	4	181	351	42	4
9x400	10	28	46	137	109	726	312	65	4	202	393	46	4
10x400	10	31	51	151	121	805	345	72	4	223	435	51	4
11x400	11	34	56	165	132	883	378	78	4	244	477	56	4
12x400	12	36	60	179	143	962	411	85	5	265	519	60	5
13x400	13	39	65	193	154	1,040	444	91	5	286	561	65	5
14x400	14	42	69	207	165	1,118	477	98	5	307	603	69	5
15x400	15	44	74	221	176	1,196	510	104	6	329	645	74	6
16x400	15	47	78	235	187	1,274	543	111	6	350	686	78	6
17x400	16	50	83	249	198	1,352	576	117	6	371	728	83	6
18x400	17	52	87	263	209	1,430	608	123	7	391	769	87	7
19x400	18	55	92	277	221	1,508	641	130	7	412	811	92	7
20x400	19	57	96	291	232	1,586	673	136	7	433	852	96	7
21x400	19	60	101	304	242	1,664	706	142	7	454	894	101	7
22x400	20	63	105	319	253	1,741	739	149	8	475	935	105	8
23x400	21	65	110	332	264	1,819	771	155	8	495	977	110	8
24x400	22	68	114	346	275	1,897	804	161	8	516	1,018	114	8
25x400	23	70	118	360	286	1,975	836	168	8	537	1,060	118	8
26x400	23	73	123	373	297	2,052	869	174	9	558	1,101	123	9
27x400	24	75	127	387	308	2,130	901	180	9	578	1,142	127	9
28x400	25	78	132	401	319	2,207	934	187	9	599	1,184	132	9
29x400	26	81	136	415	330	2,285	966	193	10	620	1,225	136	10

**TABLE XI -- Time Sampling Acceptance Numbers For Whole & Cut Style -- 400 Plan
GRADE B**

Units of product	EVM	Stems	Blem (Major)	Total Blem (Mj+Mn)	Mech Damg	Short Pieces (Whole)	Short Pieces (Cut)	Edible Fiber	Inedible Fiber	Color Defective	Char "B"	Char "C"	Char "SStd"
(AQLs)	0.366	1.25	2.17	6.2	5.5	N/A	11.8	4.0	1.25	10.1	N/A	10.1	1.02
1x400	3	8	13	33	30	N/A	58	22	8	50	N/A	50	7
1.5x400	4	12	19	47	42	N/A	84	32	12	72	N/A	72	10
2x400	6	15	24	61	55	N/A	109	41	15	95	N/A	95	13
3x400	8	21	34	88	79	N/A	160	59	21	138	N/A	138	18
4x400	10	27	44	115	103	N/A	211	77	27	181	N/A	181	23
5x400	12	33	54	142	127	N/A	259	95	33	224	N/A	224	28
6x400	13	39	64	169	151	N/A	309	112	39	266	N/A	266	33
7x400	15	45	73	195	174	N/A	358	129	45	309	N/A	309	37
8x400	17	50	83	221	198	N/A	407	146	50	351	N/A	351	42
9x400	19	56	92	248	221	N/A	456	164	56	393	N/A	393	46
10x400	21	61	102	274	244	N/A	506	181	61	435	N/A	435	51
11x400	23	67	111	300	267	N/A	555	198	67	477	N/A	477	56
12x400	24	73	121	326	291	N/A	603	215	73	519	N/A	519	60
13x400	26	78	130	352	314	N/A	652	232	78	561	N/A	561	65
14x400	28	84	139	378	337	N/A	701	248	84	603	N/A	603	69
15x400	30	89	149	404	360	N/A	749	265	89	645	N/A	645	74
16x400	31	95	158	430	383	N/A	798	282	95	686	N/A	686	78
17x400	33	100	167	456	406	N/A	846	299	100	728	N/A	728	83
18x400	35	105	177	481	429	N/A	895	316	105	769	N/A	769	87
19x400	36	111	186	507	452	N/A	943	332	111	811	N/A	811	92
20x400	38	116	195	533	475	N/A	991	350	116	852	N/A	852	96
21x400	40	122	204	559	498	N/A	1,040	366	122	894	N/A	894	101
22x400	41	127	213	584	520	N/A	1,088	383	127	935	N/A	935	105
23x400	43	132	223	610	543	N/A	1,137	399	132	977	N/A	977	110
24x400	45	138	232	636	566	N/A	1,185	416	138	1,018	N/A	1,018	114
25x400	46	143	241	661	589	N/A	1,233	433	143	1,060	N/A	1,060	118
26x400	48	149	250	687	612	N/A	1,281	450	149	1,101	N/A	1,101	123
27x400	50	154	259	712	634	N/A	1,329	466	154	1,142	N/A	1,142	127
28x400	51	159	268	738	657	N/A	1,378	483	159	1,184	N/A	1,184	132
29x400	53	165	278	763	680	N/A	1,426	500	165	1,225	N/A	1,225	136

Frozen Green and Wax Beans
Grading Manual
October 1996

**TABLE XII -- Time Sampling Acceptance Numbers For Whole & Cut Style -- 400 Plan
GRADE C**

Units of product	EVM	Stems	Blem (Major)	Total Blem (Mj+Mn)	Mech Damg	Short Pieces (Whole)	Short Pieces (Cut)	Edible Fiber	Inedible Fiber	Color Defective	Char "B"	Char "C"	Char "SStd"
AQL's	0.80	2.60	3.30	12.0	10.1	N/A	17.4	7.90	3.30	16.9	N/A	N/A	10.1
1x400	6	16	19	58	50	-	82	41	19	8	-	-	50
1.5x400	8	22	27	85	72	-	119	59	27	116	-	-	72
2x400	10	28	35	111	95	-	157	76	35	152	-	-	95
3x400	15	40	50	162	138	-	230	111	50	224	-	-	138
4x400	18	52	65	213	181	-	303	145	65	295	-	-	181
5x400	22	64	79	264	224	-	376	178	79	365	-	-	224
6x400	26	75	94	314	266	-	448	212	94	435	-	-	266
7x400	30	87	108	364	309	-	520	245	108	506	-	-	309
8x400	34	98	122	414	351	-	592	279	122	576	-	-	351
9x400	38	109	137	464	393	-	664	312	137	645	-	-	393
10x400	41	121	151	514	435	-	736	345	151	715	-	-	435
11x400	45	132	165	564	477	-	807	378	165	785	-	-	477
12x400	48	143	179	613	519	-	878	411	179	854	-	-	519
13x400	52	154	193	663	561	-	950	444	193	923	-	-	561
14x400	56	165	207	712	603	-	1021	477	207	993	-	-	603
15x400	59	176	221	761	645	-	1092	510	221	1062	-	-	645
16x400	63	187	235	811	686	-	1163	543	235	1131	-	-	686
17x400	66	198	249	860	728	-	1235	576	249	1200	-	-	728
18x400	70	209	263	909	769	-	1306	608	263	1269	-	-	769
19x400	73	221	277	959	811	-	1377	641	277	1338	-	-	811
20x400	77	232	291	1008	852	-	1448	673	291	1407	-	-	852
21x400	80	242	304	1057	894	-	1519	706	304	1476	-	-	894
22x400	84	253	319	1106	935	-	1590	739	319	1545	-	-	935
23x400	88	264	332	1155	977	-	1661	771	332	1614	-	-	977
24x400	91	275	346	1204	1018	-	1731	804	346	1683	-	-	1018
25x400	95	286	360	1254	1060	-	1802	836	360	1752	-	-	1060
26x400	98	297	373	1302	1101	-	1873	869	373	1820	-	-	1101
27x400	101	308	387	1351	1142	-	1944	901	387	1889	-	-	1142
28x400	105	319	401	1400	1184	-	2015	936	401	1958	-	-	1184
29x400	108	330	415	1449	1225	-	2085	966	415	2027	-	-	1225

Frozen Green and Wax Beans
Grading Manual
October 1996

**TABLE XIII -- Time Sampling Acceptance Numbers For Short Cut & Mixed Cut Style -- 400 Plan
GRADE A**

Units of product	EVM	Stems	Blem (Major)	Total Blem (Mj+Mn)	Mech Damg	Edible Fiber	Inedible Fiber	Color Defective	Char "B"	Char "C"	Char "SStd"
(AQLs)	0.162	0.58	1.02	3.30	2.60	1.48	0.05	5.00	10.10	1.02	0.05
1x400*	2	5	7	19	16	10	1	27	50	7	1
1.5x400	2	6	10	27	22	14	1	39	72	10	1
2x400	3	8	13	35	28	17	1	50	95	13	1
3x400	4	11	18	50	40	25	2	73	138	18	2
4x400	5	14	23	65	52	32	2	95	181	23	2
5x400	6	17	28	79	64	38	2	116	224	28	2
6x400	7	20	33	94	75	45	3	138	266	33	3
7x400	8	23	37	108	87	52	3	159	309	37	3
8x400	9	25	42	122	98	58	4	181	351	42	4
9x400	10	28	46	137	109	65	4	202	393	46	4
10x400	10	31	51	151	121	72	4	223	435	51	4
11x400	11	34	56	165	132	78	4	244	477	56	4
12x400	12	36	60	179	143	85	5	265	519	60	5
13x400	13	39	65	193	154	91	5	286	561	65	5
14x400	14	42	69	207	165	98	5	307	603	69	5
15x400	15	44	74	221	176	104	6	329	645	74	6
16x400	15	47	78	235	187	111	6	350	686	78	6
17x400	16	50	83	249	198	117	6	371	728	83	6
18x400	17	52	87	263	209	123	7	391	769	87	7
19x400	18	55	92	277	221	130	7	412	811	92	7
20x400	19	57	96	291	232	136	7	433	852	96	7
21x400	19	60	101	304	242	142	7	454	894	101	7
22x400	20	63	105	319	253	149	8	475	935	105	8
23x400	21	65	110	332	264	155	8	495	977	110	8
24x400	22	68	114	346	275	161	8	516	1,018	114	8
25x400	23	70	118	360	286	168	8	537	1,060	118	8
26x400	23	73	123	373	297	174	9	558	1,101	123	9
27x400	24	75	127	387	308	180	9	578	1,142	127	9
28x400	25	78	132	401	319	187	9	599	1,184	132	9
29x400	26	81	136	415	330	193	10	620	1,225	136	10

**TABLE XIV -- Time Sampling Acceptance Numbers For Short Cut & Mixed Cut Style -- 400 Plan
GRADE B**

Units of product	EVM	Stems	Blem (Major)	Total Blem (Mj+Mn)	Mech Damg	Edible Fiber	Inedible Fiber	Color Defective	Char "B"	Char "C"	Char "SStd"
(AQLs)	0.366	1.25	2.17	6.2	5.5	4.0	1.25	10.1	N/A	10.1	1.02
1x400	3	8	13	33	30	22	8	50	N/A	50	7
1.5x400	4	12	19	47	42	32	12	72	N/A	72	10
2x400	6	15	24	61	55	41	15	95	N/A	95	13
3x400	8	21	34	88	79	59	21	138	N/A	138	18
4x400	10	27	44	115	103	77	27	181	N/A	181	23
5x400	12	33	54	142	127	95	33	224	N/A	224	28
6x400	13	39	64	169	151	112	39	266	N/A	266	33
7x400	15	45	73	195	174	129	45	309	N/A	309	37
8x400	17	50	83	221	198	146	50	351	N/A	351	42
9x400	19	56	92	248	221	164	56	393	N/A	393	46
10x400	21	61	102	274	244	181	61	435	N/A	435	51
11x400	23	67	111	300	267	198	67	477	N/A	477	56
12x400	24	73	121	326	291	215	73	519	N/A	519	60
13x400	26	78	130	352	314	232	78	561	N/A	561	65
14x400	28	84	139	378	337	248	84	603	N/A	603	69
15x400	30	89	149	404	360	265	89	645	N/A	645	74
16x400	31	95	158	430	383	282	95	686	N/A	686	78
17x400	33	100	167	456	406	299	100	728	N/A	728	83
18x400	35	105	177	481	429	316	105	769	N/A	769	87
19x400	36	111	186	507	452	332	111	811	N/A	811	92
20x400	38	116	195	533	475	350	116	852	N/A	852	96
21x400	40	122	204	559	498	366	122	894	N/A	894	101
22x400	41	127	213	584	520	383	127	935	N/A	935	105
23x400	43	132	223	610	543	399	132	977	N/A	977	110
24x400	45	138	232	636	566	416	138	1,018	N/A	1,018	114
25x400	46	143	241	661	589	433	143	1,060	N/A	1,060	118
26x400	48	149	250	687	612	450	149	1,101	N/A	1,101	123
27x400	50	154	259	712	634	466	154	1,142	N/A	1,142	127
28x400	51	159	268	738	657	483	159	1,184	N/A	1,184	132
29x400	53	165	278	763	680	500	165	1,225	N/A	1,225	136

Frozen Green and Wax Beans
Grading Manual
October 1996

**TABLE XV -- Time Sampling Acceptance Numbers For Short Cut & Mixed Cut Style -- 400 Plan
GRADE C**

Units of product	EVM	Stems	Blem (Major)	Total Blem (Mj+Mn)	Mech Damg	Edible Fiber	Inedible Fiber	Color Defective	Char "B"	Char "C"	Char "SStd"
AQL's	0.80	2.60	3.30	7.90	10.1	7.90	3.30	16.9	N/A	N/A	10.1
1x400	6	16	19	41	50	41	19	8	-	-	50
1.5x400	8	22	27	59	72	59	27	116	-	-	72
2x400	10	28	35	76	95	76	35	152	-	-	95
3x400	15	40	50	111	138	111	50	224	-	-	138
4x400	18	52	65	145	181	145	65	295	-	-	181
5x400	22	64	79	178	224	178	79	365	-	-	224
6x400	26	75	94	212	266	212	94	435	-	-	266
7x400	30	87	108	245	309	245	108	506	-	-	309
8x400	34	98	122	279	351	279	122	576	-	-	351
9x400	38	109	137	312	393	312	137	645	-	-	393
10x400	41	121	151	345	435	345	151	715	-	-	435
11x400	45	132	165	378	477	378	165	785	-	-	477
12x400	48	143	179	411	519	411	179	854	-	-	519
13x400	52	154	193	444	561	444	193	923	-	-	561
14x400	56	165	207	477	603	477	207	993	-	-	603
15x400	59	176	221	510	645	510	221	1062	-	-	645
16x400	63	187	235	543	686	543	235	1131	-	-	686
17x400	66	198	249	576	728	576	249	1200	-	-	728
18x400	70	209	263	608	769	608	263	1269	-	-	769
19x400	73	221	277	641	811	641	277	1338	-	-	811
20x400	77	232	291	673	852	673	291	1407	-	-	852
21x400	80	242	304	706	894	706	304	1476	-	-	894
22x400	84	253	319	739	935	739	319	1545	-	-	935
23x400	88	264	332	771	977	771	332	1614	-	-	977
24x400	91	275	346	804	1018	804	346	1683	-	-	1018
25x400	95	286	360	836	1060	836	360	1752	-	-	1060
26x400	98	297	373	869	1101	869	373	1820	-	-	1101
27x400	101	308	387	901	1142	901	387	1889	-	-	1142
28x400	105	319	401	936	1184	936	401	1958	-	-	1184
29x400	108	330	415	966	1225	966	415	2027	-	-	1225

**TABLE XVI, Time Sampling Acceptance Numbers For French Style -- 200 x 2.5 g Plan
GRADE A**

Rate/ Units or Grams of Product	EVM Ea Piece	Stems Ea Piece	Major Blemish	Total Blemish	Small Pieces	Color Defectives	"B" Character	"C" Character	"Sstd" Character
(AQLs)	0.153	0.541	0.961	2.05	9.0	4.8	N/A	6.0	1.4
1x500	1	3	10	18	63	38	N/A	45	13
2x500	2	4	18	33	115	65	N/A	80	23
3x500	2	6	25	45	165	95	N/A	115	33
4x500	3	8	30	58	215	120	N/A	148	43
5x500	3	9	38	70	263	148	N/A	183	50
6x500	4	11	43	83	313	175	N/A	215	58
7x500	4	12	48	93	360	200	N/A	248	68
8x500	5	13	55	105	410	228	N/A	280	75
9x500	5	15	60	118	458	253	N/A	313	83
10x500	6	16	65	128	505	280	N/A	345	93
11x500	6	17	73	140	553	305	N/A	378	100
12x500	7	19	78	153	600	333	N/A	410	108
13x500	7	20	83	163	648	358	N/A	440	115
14x500	8	21	88	175	695	383	N/A	473	123
15x500	8	23	95	186	743	410	N/A	505	130
16x500	8	24	100	198	790	435	N/A	538	140
17x500	9	25	105	208	838	460	N/A	568	148
18x500	9	27	110	220	883	485	N/A	600	155
19x500	10	28	115	230	933	510	N/A	633	163
20x500	10	29	120	243	978	538	N/A	663	170
21x500	10	30	128	253	1025	563	N/A	695	178
22x500	11	32	133	265	1073	588	N/A	728	185
23x500	11	33	138	275	1120	613	N/A	758	195
24x500	12	34	143	288	1165	638	N/A	790	200
25x500	12	36	148	298	1213	663	N/A	823	210
26x500	12	37	153	308	1260	688	N/A	853	218
27x500	13	38	160	320	1305	713	N/A	883	225
28x500	13	39	165	330	1353	740	N/A	915	233
29x500	14	41	170	343	1400	765	N/A	945	240

**TABLE XVII, Time Sampling Acceptance Numbers For French Style -- 200 x 2.5 g Plan
GRADE B**

Rate/ Units or Grams of Product	EVM Ea Piece	Stems Ea Piece	Major Blemish	Total Blemish	Small Pieces	Color Defectives	"B" Character	"C" Character	"Sstd" Character
(AQLs)	0.325	1.16	2.05	3.20	13.9	9.8	N/A	18.8	4.8
1x500	2	5	18	25	90	52	N/A	118	38
2x500	3	8	33	45	168	123	N/A	220	65
3x500	4	11	45	65	243	225	N/A	320	95
4x500	5	14	58	85	318	233	N/A	420	120
5x500	6	17	70	81	393	285	N/A	520	148
6x500	7	20	83	97	465	338	N/A	620	175
7x500	8	23	93	140	540	390	N/A	717	200
8x500	9	25	105	158	613	443	N/A	815	228
9x500	10	28	118	175	685	495	N/A	913	253
10x500	11	31	128	195	758	548	N/A	1010	280
11x500	11	34	140	210	830	600	N/A	1108	305
12x500	12	36	153	228	903	650	N/A	1205	333
13x500	13	39	163	245	978	703	N/A	1305	358
14x500	14	42	175	263	1048	753	N/A	1400	383
15x500	15	44	185	280	1120	805	N/A	1498	410
16x500	16	47	198	298	1193	858	N/A	1595	435
17x500	16	50	208	315	1265	908	N/A	1693	460
18x500	17	52	220	333	1338	958	N/A	1788	485
19x500	18	55	230	350	1408	1010	N/A	1885	510
20x500	19	57	243	365	1480	1063	N/A	1983	538
21x500	20	60	253	383	1553	1113	N/A	2078	563
22x500	20	63	265	400	1623	1165	N/A	2175	588
23x500	21	65	275	418	1695	1215	N/A	2270	613
24x500	22	68	288	435	1768	1265	N/A	2368	638
25x500	23	70	298	453	1838	1318	N/A	2463	663
26x500	23	73	308	468	1910	1368	N/A	2560	688
27x500	24	75	320	485	1980	1418	N/A	2655	713
28x500	25	78	330	503	2053	1470	N/A	2753	740
29x500	26	81	343	520	2125	1520	N/A	2848	765

**TABLE XVIII, Time Sampling Acceptance Numbers For French Style -- 200 x 2.5 g Plan
GRADE C**

Rate/ Units or Grams of Product	EVM Ea Piece	Stems Ea Piece	Major Blemish	Total Blemish	Small Pieces	Color Defectives	"B" Character	"C" Character	"Sstd" Character
(AQLs)	0.733	2.50	3.20	9.8	18.8	16.6	N/A	N/A	11.5
1x500	3	8	25	52	118	105	N/A	N/A	75
2x500	6	15	45	123	220	195	N/A	N/A	140
3x500	8	21	65	225	320	285	N/A	N/A	205
4x500	10	27	85	233	420	375	N/A	N/A	268
5x500	12	33	81	285	520	463	N/A	N/A	328
6x500	13	39	97	338	620	550	N/A	N/A	390
7x500	15	45	140	390	717	638	N/A	N/A	450
8x500	17	50	158	443	815	725	N/A	N/A	513
9x500	19	56	175	495	913	810	N/A	N/A	573
10x500	21	61	195	548	1010	898	N/A	N/A	633
11x500	23	67	210	600	1108	985	N/A	N/A	693
12x500	24	73	228	650	1205	1070	N/A	N/A	753
13x500	26	78	245	703	1305	1158	N/A	N/A	813
14x500	28	84	263	753	1400	1243	N/A	N/A	873
15x500	30	89	280	805	1498	1330	N/A	N/A	933
16x500	31	95	298	858	1595	1415	N/A	N/A	993
17x500	33	100	315	908	1693	1500	N/A	N/A	1053
18x500	35	105	333	958	1788	1585	N/A	N/A	1113
19x500	36	111	350	1010	1885	1673	N/A	N/A	1173
20x500	38	116	365	1063	1983	1758	N/A	N/A	1233
21x500	40	122	383	1113	2078	1843	N/A	N/A	1293
22x500	42	127	400	1165	2175	1928	N/A	N/A	1353
23x500	43	132	418	1215	2270	2013	N/A	N/A	1413
24x500	45	138	435	1265	2368	2098	N/A	N/A	1470
25x500	46	143	453	1318	2463	2183	N/A	N/A	1530
26x500	48	149	468	1368	2560	2268	N/A	N/A	1590
27x500	50	154	485	1418	2655	2353	N/A	N/A	1650
28x500	51	159	503	1470	2753	2438	N/A	N/A	1708
29x500	53	165	520	1520	2848	2523	N/A	N/A	1768

