



# Performance of the Second International Mungbean Nursery

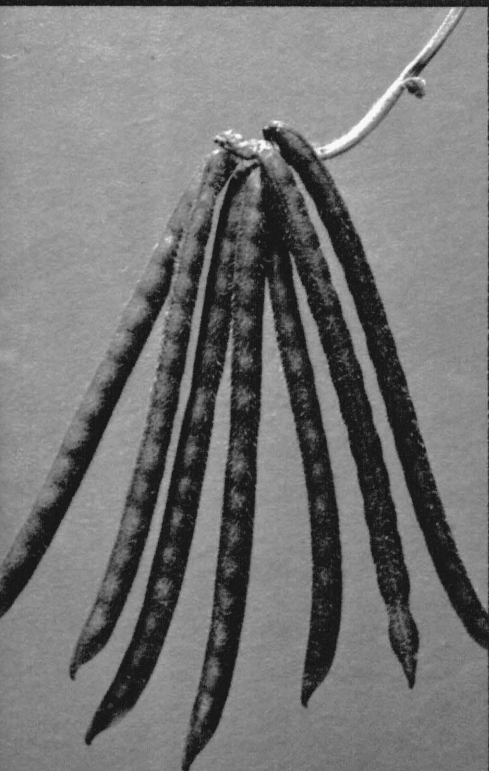
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## SUMMARY

The Second International Mungbean Nursery was grown at 18 locations in 11 countries. The test sites, ranging from 3° to 49° N latitude, represented widely different environments. The nursery contained 28 varieties of mungbeans (*Vigna radiata* (L.) Wilczek) representing a wide diversity in plant type, maturity, seed size and quality, disease resistance, yield potential, and geographic origin.

M350 from Korea was the highest yielding variety in the IMN for the second straight year. M409 from Peru, a new entry, was the second highest yielding variety, followed by M411 (Hybrid 45) from India, M317 from China, and M374 (MG50-10A) from the Philippines. M317 ranked second in yield in the First IMN. M137 was the earliest variety to flower. M374, M317, and M101 had the largest 1000-seed weight. At the low latitudes all strains tended to be short and flower early. Three of the highest yielding varieties—M350, M317, and M101—have rough, dull seed coats. M416 has yellow seed color. A virus (or virus complex) was the most common disease being reported from 9 locations. However, differences among the strains were not significantly different for any of the diseases reported. Additional research is needed on identification of mungbean diseases and methods for evaluating disease reactions.

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# Performance of the Second International Mungbean Nursery<sup>1</sup>

J. M. Poehlman<sup>2</sup>, Dale T. Sechler<sup>3</sup>, John M. Yohe<sup>4</sup>, Earl E. Watt<sup>4</sup>,  
Richard E. Swindell<sup>4</sup>, and Ellis Benham<sup>5</sup>.

## INTRODUCTION

The Second International Mungbean Nursery (Second IMN) was grown in 1973-74 at 18 locations in 11 countries. It contained 28 strains of mungbeans (*Vigna radiata* (L.) Wilczek) which had been selected for high yield, range in maturity, diversity in plant type, and geographic origin. Two or more local varieties were included at many locations for comparison. The International Mungbean Nursery was organized to provide information on: (a) the range of adaptation of the mungbean species, (b) the range of adaptation of specific cultivars, and (c) characteristics of the mungbean plant influencing adaptation.

## FIRST INTERNATIONAL MUNGBEAN NURSERY

The First International Mungbean Nursery (First IMN) was grown in 1972-'73 by 10 cooperators in seven countries (Canada, Colombia, Ethiopia, Korea, Philippines, Thailand, and the U. S. A.) and its performance was reported in Missouri Agricultural Experiment Station Special Report 158<sup>6</sup>. In the First IMN, M350<sup>7</sup> produced the highest average yield over all locations, M299 had the earliest overall mean 'days to flower', and M101 had the largest '1000-seed weight'. Viral disease symptoms were reported from 6 locations making it the most commonly reported disease. Mildew was reported from two locations, and Cercospora leaf spot from one location.

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<sup>1</sup>This research was funded by a grant from the U. S. Agency for International Development. Mungbean strains included in the nursery were received originally from the U. S. Department of Agriculture; Oklahoma Agricultural Experiment Station; former Regional Pulse Improvement Project in India and Iran; Pulse Research Station, Orissa, India; Crop Experiment Station, Suwon, Korea; Punjab Agricultural University, India; and U.S.A.I.D., Vietnam.

<sup>2</sup>Professor of Agronomy, <sup>3</sup>Associate Professor of Agronomy, <sup>4</sup>Graduate Research Assistant in Agronomy, and <sup>5</sup>Research Assistant in Agronomy, University of Missouri, Columbia, Missouri, 65201. Grateful acknowledgment is given to the cooperators who grew the nurseries and supplied the data. They are listed in Tables 2 through 19.

<sup>6</sup>Poehlman, J. M., Dale T. Sechler, John M. Yohe, Earl E. Watt, Richard E. Swindell, and Moheb M. H. Bashandi. 1973. *Performance of the First International Mungbean Nursery*. Missouri Agricultural Experiment Station Special Report 158.

<sup>7</sup>'M' numbers are accession numbers of the Missouri Agricultural Experiment Station. The numbers are cross referenced with the United States Department of Agriculture Plant Introduction (P.I.) accession numbers in Table 1. The United States Department of Agriculture maintains a permanent collection of mungbean accessions with P.I. numbers at the Plant Introduction Station, Experiment, Georgia 30212, U. S. A.

# MATERIALS AND METHODS

## Mungbean Strains

The 28 strains of mungbeans grown in the Second IMN are listed in Table 1. In selecting entries for the nursery we were limited for the most part to strains which had yielded well at Columbia, Missouri, and for which we had an adequate supply of seed. However, seed for one entry (M533) was supplied from Ludhiana, India, and seed for another entry (M543) from South Vietnam. Primary consideration was given to strains which had a good performance record in the First IMN in 1972. To permit a greater range in genetic variability we also selected strains which differed in maturity, plant type, and geographic origin. Sixteen of the 28 strains in the First IMN were included again in the Second IMN. Reasons for including specific strains are as follows: M350, M317, M15, M76, M174, M235, M4, M140, and M118 ranked 1, 2, 3, 4, 5, 6, 9, 10, and 11, respectively, for yield in the First IMN; M299, M4, M101, and M140 ranked 1, 2, 4, and 5, and M14 and M235, ranked 25 and 26, respectively, in 'days to flower' in the First IMN giving both early and late flowering strains; M15 and M317 ranked 1 and 2, respectively, in 'number of seeds per pod' in the First IMN; M101, M317, M14, M15, M90, and M235 ranked 1, 2, 3, 4, 5, and 6, respectively, in '1000-seed weight' in the First IMN; and M4, M174, M235, M14, M90,

Table 1. LIST OF MUNGBEAN VARIETIES INCLUDED IN THE SECOND INTERNATIONAL MUNGBEAN NURSERY, 1973-74.

Entry number	Missouri accession number	USDA* P. I. number	Name	Country in which variety originated
1	M4	368268	Shining Moong 1	India
2	M14	368278	Jalagaon 781	India
3	M15	368279		Taiwan
4	M25	368288	Bhatili 3-4	India
5	M76		Oklahoma 12	USA
6	M90	223711		India
7	M101	271401		India
8	M118	180311		India
9	M137**	31287	Parto	
10	M140	31290		
11	M174	164775		India
12	M194	180313		India
13	M203**	183136	Gohar	India
14	M232**	212907		India
15	M235	213015		India
16	M299	271405		India
17	M317	298915		China
18	M350	362322	Kjungkijaerae 5	Korea
19	M364	362307	Chungbukjaerae 12	Korea
20	M374**	369768	MG 50-10A	Philippines
21	M408**	378022	Morden 39	Canada
22	M409**	378023		Peru
23	M411**	370637	Hybrid 45	India
24	M412**	370638	T-2	India
25	M414**	371814	Klawng Jin Da	Thailand
26	M416**	371816	Tua Tawny	Thailand
27	M533**	377902	ML-1	India
28	M543**	377916		South Vietnam
29	Local			
30	Local			

\*P. I. number is the "Plant Introduction" number of the United States Department of Agriculture. A permanent collection of all varieties with P. I. numbers is maintained at the Regional Plant Introduction Station, Experiment, Georgia 30212.

\*\*New entries.



M101, M118, and M140 ranked 1, 2, 3, 4, 5, 6, 7, and 8, respectively, in (low) virus score in the First IMN. M25 and M364 were continued due to their diverse plant type.

Twelve new strains were included in the Second IMN. They are M137 and M203 which have been increased for release in Iran; M232, M411 (Hybrid 45), M412 (T-2) and M533 (ML-1) from India; M374 (MG 50-10A) from the Economic Garden, Los Baños, Philippines; M408 (Morden 39) from the Research Station, Morden, Canada; M409 from Peru; M414 and M416 from Thailand; and M543 from South Vietnam.

### Seed Distribution and Nursery Plans

Seed for 26 of the entries were grown at Columbia, Missouri, in 1972. Seed for one entry, M533 (ML-1), was received from the Punjab Agricultural University, Ludhiana, India, and one entry, M543, was received from U.S.A.I.D., Vietnam. The seeds were treated with the fungicide Thiram (tetramethylthiuramdisulfide) before distribution. The plan for the nursery was the same as in 1972. Cooperators were sent seed for planting 1-3 replications as requested. Most cooperators used a plot size of 4 x .75 m in a randomized block, although plot size and experimental design were modified by others to fit their specific needs.

### Nursery Sites

Seed for planting the nursery was supplied to those who had grown the First IMN and to others who requested seed insofar as seed supplies could be made available. A wide range in latitude was desired in order to evaluate response to varying photoperiods. In this respect we were fairly successful as the nursery sites ranged from 3° to 49° North Latitude. Four nurseries were located between 3° and 10°, six nurseries between 11° and 25°, seven nurseries between 26° and 41°, and 1 nursery at 49° North Latitude.

The specific sites are as follows:

Canada	- Research Station, Morden, Manitoba
Colombia	- Instituto Colombiano Agropecuario, Palmira
Ethiopia	- Awassa Experiment Station, Awassa
"	- Melka Werer Experiment Station, Melka Werer
"	- Agricultural Experiment Station, Melkassa
Haiti	- Grand Riviere du Nord
India	- Punjab Agricultural University, Ludhiana, Punjab
"	- Pulse Research Station, Nayagarh, Orissa
Iran	- University of Teheran, Karaj
Korea	- Crops Experiment Station, Suwon
Philippines	- International Rice Research Institute, Los Baños
Taiwan	- Asian Vegetable Research and Development Center, Shanhua
Thailand	- Northern Agricultural Development Center, Chiangmei
"	- Northeast Agricultural Center, Tha Phra
United States	- Alabama A. and M. University, Normal, Alabama
"	- Stine Seed Farms, Adel, Iowa
"	- Department of Agronomy, University of Missouri, Columbia, Missouri
"	- Department of Agronomy, Oklahoma State University, Stillwater, Oklahoma

## Planting Dates

Planting dates at the different locations were determined by many factors but most of the nurseries were grown during the period June to October, 1973. Three exceptions were Melka Werer, Ethiopia (planted November 6), Los Baños, Philippines (planted January 19, 1974), and Shanhua, Taiwan (planted March 5, 1974). The latitude, elevation, and growing season at each location are shown in Figure 1.

## Reporting Data

Procedures for recording notes and reporting data were sent to the cooperators to obtain the uniformity necessary for efficient data summarization. The suggestions were followed closely, for which cooperators are commended. Data on the following observations were reported for each replication from one or more of the stations where the nursery was grown:

*Number of plants:* Number of plants harvested.

*Yield:* Yield in kilograms/hectare of clean harvested seed.

*Days to first flower:* Days from date of planting to date of first open flower.

*Days to first ripe pod:* Days from date of planting to date of first ripe pod.

*Height:* Measured in cm from ground level to the tip of the main stem.

*Branch length:* Length in cm of the first or lowest lateral branch.

*Seeds per pod:* Average number of seeds per pod from a random sample of 10 or more pods.

*1000-seed weight:* Weight in grams of a random sample of 100 or more seeds, expressed on a 1,000-seed weight basis to permit use of whole numbers.

*Disease Score:* Disease reaction for specific diseases was scored on a scale of 1 (resistant) to 5 (susceptible). A score of 1 represents a high level of resistance and a score of 5 represents susceptibility.

*Seed Quality Score:* A seed quality score on a scale of 1 to 5 (1 representing the best quality) was reported from Oklahoma. The basis for scoring was general appearance of the seed with large, shiny seed given preference.

## RESULTS AND DISCUSSION

Performance data for the 28 uniform strains and the local check varieties, when included, are recorded in Tables 2 through 19. Data for the local check varieties are included in the means. The 'coefficient of variation' and 'least significant difference' are recorded for locations from which replicated data were reported. The highest mean yields over all strains were reported from Melka Werer, Ethiopia (1534 kg/ha in an irrigated test); Stillwater, Oklahoma (1193 kg/ha); Los Baños, Philippines (1176 kg/ha); Huntsville, Alabama (1131 kg/ha); and Shanhua, Taiwan (1023 kg/ha). Mean yields below 500 kg/ha were reported from 4 locations and mean yields below 250 kg/ha were reported from 2 locations. These low yields emphasize the need for research to improve cultural practices.

Mean data on performance of the 28 strains, averaged over the locations from which data are reported, are given in Table 20.

### *Yield*

Yields were reported from 15 locations. The mean yield over all locations is 752.0 kg/ha. This compares with a mean yield of 865.9 kg/ha in the First IMN over 8 locations. Mean yields of the Second IMN were higher than the mean yields of

FIGURE 1. GROWING SEASON FOR THE SECOND INTERNATIONAL  
MUNGBEAN NURSERY AT EACH TEST LOCATION

Location of Test	Degrees North Latitude	Elevation M	1973										1974					
			Apr.	May	June	July	Aug.	Sept	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	
Palmira, Colombia	3° 32'	1000	_____															
Awassa, Ethiopia	8° 00'	1700											_____					
Melkassa, Ethiopia	8° 22'	1550											_____					
Melka Werer, Ethiopia	9° 16'	750											_____					
Los Banos, Philippines	14° 20'												_____					
Tha Phra, Thailand	16° 40'	178	_____															
Chiengmei, Thailand	18° 47'	320											_____					
Gr. Riviere du Norde, Haiti	19° 00'	244	_____															
Nayagarh, India	20° 16'	91	_____															
Shanhua, Taiwan	23° 5'	9											_____					
Ludhiana, India	30° 56'	154	_____															
Normal, Alabama, U.S.A.	34° 39'	196	_____															
Karaj, Iran	35° 8'	1300	_____															
Stillwater, Oklahoma, U.S.A.	36° 2'	274	_____															
Suwon, Korea	37° 15'	37	_____															
Columbia, Missouri, U.S.A.	39° 15'	228	_____															
Adel, Iowa, U.S.A.	41° 6'	298	_____															
Morden, Manitoba, Canada	49° 2'	299	_____															

the First IMN at Suwon, Korea, and Los Baños, Philippines, but were lower than the mean yields of the First IMN at Palmira, Colombia; Melkassa, Ethiopia; and Columbia, Missouri.

M350 from Korea ranked highest in yield over the 15 locations with a mean yield of 1007.5 kg/ha. M409 from Peru ranked second with a mean yield of 932.7 kg/ha. These were followed in order by M411 (Hybrid 45) from India, M317 from China, and M374 (MG50-10A) from the Philippines. M350 ranked first in yield also in the First IMN and M317 was second. M409, M411, and M374 are new strains which were not included in the First IMN. M350 did not rank first in yield in any location in the First IMN and ranked first at only 2 of 15 locations in the Second IMN. It would appear that M350 and M317 both have wide adaptation and would have utility as parents in a hybridization program for this reason. A local strain was highest in yield at Karaj, Iran; and Shanhua, Taiwan. M25, M137, M299 and M414 were the lowest yielding strains in the nursery.

### *Days to First Flower*

The mean 'days to first flower' for the 28 varieties at 15 locations was 48.4 days which is similar to the 48.5 days reported at 9 locations in the First IMN. As was reported for the First IMN, the number of 'days to first flower' increased at the higher latitudes as well as the spread in days to flowering between the earliest and the latest strain. At Palmira, Colombia (latitude, 3°32'N) the mean 'days to flower' of all varieties was 35.1 days. At Morden, Manitoba, Canada (latitude, 49°2'N) the mean 'days to flower' was 80.8 days.

M137 was the earliest strain to flower over all locations with a mean of 42 'days to first flower'. M409 was the latest strain to flower with a mean of 58 days. M137 and M409 ranked 27 and 2, respectively in yield, and 28 and 1, respectively, in height. Except for M409, the highest yielding strains were moderately early in flowering, with M350 averaging 46 days and M317 averaging 49 days.

### *Days to First Ripe Pod*

The overall mean for 'days to first ripe pod' was 67.7 days for the 13 locations reporting data. The mean 'days to first flower' at the same 13 locations was 47.2 days, indicating that the period from flowering to ripening of the first pod averaged about 20.0 days.

### *Height and Branch Length*

Height and branch length are measures of plant size, which theoretically is an indication of capacity for holding pods. Height may be related to maturity also with late flowering strains tending to grow taller than early maturing strains. The average height of all strains at the 17 locations from which data were reported was 50.0 cm. The earliest strain to flower, M137, was the shortest averaging 38 cm in height and M409, the latest strain, was the tallest averaging 71 cm in height.

Individual strains vary in the ratio of height to branch length. Since long branches tend to droop and lie on the ground, resulting in harvest problems and seed spoilage, there is a definite need to identify strains with short, erect branches that will hold the seeds up off of the ground. Strains with the largest 'height/branch length' ratios were M543 (1.85), M15 (1.82), M412 (1.81), and M416 (1.75). Strains with lowest 'height/branch length' ratios were M203 and M118 (1.15 each) and M101 (1.24).

### *Pods per Plant*

'Pods per plant' is a component of yield. Although not requested from cooperators originally, data of 'pods per plant' were received from four locations. Only three of these locations reported yields. Highest number of 'pods per plant' were reported for M411 followed by M533, however differences among strains were not significant (Table 20). 'Pods per plant' are influenced greatly by environmental variations, including the stands, as indicated by C. V. of 59.2% (Table 20). It appears that a larger sample of locations is needed in order to obtain a valid comparison of the pod-forming capacities among the strains. It is hoped that data on this yield component will be received from cooperators with the Third IMN now being grown.

### *Seeds per Pod*

Number of 'seeds per pod' is a second component of yield. Data on 'seeds per pod' were reported from 8 locations. The number of 'seeds per pod' varied from an average of 9.4 for M416 to 12.0 for M317. Strains other than M317 with a high number of 'seeds per pod' were M15 (11.3), M4 (11.1) and M140 (11.0). M317 ranked second in yield, and second in 'seeds per pod' after M15, in the First IMN. The highest yielding strain, M350, had only 10.0 'seeds per pod'.

### *1000-Seed Weight*

Seed weight is a third component of yield. Also, large seeds are preferred in the marketplace. Seed weight varied among the strains from 62 g per 1000 seeds for M374 to 20 g per 1000 seeds for M25. Other strains with large '1000-seed weight' included M101 (60g), M317 (60 g), M543 (58 g), M15 (56 g), and M416 (56 g). M374, M101, and M317 ranked 5, 6, and 4 in yield. Thirteen of the 28 strains had mean '1000-seed weights' of 50 g or higher. M101 ranked first and M317 ranked second for '1000-seed weight' in the First IMN. The high yielding strain, M350, had a '1000-seed weight' of 42 g.

### *Disease Scores*

In the report on the First IMN it was stated that the disease observations from the separate locations were more difficult to evaluate and interpret than data on yield, days to first flower, etc., which can be measured and recorded with discrete values. Data reported for the Second IMN are also highly variable as verified by the high C. V. values and the fact that differences among strains are not statistically significant for any of the diseases (Table 20). Much of the problem lies in the lack of specific information on mungbean diseases, particularly the virus diseases, and also the lack of experience among mungbean research workers in reporting disease infection on a uniform scale. To simplify the latter it was suggested that diseases be scored on a basis of 1 (resistant) to 5 (susceptible). Difficulty with this system arises in interpreting data from locations where all of the scores are low. Should they be interpreted to mean resistance or, more probable, escape reactions due to light disease development?

Disease observations reported indicate again that a viral disease, or viral disease complex, is the most widespread of the mungbean diseases being reported from 11 locations. The specific viral disease has not been identified at any location, so it is not known whether the same viral disease, or complex of viral diseases, are being observed at the different locations. Furthermore, it is recognized that symptoms similar to those of viral diseases may result from other causes, insect damage for example.

The mean virus score reported for nine locations with data complete for all strains was 1.9, with M411 having the lowest mean score (1.0), and M414 having the highest mean score (2.6). M411 ranked third and M414 ranked 25th in yield among the 28 varieties. However, M350 and M374, both of which ranked high in yield, had comparatively high virus scores, 2.1 and 2.3, respectively.

Mungbean yellow mosaic virus was reported to be present at four locations. M411 (Hybrid 45) had the lowest disease score (0.9) with the highest score (2.6) being recorded for M137. Mildew scores were reported from four locations with the highest mildew scores being recorded at Suwon, Korea; Shanhua, Taiwan; and Columbia, Missouri. Mildew was reported from Suwon and Columbia in the report of the First IMN. Lowest mean mildew scores were recorded for M25 (1.9) and M409 (2.2) and the highest mean score was recorded for M137 (3.4). Cercospora leaf spot was reported from two locations—Palmira, Colombia, and Tha Phra, Thailand. Lowest mean score was reported for M4 (0.5) and highest score for M235 (2.8).

### *Seed Color and Texture*

Bright, shiny green or yellow seeds are preferred in the marketplace. All of the strains in the Second IMN have green seeds except M416 which has yellow seeds, M25 which has brown seeds, and M137 which has a mixture of green and brown seeds. Several strains have rough or dull seed coats and would be unacceptable in the marketplace. These include three of the six highest yielding strains: M350 (ranking 1st in yield), M317 (ranking 4th), and M101 (ranking 6th); and two of the three strains with the largest 1000-seed weight, M101 (ranking 2nd), and M317 (ranking 3rd). In addition, M299 and M364 have dull seed coats. M374, which ranked 5th in yield and 1st in 1000-seed weight, M409 and M411 which ranked 2nd and 3rd in yield, respectively, and M543 which ranked 2nd in 1000-seed weight all have shiny green seeds.

## SUMMARY OF FIRST AND SECOND INTERNATIONAL MUNGBEAN NURSERIES

Sixteen mungbean strains grown at 9 locations in the First IMN in 1972-73 were grown again in the Second IMN at 18 locations in 1973-74. The data reported from the 27 tests are averaged in Table 21.

The following observations may be made from these data:

- (a) M350 and M317 ranked 1 and 2 in yield indicating wide adaptability for these strains.
- (b) M140 and M299 were the earliest strains. Both ranked low in yield. However, the highest yielding strains were mostly moderately early.
- (c) M101 and M299 were the shortest varieties, yet they have very different plant types as is indicated by the height/branch length ratios (1.08 for M101 and 1.60 for M299). Other strains with large height/branch length ratios are M350, M317, and M15. Strains with low height/branch ratios are M4, M118, M174, M90, M235, M194, and M14.
- (d) Pods per plant are greatly influenced by the environment and differences among strains were not statistically significant.
- (e) M101 and M317 have the largest seeds. Both have dull seeds as well as M350, the highest yielding variety, M299, and M364.
- (f) An unidentified virus disease was observed most frequently. However, varietal differences were not significant for any of the diseases. There is a

need for additional research on the identification of mungbean diseases and methods for evaluating disease reaction.

### **FUTURE INTERNATIONAL MUNGBEAN NURSERIES**

The Third International Mungbean Nursery was distributed in 1974 to cooperators at more than 30 locations in 20 countries. Mungbean research workers who would like to participate in growing the International Mungbean Nursery in future years should contact the authors.



Table 2. AGRONOMIC AND DISEASE DATA FOR THE SECOND INTERNATIONAL MUNGBEAN NURSERY GROWN AT Morden, Manitoba, Canada, in 1973

Cooperator: B. B. Chubey, Crop Science Section, Research Station, Morden, Manitoba, Canada, in 1973

Entry no	Acc. no	Yield kg/ha	Days to first flower	Days to first ripe pod	Ht cm	Branch length cm	Seeds per pod no	1,000 seed wt gm	Disease Scores	
									Virus (1-5)	Mildew (1-5)
1	M4	112	79	121	45	37	10	58		1.0
2	M14		91		33	26			1.0	
3	M15		84		45	33				1.0
4	M25		85		33	30			1.0	
5	M76	172	72	121	51	39	7	42		1.0
6	M90		91		39	34				1.0
7	M101	537	71	119	33	38	6	86	1.0	
8	M118		81		45	35			1.0	
9	M137	1315	63	112	34	34	10	50		1.0
10	M140	749	66	114	41	44	10	44	1.0	1.0
11	M174		91		32	25				
12	M194		91		32	25				1.0
13	M203		92		35	29			1.0	1.0
14	M232		87		38	34	7		1.0	1.0
15	M235		92		31	27				1.0
16	M299	57	92	120	25	20	8	41		1.0
17	M317		79		49	38	12			
18	M350	156	79	119	49	34	11	49		1.0
19	M364	37	72	122	52	32	8	45		
20	M374	258	71	118	43	29	8	66		1.0
21	M408	861	65	110	42	36	9	55		1.0
22	M409		92		49	43			1.0	1.0
23	M411		78		41	37	10			
24	M412		78		44	31	8			1.0
25	M414		91		49	33			1.0	
26	M416		72		47	31	9			1.0
27	M533		83		43	31			1.0	1.0
28	M543		74		52	33	9			1.0
Mean			80.8		41.1	32.8				

Latitude: 49° 2' N

Elevation: 299m

Precipitation during test: 262 mm

Irrigation water applied:

Number replications: one

Date Planted: May 21, 1973

Date harvested:

Plot size (length x width): 5 m x 75 cm

Plot area: 3.75 m<sup>2</sup>

Nodulation:

Table 3. AGRONOMIC AND DISEASE DATA FOR THE SECOND INTERNATIONAL MUNGBEAN NURSERY GROWN AT Palmira, Colombia, S. A., in 1973

Cooperator: Luis H. Camacho and Edgar Guzman Acuna, Instituto Colombiano Agropecuario Palmira, Colombia, S. A.

Entry no	Acc. no	Yield rank	Yield kg/ha	Days to first flower	Days to first ripe pod	Ht cm	Disease Scores				
							Virus (1-5)	Mildew (1-5)	Cercospora leaf spot (1-5)	Anthrax-nose (1-5)	Bacterial disease (1-5)
1	M4	3	1150	34	65	27	0.0	3.0	1.0	0.0	2.5
2	M14	2	1260	35	67	36	0.0	2.0	2.5	1.5	3.5
3	M15	4	980	37	69	33	1.0	2.0	1.5	2.0	1.5
4	M25						1.0	0.0	2.0	2.0	1.0
5	M76	17	630	35	70	34	0.0	1.0	2.0	1.0	2.0
6	M90	5	980	35	68	32	0.0	2.0	4.0	1.0	2.5
7	M101	6	900	34	66	28	0.0	1.0	3.0	1.0	2.0
8	M118	10	720	35	68	31	0.0	1.5	3.5	2.0	1.5
9	M137	11	720	34	69	31	1.5	2.0	3.5	1.5	2.0
10	M140	14	700	34	69	30	1.0	1.0	3.0	1.5	2.0
11	M174	9	750	35	70	32	1.0	1.0	4.0	2.5	1.5
12	M194	8	780	35	70	33	1.5	1.0	4.0	2.0	2.0
13	M203	12	720	35	71	31	1.0	1.0	3.0	3.5	1.5
14	M232	13	720	34	68	30	1.0	1.5	3.0	2.0	2.0
15	M235	19	580	35	70	30	1.0	1.5	3.5	2.0	2.0
16	M299	27	80	39	74	28	4.0	1.0	1.0	2.5	1.0
17	M317	28	80	44	73	36	0.0	1.0	1.0	1.0	1.5
18	M350	1	1370	36	73	43	2.0	1.0	2.0	2.5	2.5
19	M364	22	520	35	71	37	3.0	1.0	2.0	1.5	2.0
20	M374	23	430	39	74	38	4.5	1.0	1.5	1.5	2.0
21	M408	15	680	34	67	22	1.0	1.0	3.5	1.5	2.0
22	M409	7	850	49	86	52	1.0	1.5	2.0	3.0	1.0
23	M411	18	600	34	65	35	0.0	1.0	2.0	1.0	2.0
24	M412	21	570	35	73	35	1.0	1.0	2.5	1.0	2.0
25	M414	25	230	41	75	54	4.5	1.5	2.0	1.5	2.0
26	M416	20	580	35	75	45	4.5	1.5	2.0	3.0	1.5
27	M533	26	230	34	76	44	3.0	1.5	1.5	2.0	1.5
28	M543	24	270	39	77	47	3.5	1.5	1.0	3.5	1.0
29	Berken	16	670	39	71	44	1.0	1.0	1.5	1.0	2.0
Mean			646.5	35.1	68.6	34.4	1.5	1.3	2.4	1.7	1.7

Latitude: 3° 32' N

Elevation: 1,000 m

Precipitation during test: 236 mm

Irrigation water applied:

Number replications: one

Date Planted: April 27, 1973

Date harvested: July 13, 1973

Plot size (length x width): 10 m x 60 cm

Plot area: 6 m<sup>2</sup>

Nodulation:

Table 4. AGRONOMIC AND DISEASE DATA FOR THE SECOND INTERNATIONAL MUNGBEAN NURSERY GROWN AT Awassa, Ethiopia, in 1973

Cooperator: B. Chevreaux, Awassa Experiment Station, P. O. Box 6, Awassa, Ethiopia, and Lars Ohlander, Institute of Ag. Research, Nazareth, Ethiopia

Entry no	Acc. no	Yield rank	Yield kg/ha	Days to first flower	Days to first ripe pod	Ht cm	Branch length cm	Disease Scores	
								Virus (1-5)	Bean yellow mosaic virus (1-5)
1	M4	17	356	55	80	22	10	0.7	0.3
2	M14	11	405	60	90	30	23	0.7	0.7
3	M15	19	344	60	90	28	12	1.3	1.0
4	M25	29	150	70	108	17	13	0.3	0.0
5	M76	10	428	60	92	26	15	1.0	1.0
6	M90	6	539	75	110	26	13	1.0	1.0
7	M101	18	344	60	88	22	10	0.7	1.0
8	M118	3	572	60	92	28	23	0.7	1.0
9	M137	8	517	60	92	28	15	1.0	2.5
10	M140	27	161	60	83	20	10	1.2	2.0
11	M174	16	361	60	90	28	16	1.0	1.7
12	M194	24	256	60	92	27	13	0.7	0.7
13	M203	15	361	60	92	26	18	1.2	1.7
14	M232	9	478	60	92	32	22	0.3	1.3
15	M235	12	384	60	93	31	18	1.0	1.3
16	M299	25	239	60	92	25	15	0.3	0.7
17	M317	2	934	60	90	37	13	1.0	1.3
18	M350	22	311	60	90	31	19	1.7	1.3
19	M364	20	344	60	92	25	16	1.0	1.2
20	M374	7	528	60	92	30	16	1.3	1.2
21	M408	21	317	60	88	16	7	0.3	0.3
22	M409	1	1456	85	115	51	30	0.7	0.8
23	M411	28	155	60	92	25	10	0.0	0.0
24	M412	23	267	77	92	28	12	1.0	0.3
25	M414	5	544	60	92	39	25	1.0	0.8
26	M416	13	378	60	93	30	13	0.8	0.7
27	M533	14	367	60	93	34	19	0.5	0.7
28	M543	4	550	60	92	33	10	1.5	1.0
29	Gode	26	233	90	120	53	48	0.8	0.3
30	Dire	30	95	90	120	50	50	0.0	0.3
Mean			412.4	64.1	94.6	30.0	23.3	0.8	0.9
C.V., %			56.3	-	-	21.0		52.3	64.0
L.S.D. (.05)			378.9	-	-	10.3	n.s.	0.7	0.98

Latitude: 8° 0' N

Elevation: 1,700 m

Precipitation during test: 485 mm

Irrigation water applied:

Number replications: three

Date Planted: July 2, 1973

Date harvested: Oct. 8-Nov. 21, 1973

Plot size (length x width): 4m x 75cm

Plot area: 3m

Nodulation: poor

Table 5. AGRONOMIC AND DISEASE DATA FOR THE SECOND INTERNATIONAL MUNGBEAN NURSERY GROWN AT Melka Werer, Ethiopia, in 1973, 1974

Cooperator: J. E. Moore, Melka Werer, and Lars Ohlander, Institute of Agriculture Research, Nazareth, Ethiopia

Entry no	Acc. no	Yield rank	Yield kg/ha	Ht cm	Branch length cm	1,000 seed wt gm	Disease Scores
							Bean yellow mosaic virus (1-5)
1	M4	24	1219	32	21	48	0.3
2	M14	15	1500	39	26	42	1.0
3	M15	28	995	41	26	50	1.0
4	M25	30	618	26	25	25	1.7
5	M76	20	1381	33	26	34	2.3
6	M90	11	1635	37	32	48	0.7
7	M101	26	1108	35	22	49	0.3
8	M118	7	1726	31	21	43	2.3
9	M137	14	1572	34	26	33	2.7
10	M140	16	1483	30	28	40	0.7
11	M174	17	1472	36	28	49	0.7
12	M194	23	1258	24	27	48	1.0
13	M203	21	1365	27	29	22	1.0
14	M232	25	1177	32	32	43	0.7
15	M235	18	1428	42	32	37	0
16	M299	27	1037	32	25	32	1.0
17	M317	2	2694	51	26	51	0
18	M350	8	1703	50	34	42	1.7
19	M364	13	1584	43	26	46	1.7
20	M374	22	1297	31	26	50	1.7
21	M408	29	627	28	18	52	3.0
22	M409	1	3032	55	51	52	0
23	M411	5	1871	38	25	41	0.3
24	M412	19	1418	38	26	33	0
25	M414	6	1847	51	30	45	0.3
26	M416	10	1668	55	34	49	0.3
27	M533	12	1590	59	35	35	0.3
28	M543	9	1676	41	36	48	0
29	Local	3	2057	66	52	44	0
30	Local	4	1974	68	53	34	0
Mean			1533.7	40.2	29.9	42.2	0.9
C. V.			20.3	4.9	7.8	16.1	56.4
L. S. D. (.05)			508.9	3.2	3.8	11.1	0.8

Latitude: 9° 16' N

Elevation: 750m

Precipitation during test: 19.5mm

Irrigation water applied: 875mm

Number replications: three

Date Planted: November 6, 1973

Date harvested: February 2, 1974

Plot size (length x width): 3m x 40cm

Plot area: 2.4m<sup>2</sup>

Nodulation:

Table 6. AGRONOMIC AND DISEASE DATA FOR THE SECOND INTERNATIONAL MUNGBEAN NURSERY GROWN AT Melkassa, Ethiopia, in 1973

Cooperator: Lars Ohlander, Institute of Agricultural Research, National Horticultural Center, Nazareth, Ethiopia

Entry no	Acc. no	Yield rank	Yield kg/ha	Days to first flower	Days to first ripe pod	Ht cm	Branch length cm	Seeds per pod no	1,000 seed wt gm	Shattering %
1	M4	11	506	48	69	23	13	9	49	28
2	M14	5	655	50	72	35	25	8	58	20
3	M15	12	503	50	74	31	16	12	59	7
4	M25	30	163	52	74	20	15	8	20	5
5	M76	15	480	54	76	32	17	10	36	8
6	M90	7	592	50	70	27	18	8	59	25
7	M101	10	533	51	74	25	13	9	68	23
8	M118	16	479	50	73	25	17	10	51	23
9	M137	23	383	49	72	20	13	8	43	18
10	M140	26	303	50	72	22	13	9	43	15
11	M174	27	300	50	72	26	18	10	56	20
12	M194	17	478	51	72	26	15	8	56	23
13	M203	28	255	50	72	26	15	9	52	10
14	M232	24	378	50	72	29	16	8	52	13
15	M235	21	449	49	70	29	19	8	56	30
16	M299	22	388	52	72	29	20	10	34	7
17	M317	8	561	54	79	40	23	12	61	7
18	M350	9	548	51	74	34	21	9	45	33
19	M364	29	239	50	70	30	19	10	41	5
20	M374	3	755	51	72	33	21	10	59	2
21	M408	25	328	48	71	19	9	8	49	33
22	M409	1	1744	62	84	64	44	11	48	5
23	M411	13	498	49	72	29	16	8	36	2
24	M412	19	478	50	71	32	14	7	39	2
25	M414	4	739	52	74	50	31	12	54	3
26	M416	2	911	52	75	52	27	10	56	2
27	M533	6	628	53	76	40	23	10	31	2
28	M543	18	478	53	76	46	26	9	64	0
29	Gode	20	467	61	83	57	35	8	35	0
30	Dire	14	489	63	86	58	31	8	36	0
Mean			523.6	51.8	73.9	33.6	20.2	9.2	48.2	12.4
C.V., %			33.1	4.8	3.2	17.4	24.4	12.3	4.9	
L.S.D. (.05)			283.1	4.1	3.9	9.5	8.1	1.9	3.9	

Latitude: 8° 22' N  
 Elevation: 1,550 m  
 Precipitation during test: 471 mm  
 Irrigation water applied:  
 Number replications: three

Date Planted: June 22, 1973  
 Date harvested: Sept. 19–October 20, 1973  
 Plot size (length x width): 4m x 75cm  
 Plot area: 3 m<sup>2</sup>  
 Nodulation: fair

Table 7. AGRONOMIC AND DISEASE DATA FOR THE SECOND INTERNATIONAL MUNGBEAN NURSERY GROWN AT Grande Riviere du Nord, Haiti, W. I., in 1973.

Cooperator: Steve Mason, Mennonite Central Committee, Boite Postale 665, Port-au-Prince, Haiti, West Indies

Entry no	Acc. no	Days to first flower	Days to first ripe pod	Ht cm	Branch length cm	Disease Score
						Virus (1-5)
1	M4	41	56	57	33	1.7
2	M14	41	57	61	39	2.5
3	M15	46	62	61	33	1.8
4	M25	50	65	60	32	2.2
5	M76	44	59	75	29	1.7
6	M90	44	60	51	32	1.5
7	M101	40	55	55	36	1.3
8	M118	44	59	64	38	1.3
9	M137	41	57	53	31	1.8
10	M140	42	58	55	30	2.3
11	M174	44	59	57	38	2.0
12	M194	43	59	60	36	3.2
13	M203	46	61	57	34	2.3
14	M232	44	59	63	31	2.5
15	M235	43	58	67	40	1.7
16	M299	46	62	71	32	1.8
17	M317	47	62	68	36	1.8
18	M350	46	62	73	33	2.0
19	M364	43	59	64	27	3.5
20	M374	43	58	60	34	0.8
21	M408	43	57	52	31	2.7
22	M409	51	67	68	34	4.0
23	M411	49	66	93	45	0.5
24	M412	49	64	91	39	1.0
25	M414	48	62	90	35	3.8
26	M416	46	60	81	33	3.0
27	M533	47	63	77	34	1.5
28	M543	48	63	94	34	2.3
Mean		45.0	60.3	67.1	34.2	2.1
C.V., %		4.2	3.2	15.8	17.0	37.2
L.S.D. (.05)		3.1	3.2	17.4	n.s.	1.3

Latitude: 19° N  
 Elevation: 274 m  
 Precipitation during test:  
 Irrigation water applied:  
 Number replications: three

Date Planted: June 15, 1973  
 Date harvested: August 8-Sept. 8, 1973  
 Plot size (length x width): 3m x 45cm  
 Plot area: 1.35 m<sup>2</sup>  
 Nodulation:

Table 8. AGRONOMIC AND DISEASE DATA FOR THE SECOND INTERNATIONAL MUNGBEAN NURSERY GROWN AT Ludhiana, India, in 1973.

Cooperator: K. B. Singh and K. S. Gill, Punjab Agricultural University, Ludhiana, Punjab, India

Entry no	Acc. no	Pods per plant no	Seeds per pod no	1,000 seed wt gm
1	M4	8	8	38
2	M14	10	5	43
3	M15	3	5	21
4	M25	17	7	19
5	M76	4	4	40
6	M90	3	6	35
7	M101	4	4	40
8	M118	3	6	39
9	M137	3	6	31
10	M140	13	6	31
11	M174	5	4	30
12	M194	4	4	55
13	M203	6	4	27
14	M232	6	7	41
15	M235	5	6	36
16	M299	5	5	29
17	M317	5	5	36
18	M350	4	3	30
19	M364	2	4	30
20	M374	1	5	-
21	M408	5	5	40
22	M409	3	6	40
23	M411	27	8	27
24	M412	22	9	23
25	M414	3	4	28
26	M416	6	5	48
27	M533	36	10	29
28	M543	3	4	46
29	ML3	23	8	32
30	ML5	31	8	25
Mean		9.0	5.9	33.0

Latitude: 30° 56' N

Elevation: 154m

Precipitation during test: 476 mm

Irrigation water applied:

Number replications: three

Date Planted: July 1, 1973

Date harvested: October 15, 1973

Plot size (length x width):

Plot area:

Nodulation:



Table 9. AGRONOMIC AND DISEASE DATA FOR THE SECOND INTERNATIONAL MUNGBEAN NURSERY GROWN AT Nayagarh, India, in 1973

Cooperator: R. C. Misra, Pulse Research Station, Nayagarh, Orissa, India

Entry no	Acc. no	Yield rank	Yield kg/ha	Days to first flower	Days to first ripe pod	Ht cm	Branch length cm	1,000 seed wt gm	Disease Scores	
									Virus (1-5)	Bean yellow mosaic virus (1-5)
1	M4	24	542	33	50	35	27	43	4.2	1.7
2	M14	10	792	34	51	51	58	53	3.0	2.0
3	M15	22	601	33	50	55	38	56	2.7	1.3
4	M25	28	469	37	52	63	45	17	0.7	2.7
5	M76	27	472	32	51	45	26	33	4.0	2.0
6	M90	11	736	33	49	51	57	57	2.7	1.3
7	M101	19	639	32	49	39	23	58	4.0	2.7
8	M118	7	900	33	49	49	53	44	3.0	2.3
9	M137	30	193	29	46	37	20	38	3.3	1.3
10	M140	29	428	33	50	46	24	41	3.5	1.3
11	M174	13	724	34	50	43	53	56	3.0	2.3
12	M194	20	637	34	51	44	53	55	3.0	2.7
13	M203	14	714	35	51	45	64	55	3.5	1.3
14	M232	15	711	31	49	44	32	49	3.2	0.7
15	M235	12	726	31	49	46	74	56	3.5	1.7
16	M299	26	481	35	51	48	27	31	3.2	1.0
17	M317	17	658	35	53	53	30	59	4.0	1.3
18	M350	18	642	31	45	54	29	40	3.3	1.3
19	M364	23	591	30	45	52	26	37	3.2	1.3
20	M374	9	818	30	47	47	30	62	3.3	2.0
21	M408	21	612	29	45	40	20	45	4.0	2.0
22	M409	25	537	40	61	122	95	40	3.2	2.7
23	M411	1	1282	35	51	67	44	31	1.3	0.7
24	M412	6	932	34	51	61	42	32	2.3	2.0
25	M414	5	963	34	51	82	48	53	3.5	2.0
26	M416	2	1159	33	51	70	46	50	3.3	1.7
27	M533	8	826	35	53	85	64	30	2.3	1.3
28	M543	4	1058	35	51	63	40	59	2.7	2.0
29	Baisakhi	3	1156	31	46	57	46	31	1.8	2.0
30	Kopergaon	16	677	31	45	55	38	43	4.2	1.3
Mean			722.5	33.1	49.8	55.0	42.3	45.2	3.1	1.7
C. V., %			28.2			12.7	29.5	4.3	27.8	61.8
L. S. D. (.05)			333.0			11.4	20.4	3.1	1.4	n. s.

Latitude: 20° 10' N

Elevation: 91 m

Precipitation during test:

Irrigation water applied:

Number replications: three

Date Planted: July 14, 1973

Date harvested:

Plot size (length x width): 4.5m x 45cm

Plot area: 2 m<sup>2</sup>

Nodulation: good

Table 10. AGRONOMIC AND DISEASE DATA FOR THE SECOND INTERNATIONAL MUNGBEAN NURSERY GROWN AT Karaj, Iran, in 1973

Cooperator: M. C. Amirshahi, Faculty of Agriculture, University of Teheran, Karaj, Iran

Entry no	Acc. no	Yield rank	Yield kg/ha	Days to first flower	Days to first ripe pod	Ht cm	Branch length cm	1,000 seed wt gm	Disease Scores
									Virus (1-5)
1	M4	18	97	52	72	24	6	49	1.0
2	M14	13	111	54	75	42	4	54	1.3
3	M15	19	94	50	71	31	6	64	2.0
4	M25	27	62	56	73	26	3	20	1.0
5	M76	21	84	48	67	28	6	34	2.0
6	M90	9	114	56	76	29	4	55	2.0
7	M101	15	103	50	66	15	5	59	2.0
8	M118	14	104	55	75	24	5	49	1.7
9	M137	10	114	50	67	25	5	43	2.0
10	M140	3	157	50	66	21	5	40	2.3
11	M174	23	78	56	77	27	5	58	1.0
12	M194	7	118	57	76	25	4	51	1.3
13	M203	16	103	57	77	23	4	55	1.3
14	M232	11	113	52	72	30	5	51	1.3
15	M235	8	117	59	79	32	4	56	2.0
16	M299	30	48	52	68	24	4	31	1.3
17	M317	25	65	51	69	32	7	66	1.7
18	M350	26	64	50	68	33	6	37	1.7
19	M364	28	53	50	69	25	5	41	1.3
20	M374	6	128	50	66	24	5	67	1.3
21	M408	20	85	52	73	13	4	43	1.7
22	M409	4	157	57	76	32	5	45	1.3
23	M411	2	165	51	68	35	5	35	1.3
24	M412	5	131	52	71	31	5	40	1.3
25	M414	22	80	53	72	48	9	53	1.7
26	M416	24	77	51	69	32	5	56	1.0
27	M533	17	98	56	75	34	5	28	1.7
28	M543	29	52	51	70	36	6	56	1.0
29	48-071-10827	1	215	51	69	28	6	44	1.7
30	48-071-10961	12	113	51	68	37	6	49	1.7
Mean			103.4	52.5	71.3	28.8	5.1	47.6	1.5
C.V., %			30.7	3.7	3.8	16.7	28.6	6.4	29.7
L.S.D. (.05)			51.8	3.2	4.4	7.9	2.2	5.0	0.7

Latitude: 35° 8'  
 Elevation: 1300m  
 Precipitation during test: none  
 Irrigations: 24  
 Number replications: three

Date Planted: June 10, 1973  
 Date harvested: September 26, 1973  
 Plot size (length x width): 4m x 50cm  
 Plot area: 2 m<sup>2</sup>  
 Nodulation: none

Table 11. AGRONOMIC AND DISEASE DATA FOR THE SECOND INTERNATIONAL MUNGBEAN NURSERY GROWN AT Suwon, Korea, in 1973

Cooperator: Hyun Ok Choi and Keun Yong Park, Crops Experiment Station, Office of Rural Development, Suwon, Korea

Entry no	Acc. no	Yield rank	Yield kg/ha	Days to first flower	Days to first ripe pod	Ht cm	Branch length cm	Seeds per pod no	1,000 seed wt gm	Disease Scores		
										Virus (1-5)	Bean yellow mosaic virus (1-5)	Mildew (1-5)
1	M4	15	821	56	77	118	70	12	33	2.0	3.0	3.0
2	M14	29	369	66	89	112	72	12	44	3.0	4.0	2.5
3	M15	27	468	57	76	91	29	11	45	2.5	4.0	4.0
4	M25	30	140	77	100	92	52	13	16	3.5	2.0	1.5
5	M76	7	1108	46	65	62	42	13	32	4.0	4.0	4.5
6	M90	4	1521	65	91	124	89	12	48	3.0	3.0	3.5
7	M101	6	1126	60	81	89	79	13	41	3.0	3.0	4.0
8	M118	10	993	64	88	130	109	13	38	2.5	3.0	3.0
9	M137	24	612	42	64	51	45	13	31	3.0	4.0	4.0
10	M140	22	629	41	63	58	36	13	33	2.5	2.0	4.0
11	M174	3	1539	67	91	118	109	12	39	2.0	4.0	3.5
12	M194	17	731	68	96	88	90	11	42	3.5	3.0	4.0
13	M203	25	590	64	92	97	73	11	42	3.0	3.0	3.0
14	M232	9	1000	53	76	112	81	11	40	3.0	2.5	4.0
15	M235	18	705	67	96	108	80	11	43	2.0	3.5	3.0
16	M299	11	992	35	63	47	35	13	29	2.0	3.0	3.5
17	M317	13	900	53	72	74	39	13	49	2.0	3.0	2.5
18	M350	1	1659	45	68	62	45	10	32	1.5	2.5	4.0
19	M364	12	991	56	78	76	57	11	39	1.5	2.0	4.0
20	M374	2	1598	42	63	69	44	13	52	3.0	3.0	3.5
21	M408	8	1028	50	71	51	35	9	39	4.0	3.0	4.0
22	M409	22	636	59	86	159	89	10	33	3.5	3.0	3.5
23	M411	5	1490	67	90	141	71	12	28	2.5	2.5	3.5
24	M412	28	370	70	91	104	50	10	28	2.5	3.0	3.0
25	M414	20	659	60	87	126	74	13	41	3.0	4.0	2.5
26	M416	19	663	41	63	64	21	11	47	3.5	3.0	2.0
27	M533	16	771	46	66	124	62	11	26	4.0	3.0	4.0
28	M543	15	834	52	69	90	38	10	45	3.5	3.0	3.5
29	Chong Joo Nokdoe	23	628	48	66	82	32	11	35	4.0	3.0	2.5
30	Jaerae #2	26	469	48	67	117	39	14	26	4.0	3.0	3.0
Mean			867.8	55.4	77.9	94.3	59.3	11.4	36.9	2.9	3.1	3.3
C. V., %			44.8	4.6	4.3	16.4	25.0	11.4	7.0	15.3	16.8	13.7
L. S. D. (.05)			796.	5.3	6.9	31.5	30.3	n.s.	5.3	0.9	1.1	0.9

Latitude: 37° 15' N  
 Elevation: 37 m  
 Precipitation during test: 622 mm  
 Irrigation water applied:  
 Number replications: two

Date Planted: June 22, 1973  
 Date harvested: October, 1973  
 Plot size (length x width): 1.5m x 60cm  
 Plot area: 0.9 m<sup>2</sup>  
 Nodulation:

Table 12. AGRONOMIC AND DISEASE DATA FOR THE SECOND INTERNATIONAL MUNGBEAN NURSERY GROWN AT Los Baños, Philippines, in 1974

Cooperator: Richard R. Harwood, International Rice Research Institute, Los Baños, Laguna, Philippines in 1974

Entry no	Acc. no	Yield rank	Yield kg/ha	Days to 50% flower	Days to Maturity	Ht cm	Pods per plant no	Seedling* vigor	Disease Score	
									Mildew (1-5)	Insect** Resistance Score
1	M4	8	1308	31	77	40	14	3.0		2.5
2	M14	26	935	32	79	42	13	2.5		2.5
3	M15	1	1789	32	80	58	20	4.0	1.0	3.0
4	M25	16	1126	32	89	41	29	1.0		3.9
5	M76	3	1544	35	81	53	31	3.0	1.0	3.5
6	M90	20	1053	31	79	39	13	2.5		2.5
7	M101	12	1190	32	79	37	12	3.0		3.5
8	M118	15	1135	31	84	32	21	2.5	1.0	2.0
9	M137	30	617	31	76	33	15	2.5		2.5
10	M140	27	926	31	76	38	18	3.0		2.5
11	M174	25	981	31	80	40	15	2.5		2.5
12	M194	17	1108	31	83	36	13	2.0		2.5
13	M203	23	999	31	84	40	14	2.5		2.0
14	M232	22	1017	31	80	40	14	2.5		3.0
15	M235	11	1208	32	85	42	15	2.5	0.5	3.5
16	M299	9	1235	38	77	47	26	2.0	0.5	2.5
17	M317	2	1771	36	79	61	20	4.0	1.0	2.5
18	M350	5	1453	32	76	60	13	3.5		3.5
19	M364	10	1217	33	76	51	14	2.5		4.0
20	M374	18	1062	35	77	45	12	3.5	0.5	2.5
21	M408	29	863	31	77	35	14	3.0	0.5	2.0
22	M409	4	1489	38	81	60	12	4.0	0.5	3.5
23	M411	24	999	35	80	37	15	1.5		2.0
24	M412	13	1190	39	83	50	23	1.0		2.0
25	M414	19	1062	37	79	59	10	2.5		2.5
26	M416	21	1035	38	78	57	16	2.5		3.5
27	M533	28	881	34	80	37	19	1.5		2.5
28	M543	7	1426	38	79	60	11	3.5		3.0
29	CES 55	14	1180	36	80	51	24	3.5	1.0	3.5
30	CES 28	6	1471	38	82	61	17	3.5	1.0	3.5
Mean			1175.7	33.7	79.9	46.1	16.8	2.7		2.8

\*Seedling vigor: 1 (low) to 5 (high vigor)

\*\*Insect Resistance: 1 (resistant) to 5 (susceptible)

Latitude: 14° 20' N

Elevation:

Precipitation during test:

Irrigation water applied:

Number replications: two

Date Planted: January 19, 1974

Date harvested: April 22, 1974

Plot size (length x width):

Plot area:

Nodulation:

Table 13. AGRONOMIC AND DISEASE DATA FOR THE SECOND INTERNATIONAL MUNGBEAN NURSERY GROWN AT Shanhua, Tainan, Taiwan, in 1974

Cooperator: D. R. MacKenzie and N. C. Chen, Asian Vegetable Research and Development Center, Shanhua, Tainan, Taiwan

Entry no	Acc. no	Yield rank	Yield kg/ha	Days Days to first flower	Days to first ripe pod	Ht cm	Branch length cm	Pods per plant no	Seeds per pod no	1,000 seed wt gm	Disease Scores	
											Virus (1-5)	Mildew (1-5)
1	M4	30	543	41	61	28	5	13	11	52	5.0	4.0
2	M14	19	824	42	64	38	15	16	11	64	3.7	3.0
3	M15	10	1129	45	65	41	16	24	14	67	2.0	3.0
4	M25	12	1096	45	67	42	38	57	12	21	0.0	2.3
5	M76	5	1362	45	64	44	28	24	11	36	3.0	3.0
6	M90	23	699	41	62	33	5	12	10	58	4.3	3.7
7	M101	25	672	42	63	33	13	9	10	65	5.0	4.0
8	M118	24	694	42	62	32	11	15	11	50	4.7	4.0
9	M137	29	569	41	62	32	8	15	12	42	4.3	3.7
10	M140	21	732	42	63	32	8	16	11	49	4.0	3.7
11	M174	28	619	42	64	31	10	13	10	54	5.0	3.3
12	M194	20	756	40	60	34	5	15	10	57	4.3	3.7
13	M203	14	979	43	63	35	14	16	10	55	4.0	4.0
14	M232	22	720	42	62	34	8	14	10	51	4.0	3.7
15	M235	16	872	42	63	31	13	14	10	55	4.0	3.3
16	M299	18	828	43	62	30	12	17	10	35	3.7	3.7
17	M317	6	1312	46	68	46	14	13	13	69	2.7	3.0
18	M350	8	1284	43	62	37	8	16	11	46	4.0	3.0
19	M364	26	666	42	60	31	12	20	10	44	4.0	3.3
20	M374	15	959	44	64	32	9	13	11	68	3.7	2.7
21	M408	9	1198	43	65	50	22	22	11	60	1.7	3.0
22	M409	7	1309	53	73	67	49	30	12	49	0.3	2.3
23	M411	17	855	42	62	33	10	23	10	36	2.3	2.7
24	M412	27	631	41	61	28	3	18	11	46	1.3	2.7
25	M414	4	1512	46	67	54	22	25	13	60	1.3	2.7
26	M416	11	1099	45	66	51	19	21	11	61	1.7	2.3
27	M533	2	2061	47	66	61	43	55	12	33	0.0	2.3
28	M543	13	991	46	67	44	27	27	11	67	1.7	3.0
29	Th 24	3	1640	46	66	48	20	25	12	56	1.0	3.3
30	Local	1	2078	49	68	56	30	26	15	58	1.7	3.0
Mean			1022.9	43.7	64.1	39.6	16.6	20.9	11.2	52.0	2.9	3.2
C.V., %			17.3	3.2	1.9	11.4	36.2	30.6	9.6	9.6	17.8	16.3
L.S.D. (.05)			289.3	2.2	2.0	7.4	9.8	10.4	1.8	8.1	0.9	0.8

Latitude: 23° 5' N

Elevation: 9.3 m

Precipitation during test:

Irrigation water applied:

Number replications: three

Date Planted: March 5, 1974

Date harvested: May 18 and June 4, 1974

Plot size (length x width): 4m x 75cm

Plot area: 3m<sup>2</sup>

Nodulation: good

Table 14. AGRONOMIC AND DISEASE DATA FOR THE SECOND INTERNATIONAL MUNGBEAN NURSERY GROWN AT Chiengmei, Thailand, in 1973

Cooperator: Manope Pavakul, Northern Agricultural Development Center, Faculty of Agriculture, Chiengmei University, Chiengmei, Thailand

Entry no	Acc. no	Yield rank	Yield kg/ha	Days to first flower	Days to first ripe pod	Ht cm	Branch length cm	1,000 seed wt gm	Disease Scores	
									Virus (1-5)	Bean yellow mosaic virus (1-5)
1	M4	7	773	34	53	35	34	42		
2	M14	21	425	36	57	36	31	48		
3	M15	23	344	40	59	36	27	45		
4	M25	28	184	45	62	46	37	15	0.3	
5	M76	25	296	38	59	43	27	33		
6	M90	20	491	37	57	34	39	51		
7	M101	3	920	38	57	31	32	63		
8	M118	11	584	35	56	39	35	45		
9	M137	29	165	33	52	27	26	33		
10	M140	26	248	36	55	29	26	33		
11	M174	12	565	37	58	38	38	52		
12	M194	18	502	37	59	34	35	52		
13	M203	19	501	37	59	36	40	49		
14	M232	17	521	36	54	35	32	45		
15	M235	22	380	38	58	30	27	50		
16	M299	24	300	40	58	42	27	29	0.3	0.3
17	M317	15	541	43	62	43	38	56		
18	M350	6	808	38	57	52	41	44		0.7
19	M364	13	562	37	55	43	35	37	0.3	
20	M374	5	885	38	58	47	37	49	0.7	
21	M408	27	221	33	51	23	18	38		
22	M409	30	74	61	81	64	36	31		
23	M411	14	555	40	56	51	32	31		2.0
24	M412	4	888	39	55	51	32	34	0.3	1.3
25	M414	16	521	44	61	72	53	50	1.3	0.3
26	M16	2	930	41	58	66	45	52	0.7	
27	M533	1	975	42	61	62	36	29		0.7
28	M543	9	681	39	59	54	44	56	2.0	0.3
29	Local	10	610	44	61	67	51	51	0.3	
30	Local	8	716	44	61	56	52	52	1.7	
Mean			538.8	39.3	58.4	44.1	35.4	43.1	0.3	0.2
C.V., %			30.4	4.7	2.3	15.0	22.0	9.2	183.8	215.1
L.S.D. (.05)			267.4	3.0	2.2	10.8	12.7	6.5	0.8	0.7

Latitude: 18° 47' N

Elevation: 320 m

Precipitation during test: 685 mm

Irrigation water applied: None

Number replications: three

Date Planted: July 19, 1973

Date harvested: October 9, 1973

Plot size (length x width): 6m x 50cm

Plot area: 3 m<sup>2</sup>

Nodulation: none

Table 15. AGRONOMIC AND DISEASE DATA FOR THE SECOND INTERNATIONAL MUNGBEAN NURSERY GROWN AT Tha Phra, Thailand, in 1973

Cooperator: Prathes Sittiyees, V. C. Finkner, and Earl E. Watt, Northeast Argicultural Center, Tha Phra, Khon Kaen, Thailand

Entry no	Acc. no	Yield rank	Yield kg/ha	Days to first flower	Days to first ripe pod	Ht cm	Branch length cm	Seeds per pod no	1,000 seed wt gm	Disease Scores	
										Virus (1-5)	Cercospora leaf spot (1-5)
1	M4	15	326	29	42	28	18	11	56	1.0	0.1
2	M14	21	257	30	43	40	25	11	60	1.0	0.3
3	M15	19	270	33	47	35	21	14	66	2.0	0.5
4	M25	29	56	35	50	45	38	9	20	1.5	0.3
5	M76	20	268	32	46	34	36	11	44	1.0	0.1
6	M90	24	238	30	44	33	27	11	64	1.0	0.1
7	M101	16	312	33	47	35	19	11	72	0.5	0.0
8	M118	7	467	28	43	41	43	11	51	1.0	0.1
9	M137	9	450	26	40	35	24	11	45	1.0	0.3
10	M140	11	407	29	43	35	22	12	48	0.5	0.8
11	M174	18	279	29	43	31	25	10	65	1.5	0.4
12	M194	8	452	29	45	38	41	11	61	0.5	0.1
13	M203	17	303	45	44	40	37	11	60	1.5	1.0
14	M232	3	587	29	43	42	39	11	63	0.5	0.6
15	M235	4	547	29	44	38	32	11	53	1.0	2.0
16	M299	12	341	30	45	39	27	10	37	2.5	0.5
17	M317	5	528	33	47	50	46	12	69	2.0	0.5
18	M350	2	643	32	45	48	36	13	51	2.0	0.1
19	M364	6	517	30	46	48	44	12	50	2.5	0.8
20	M374	22	248	32	47	40	27	11	72	1.5	0.6
21	M408	1	838	27	41	38	40	11	52	1.0	0.8
22	M409	30	24	40	57	79	83	9	39	0.5	0.3
23	M411	14	329	34	46	47	28	11	39	1.0	0.0
24	M412	10	419	33	47	58	29	11	39	1.0	0.0
25	M414	27	99	35	50	57	49	11	66	3.0	0.0
26	M416	28	80	34	48	44	36	9	68	2.0	0.0
27	M533	25	236	33	46	53	40	12	36	0.5	0.0
28	M543	23	241	35	51	47	37	12	53	2.0	0.0
29	Golden	13	330	34	47	47	39	11	53	2.0	0.1
30	India	26	155	34	49	60	43	12	76	2.0	0.0
Mean			341.4	31.9	45.6	43.2	34.8	10.9	54.3	1.4	0.3
C.V., %			50.2	13.0	4.7	18.4	35.6	10.7		50.4	128.9
L.S.D. (.05)			350.4	n.s.	4.4	16.2	24.0	2.4		n.s.	n.s.

Latitude: 16° 40' N

Elevation: 178 m

Precipitation during test: 325 mm

Irrigation water applied: May 11 and June 26

Number replications: two

Date Planted: May 10, 1973

Date harvested: June 30 and July 17, 1973

Plot size (length x width): 4m x 50 cm

Plot area: 2 m<sup>2</sup>

Nodulation: fair



Table 16. AGRONOMIC AND DISEASE DATA FOR THE SECOND INTERNATIONAL MUNGBEAN NURSERY GROWN AT Normal, Alabama, USA, in 1973

Cooperator: V. T. Sagra, Alabama Agricultural and Mechanical University, Normal, Alabama, USA

Entry no	Acc. no	Yield rank	Yield kg/ha	Days to first flower	Days to first ripe pod	Ht cm	Branch length cm	Seeds per pod no	1,000 seed wt gm
1	M4	15	971	56	74	62	66	12	42
2	M14	10	1079	62	81	77	52	11	59
3	M15	21	812	54	75	76	42	10	64
4	M25	28	259	61	81	60	60	10	23
5	M76	11	1079	49	73	67	47	12	37
6	M90	27	647	59	51	69	65	10	55
7	M101	9	1165	55	75	64	50	12	69
8	M118	16	971	59	77	72	61	10	45
9	M137	18	884	48	71	61	60	13	38
10	M140	22	798	50	72	67	56	13	46
11	M174	12	1035	57	78	73	56	11	56
12	M194	19	863	54	74	81	59	11	58
13	M203	24	755	62	82	75	61	10	58
14	M232	13	1035	58	75	78	60	12	52
15	M235	25	690	61	82	84	51	10	62
16	M299	4	1639	44	65	63	43	10	76
17	M317	2	1812	54	72	91	54	14	68
18	M350	5	1596	47	67	91	46	10	46
19	M364	17	949	49	71	80	37	12	35
20	M374	14	1014	47	66	69	39	11	65
21	M408	20	820	54	75	69	52	12	52
22	M409	23	798	58	77	68	56	12	49
23	M411	1	2243	62	77	78	53	12	42
24	M412	3	1812	61	76	77	53	11	40
25	M414	26	690	60	79	96	39	10	57
26	M416	7	1381	49	71	72	50	8	68
27	M533	8	1294	52	74	84	66	11	33
28	M543	6	1575	50	70	87	41	10	74

Mean			1130.9	54.7	73.6	74.7	52.7	11.1	52.5
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Latitude: 34° 39' N

Elevation: 196 m

Precipitation during test: 344 mm

Irrigation water applied:

Number replications: one

Date Planted: June 13, 1973

Date harvested: September 24, 1973

Plot size (length x width): 6m x 80cm

Plot area: 4.8 m<sup>2</sup>

Nodulation:

Table 17. AGRONOMIC AND DISEASE DATA FOR THE SECOND INTERNATIONAL MUNGBEAN NURSERY GROWN AT Adel, Iowa, USA, in 1973.

Cooperator: Harry H. Stine and Wm. H. Eby, Stine Seed Farms, Adel, Iowa, USA.

Entry no	Acc. no	Yield rank	Yield kg/ha	Ht cm	Disease Scores
					Virus (1-5)
1	M4	16	144	61	1.0
2	M14	10	177	114	1.0
3	M15	6	211	102	1.0
4	M25	27	89	55	4.0
5	M76	5	277	65	2.0
6	M90	13	166	92	1.0
7	M101	14	166	67	1.0
8	M118	8	189	72	
9	M137	17	144	62	2.0
10	M140	22	111	63	
11	M174	12	171	107	
12	M194	9	179	90	
13	M203	18	140	77	
14	M232	7	191	95	
15	M235	11	173	90	1.0
16	M299	23	106	47	2.0
17	M317	19	133	95	2.0
18	M350	2	715	96	1.0
19	M364	3	618	70	2.0
20	M374	1	763	62	2.0
21	M408	15	146	48	3.0
22	M409	25	102	93	2.0
23	M411	21	121	100	1.0
24	M412	20	122	94	1.0
25	M414	26	99	105	4.0
26	M416	4	313	63	1.0
27	M533	24	104	91	1.0
28	M543	28	88	113	1.0
Mean			212.8	81.8	1.3

Latitude: 41° 6' N

Elevation: 298 m

Precipitation during test:

Irrigation water applied:

Number replications: three

Date Planted: May 11, 1973

Date harvested: October 22, 1973

Plot size (length x width): 4.7m x 80cm

Plot area: 3.8m<sup>2</sup>

Nodulation: good

Table 18. AGRONOMIC AND DISEASE DATA FOR THE SECOND INTERNATIONAL MUNGBEAN NURSERY GROWN AT Columbia, Missouri, USA, in 1973

Cooperator: Richard E. Swindell, Ellis C. Benham, and Earl E. Watt, Department of Agronomy, University of Missouri, Columbia, Missouri, USA

Entry no	Acc. no	Yield rank	Yield kg/ha	Days to first flower	Days to first ripe pod	Ht cm	Branch length cm	Pods per plant no	Seeds per pod no	1,000 seed wt gm	Disease Scores	
											Virus (1-5)	Mildew (1-5)
1	M4	11	1097	57	74	73	63	72	14	47	0.0	2.8
2	M14	9	1153	56	81	63	51	71	9	59	0.4	2.3
3	M15	19	793	53	73	68	45	37	10	62	0.9	2.5
4	M25	27	362	54	72	53	44	55	11	22	2.3	4.0
5	M76	13	1042	46	66	58	44	63	12	36	0.9	4.0
6	M90	2	1513	58	76	71	45	81	11	61	0.0	1.8
7	M101	1	1570	51	70	66	62	84	12	66	0.0	2.3
8	M118	3	1420	64	84	48	59	54	11	59	0.1	2.0
9	M137	10	1140	44	66	47	35	103	12	39	0.1	3.8
10	M140	5	1392	44	65	54	43	97	12	41	0.0	2.2
11	M174	17	912	66	86	58	49	50	11	59	0.1	2.0
12	M194	8	1212	57	83	60	52	57	11	60	0.0	1.3
13	M203	6	1377	61	80	55	65	112	10	56	0.1	2.2
14	M232	7	1237	55	72	69	66	81	11	59	0.0	1.8
15	M235	4	1393	65	84	72	65	53	11	61	0.0	2.0
16	M299	26	430	36	54	39	29	57	10	34	1.4	4.7
17	M317	14	947	52	73	71	52	73	14	62	0.7	3.8
18	M350	18	867	47	65	78	65	60	13	39	0.3	2.8
19	M364	24	596	45	64	50	33	39	11	43	2.2	4.3
20	M374	16	926	44	65	58	44	55	11	63	1.3	4.0
21	M408	15	943	44	65	44	41	49	12	47	0.4	3.7
22	M409	20	760	62	82	77	50	27	12	48	0.2	1.5
23	M411	12	1096	63	81	64	52	174	12	36	0.3	2.8
24	M412	21	666	61	78	58	38	101	11	36	0.6	2.5
25	M414	28	343	66	84	64	47	25	10	47	1.4	3.2
26	M416	22	630	46	65	63	42	38	11	51	1.4	4.0
27	M533	25	546	49	68	54	41	63	11	32	1.0	3.3
28	M543	23	600	56	75	62	32	35	9	60	2.1	3.7
Mean			963.1	53.7	73.2	60.6	48.4	66.7	11.2	49.4	0.7	2.9
C. V., %			33.2	10.0	7.4	18.5	28.3	40.7	11.4	5.7		16.6
L. S. D. (.05)			523.3	8.7	8.8	18.4	22.5	44.4	2.1	4.6		0.8

Latitude: 39° 15' N  
 Elevation: 228 m  
 Precipitation during test: 433 mm  
 Irrigation water applied:  
 Number replications: three

Date Planted: June 1, 1973  
 Date harvested: October 1-15, 1973  
 Plot size (length x width): 4.5m x 91cm  
 Plot area: 4.6 m<sup>2</sup>  
 Nodulation: good

Table 19. AGRONOMIC AND DISEASE DATA FOR THE SECOND INTERNATIONAL MUNGBEAN NURSERY GROWN AT Stillwater, Oklahoma, USA, in 1973

Cooperator: R. S. Matlock, J. S. Kirby, and Charles Galeotti, Department of Agronomy, Oklahoma State University, Stillwater, Oklahoma, USA

Entry no	Acc. no	Yield rank	Yield kg/ha	Days to first flower	Days to first ripe pod	Ht cm	Branch length cm	Seeds per pod no	1,000 seed wt gm	Lodging score (1-5)	Seed Quality score (1-5)
1	M4	1	2159	50	62	24	58	12	56	3.7	2.0
2	M14	24	844	61	77	48	64	11	61	3.3	2.0
3	M15	7	1477	50	59	40	46	14	73	3.7	2.0
4	M25	30	247	64	93	25	49	11	23	3.7	5.0
5	M76	10	1420	47	58	42	35	10	46	1.3	1.0
6	M90	13	1349	59	69	35	59	11	61	4.0	2.7
7	M101	4	1793	50	64	25	64	12	75	4.0	4.3
8	M118	22	979	56	78	39	63	12	55	3.0	2.0
9	M137	19	1041	45	56	33	30	10	48	2.3	2.0
10	M140	5	1789	47	61	29	47	12	51	3.0	2.0
11	M174	12	1367	58	74	31	62	12	65	4.0	2.3
12	M194	16	1098	61	75	43	59	13	60	3.7	2.0
13	M203	21	991	61	76	43	58	12	62	3.3	2.0
14	M232	17	1074	55	68	46	57	13	53	3.0	2.0
15	M235	15	1235	61	78	40	57	11	65	3.3	2.0
16	M299	11	1385	44	54	36	29	10	51	1.7	4.0
17	M317	23	852	49	65	60	42	13	72	2.7	3.7
18	M350	8	1450	49	61	47	51	11	50	2.0	4.0
19	M364	3	1885	48	61	32	45	11	44	2.0	4.0
20	M374	14	1325	46	58	38	41	12	73	2.0	2.0
21	M408	2	1895	47	58	32	48	11	62	3.0	2.0
22	M409	20	1022	58	71	39	49	11	63	3.0	2.0
23	M411	6	1555	61	78	74	66	12	40	2.0	1.7
24	M412	28	525	59	78	75	60	10	41	1.7	2.0
25	M414	29	480	51	66	53	61	11	59	2.7	2.0
26	M416	26	709	47	66	51	48	10	61	1.7	4.0
27	M533	25	754	47	61	64	54	8	35	1.7	2.0
28	M543	27	624	49	68	74	51	11	68	2.0	2.0
29	Berken	9	1421	49	66	39	40	10	74	1.7	2.0
30	Lincoln	18	1048	50	71	34	59	15	64	3.0	2.0
Mean			1193.1	52.8	67.7	43.0	51.8	11.4	57.0	2.7	2.5
C. V., %			29.4	2.6	3.3	15.1	12.0	12.4	3.0		
L.S.D. (.05)			574.0	2.2	2.9	10.6	10.1	2.3	2.8		

Latitude: 36° 2'  
 Elevation: 274m  
 Precipitation during test: 367 mm  
 Irrigation water applied:  
 Number replications: three

Date Planted: May 30, 1973  
 Date harvested: October 14, 1973  
 Plot size (length x width): 6m x 1m  
 Plot area: 6 m<sup>2</sup>  
 Nodulation:

Table 20. SUMMARY OF AGRONOMIC AND DISEASE DATA FOR THE SECOND INTERNATIONAL MUNGBEAN NURSERY GROWN AT 18 LOCATIONS in 1973-74.

Entry no	Acc. no	Yield rank	Yield kg/ha	Days to first flower	Days to first ripe pod	Ht cm	Branch length cm	Pods per plant no	Seeds per pod no	1,000 seed wt gm	Disease Scores			
											Virus (1-5)	Bean yellow mosaic (1-5)	Mildew (1-5)	Cercospora leaf spot (1-5)
18	M350	1	1007.5	(15)*	(15)	(13)	(17)	(4)	(8)	(12)	(9)	(4)	(4)	(2)
22	M409	2	932.7	58	78	71	51	18	10.4	45	1.6	1.6	2.2	1.1
23	M411	3	920.9	51	70	58	35	60	10.6	35	1.0	0.9	2.5	1.0
17	M317	4	919.1	49	68	56	33	28	12.0	60	1.8	1.4	2.6	0.8
20	M374	5	849.0	45	64	45	29	20	10.5	62	2.3	2.0	2.8	1.0
7	M101	6	836.0	47	66	41	33	27	10.4	60	1.8	1.7	2.8	1.5
6	M 90	7	818.1	51	68	48	37	27	9.9	54	1.7	1.5	2.8	2.0
1	M 4	8	800.7	46	64	43	33	27	11.1	46	1.7	1.3	3.2	0.5
8	M118	9	795.5	49	70	47	41	23	10.5	47	1.7	2.1	2.6	1.8
5	M 76	10	791.3	46	65	47	30	31	10.4	37	2.0	2.3	3.1	1.0
26	M416	11	774.1	46	66	56	32	20	9.4	56	2.4	1.4	2.4	1.0
27	M533	12	757.4	48	68	62	40	43	10.6	31	1.6	1.3	2.8	0.8
19	M364	13	755.7	45	65	48	30	19	10.1	41	2.5	1.5	3.1	1.4
11	M174	14	743.5	51	70	48	38	21	10.0	53	1.8	2.2	2.4	2.2
28	M543	15	742.9	48	68	61	33	19	9.5	58	2.3	1.5	2.9	0.5
14	M232	16	730.5	48	66	50	37	29	10.4	50	1.8	1.3	2.8	1.8
15	M235	17	725.7	51	71	50	39	22	9.8	53	1.8	1.6	2.4	2.8
3	M 15	18	720.7	48	67	51	28	21	11.3	56	1.8	1.8	2.9	1.0
2	M 14	19	719.0	50	70	53	37	28	9.8	54	1.7	1.9	2.4	1.4
21	M408	20	706.6	44	64	37	27	23	9.9	48	1.9	2.1	2.9	2.1
12	M194	21	695.0	50	70	46	37	22	9.9	55	2.0	1.8	2.5	2.0
24	M412	22	694.5	52	70	56	31	41	10.0	40	1.3	1.3	2.3	1.3
10	M140	23	684.5	44	63	39	28	36	11.0	41	1.9	1.5	2.7	1.9
13	M203	24	676.8	52	71	45	39	37	9.6	49	2.0	1.8	2.5	2.0
25	M414	25	658.0	52	71	68	40	16	10.5	51	2.6	1.8	2.5	1.0
16	M299	26	635.3	46	63	40	25	26	9.8	37	2.2	1.4	3.2	0.8
9	M137	27	608.0	42	63	38	27	34	10.6	39	2.0	2.6	3.4	1.9
4	M 25	28	356.6	53	74	43	34	40	10.1	20	1.4	1.6	1.9	1.1
Mean			752.0	48.4	67.7	50.0	34.0	27.8	10.3	47.0	1.9	1.7	2.7	1.4
C. V., %			41.3	9.7	7.7	21.2	29.1	59.2	11.8	11.4	49.2	38.2	27.1	49.3
L. S. D. (.05)			223.4	3.4	2.5	7.1	7.4	n.s.	1.1	4.3	n.s.	n.s.	n.s.	n.s.

\*Numbers in parentheses are number of locations from which data were reported on all entries. (See Tables 2 through 19.)

Table 21. SUMMARY OF AGRONOMIC AND DISEASE DATA FOR 16 ENTRIES IN THE FIRST AND SECOND INTERNATIONAL MUNGBEAN NURSERIES GROWN AT 27 LOCATIONS\*

Acc. no.	Yield rank	Yield kg/ha	Days to first flower	Days to first ripe pod		Ht cm	Branch length cm	Pods per plant no	Seeds per pod no	1,000 seed wt gm	Disease Scores			Cercospora leaf spot (1-5)
				(23)**	(24)						(20)	(27)	(19)	
M350	1	1047.3	46	63	55	35	23	10.4	42	1.8	1.5	3.3	1.2	
M317	2	983.9	49	67	57	35	28	11.9	60	1.5	1.2	2.8	0.8	
M 76	3	892.1	46	64	46	32	31	10.5	38	1.8	2.0	3.5	1.0	
M101	4	876.6	46	64	40	37	27	10.6	62	1.4	2.0	3.1	1.3	
M 4	5	868.9	46	63	43	37	27	11.2	46	1.3	1.9	3.2	1.0	
M118	6	862.3	50	68	48	43	23	10.4	48	1.3	2.1	2.8	1.4	
M174	7	853.8	51	69	48	40	21	10.0	54	1.4	2.1	2.7	2.0	
M 15	8	853.5	48	66	51	30	21	11.6	57	1.8	2.1	2.9	1.0	
M 90	9	840.9	51	67	49	39	27	10.0	55	1.4	1.4	2.9	1.7	
M235	10	836.0	52	70	49	41	22	9.8	54	1.4	1.5	2.6	2.2	
M364	11	819.4	46	63	48	32	19	10.4	41	2.0	1.4	3.4	1.3	
M140	12	789.9	44	63	41	30	36	10.9	42	1.5	2.0	3.2	1.9	
M194	13	787.6	50	69	47	40	22	9.9	54	1.6	1.7	2.8	1.7	
M 14	14	779.1	51	69	51	39	28	9.8	55	1.4	1.7	2.8	1.3	
M299	15	647.5	45	62	40	25	26	9.9	36	2.0	1.5	3.7	0.8	
M 25	16	434.1	51	71	42	35	40	10.3	21	1.8	1.4	2.3	0.9	
Mean		823.3	48	66	47	36	26	10.5	48	1.6	1.7	3.0	1.3	
C. V. %		32.3	10.4	8.9	19.7	28.6	39.0	9.5	11.2	49.5	46.5	25.7	54.6	
L. S. D. (.05)		154.1	3.0	3.6	5.1	6.3	n.s.	0.7	3.5	n.s.	n.s.	n.s.	n.s.	

\*Nine locations in the 1st IMN grown during 1972-73 and 18 locations in the 2nd IMN grown during 1973-74.

\*\*Numbers in parentheses are number of locations from which data were reported.