Supplemental paper 2

Forms, Standards, Structures, and Others

I. Report form on the survey to be published in the Annual Report

Any item not described here may be listed in a suitable form

Form 1. Survey of the growth conditions of the rice seedlings in the paddy fields

Survey point	Date	Culture pattern	Variety name	Average leaf no. (seeding Stage)	Average stem no.	Fresh living wt. (g)	Air-dried wt. (g)	Dry weight (g)	Remark
		Early Early planting Ordinary Late							

General comment

The survey result of the respective prefecture may be summarized according to either different agricultural zone, or early, medium, or late cultivation of the plant. General conclusion should always be written down.

Form 2. Survey of the growth condition of rice plants in the paddy fields

Survey items / Date	Height (cm)	No. of developed leaves	No. of tillering/ plant	No. of heading /plant	Living wt. (g)	Dry wt.	Remark
	* ** C R	C R	C R	C R	C R	C R	
Date Date Date							

* Current year

** Comparison to the ordinary year

General comment

In selecting the important stage from the whole growth stage of rice plants, the results may be obtained and summarized in the respective survey spots, and conclusion may be written down.

Note.

1. Count the number of leaves on the main culm, excluding the incipient incomplete leaf.

2. Data on the height of the plant, and of the crown, and on the width of the crown may be summarized in the same manner.

3. "Rate as compared with the ordinary year" means the value obtained by subtracting the value of the ordinary year from the value of the current year, and should be recorded with + or -.

4. The above chart always accompanys the next chart.

Survey item	Sowing stage	Quantity of sowing seeds 10 m^2 (g)	Trans-planting stage	No of plant / 10 m^2	Maximum tiller-ing stage date	Young ear forma-tion stage date
Current year						
Ordinary year						

	Early heading stage date	Completion of heading stage date	Watering off stage date	Harvesting stage
Current year				
Ordinary year				

The previous chart may be prepared according to the types of different cultivation practices.

Form 3 Growth conditions of wheat or barley

Species	Stage	Date	Height		No. of plant /50 cm long row		Living wt. / plant (g)		Dry wt. / plant (g)		Remark
			C*	R**	C	R	C	R	C	R	
Skin-barley (Ave.)	Before snow season Vernal equinox season Heading season										
Naked barley (Ave.)	Before snow season Vernal equinox season Heading season										
Wheat (Ave.)	Before snow season Vernal equinox season Heading season										

C* Current year
R** Comparison to the ordinary year

Remark

General conclusion may be written down based on the survey results at the vernal equinox season, and the heading stage.

Comparison of the current year with the ordinary year should especially be emphasized.

Note

1. In the snow zones where the surveys at the vernal equinox time is impossible and survey is, done at an optional time after snow melting the date of the survey should be written down.

2. The next chart should always follow the previous chart.

Form 4 the date of the survey should be written down.

Species	Year	Sowing time	Quantity of sowing seeds 10 m^2	Heading stage	Ripening stage	Harvesting stage	Remark
Skin barley (Ave.)	Current year Rate	Date		Date	Date	Date	
Naked barley (Ave.)	Current year Rate						
Wheat (Ave.)	Current year Rate						

Form 4. Survey of the growth conditions of potatoes.

Variety	Budding, or flowering stage		Yellowing, or senescence stage		Survey time	Height (cm)	No. of leaf/ plant	Wt. of top/ plant(g)
	C*	R**	C	R		C R	C R	C R
Early-maturing variety					Budding, or flowering stage			
Middle-maturing variety					Yellowing stage			
Late-maturing variety					Emergence stage	Early-maturing var. (date)	Middle maturing var. (date)	Late-maturing var. (date)

C* Current year

R** Comparison to the ordinary year

General comment. The general conclusions should be written down based on the survey results at the respective survey time.

Form 5 Survey of the flying conditions of the rice blast pathogen

Date	Ave. no. of trapped spores	The max. no. of trapped spores No. Date	Spore trap conditions as compared with ordinary year	Remark
June early				Sowing time
middle				Transplanting time
late				Heading time
July early				Date of the max. spores trapped. Comparison to the ordinary year
middle				
late				
Aug. early				Incipient occurrence of leaf blast Nursery Paddy field
middle				
late				
Sep. early				Incipient occurrence of neck blast
middle				
late				
Position of spore trap equipment, and direction of rice blast occurrence field				

General comment

The above chart should be accompanyied with the graph on the spore trap curve (including the spore trap curve for the ordinary year). Furthermore, conclusion should be written down on the analysis of the spore trap records, and the relation of the meteorological conditions to the disease occurrence based on these results.

Note

1. The average number of the spore trapping is defined as the average number of spores trapped per day of the trapping.

2. The day of the trapping is defined as the date of slide-glass setting, but not of the spore counting.

Form 6. The survey on the fluctuation of the disease occurrence and the types of the symptoms in the model-fields for forecasting

(a) Survey of disease occurrence in the nursery stage

Item / Stage	Incipient disease occurrence	Symptom pattern	Position of diseased leaf	Degree of occurrence	Presence or absence of leaf-node blast	Remark
Nursery stage (middle)	Date					
7 to 10 days ahead of transplanting	Date					
Just before transplanting	Date					

(b) Survey of occurrence in the paddy field

Item / Date	Sympton	Position of diseased leaf	Degree of occurrence	Rate of diseased plant	Remark
Date Date Date					

(c) Survey of the disease occurrence in booting stage

Item	Symptom	Rate (%) of diseased leaves on the basis of leaf order			Remark
		Flag leaf	2nd leaf	3rd leaf	
Date Date Date					

(d) Survey of panicle blast occurrence

Survey item	Panicle blast			Node blast		
	a	b	c	A	B	C
No. of diseased plant						
Rate of diseased plant						

Note

General trend of the disease occurrence at respective stages should be remarked, and conclusion on the characteristic of the disease occurrence throughout the whole growing season, including changes in disease pattern should be written down.

The data obtained by surveys in fields other than the model-field for forecasting (articles b (2) - (a)(b), and c (2) - (a)), should be summed up in the same form.

Form 7 Constitution of rice plants tested by the leaf sheath inoculation method

Variety name

Date of survey	Name of the test fungus isolate											Do.	Do.	General judgement
	No. of diseased stems by the leaf sheath method based on the penetration rate													
	0	1	2	3	4	5	6	7	8	9	10	Do.	Do.	
Date														
Judgement at the time of test														

General comment

The survey results should be synthesized and the degree of the penetration with the growth speed of rice plants and others should be written down.

Form 8. Survey of the occurrence conditions of the sheath blight of rice.

Date of survey	Date Date Date - - - - -
No. of plants examined	
No. of diseased plants	
Rate of diseased plants (%)	
Position of the uppermost diseased leaf sheath	
Damage rate	

Form 9 Survey of the quantity of the bacteriophages of leaf blight bacteria

Date of water collection / Position of water collection	Quantity of phage/ml of water examined		
	Date	Date	Date
Forecasting field Irrigation			

Form 10 Survey of occurrence of bacterial leaf blight of rice

Growth stage	Early period in paddy fields		Late period in paddy fields	
Date of survey	Date of the incipient occurrence	Date	Date	Date
Current year	Date			
Comparison to the ordinary year				
Remark				

Note

Relationship between the occurrence in the model-fields for forecasting and general occurrence in the prefecture in concern should be analyzed, and written down. Furthermore, correlations of meteorological factors, and varieties used to the occurrence of bacterial leaf blight of rice plants and alternative weeds.

Form11. The survey on the fluctuation of the disease in the model-fields for forecasting and in the fields of early incipient occurrence.

Kinds of cereals, and rusts

Month	Conventional manuring plot			Nitogen-rich plot			
	No. of total leaves	No. of diseased leaves	Degree of occurr.	No. of total leaves	No. of diseased leavesv	Degree of occurr.	Remark
10							
11							
12							
1							
2							
3							
4							
5							
6							
7							

The cases of lesions on culms and ears should be written down in the remark column.

Variety name of cereal				
Date of the incipient occurrence				

General comment

The overall conclusions should be written down including at least following 3 points:

1. Outlines of the transitional conditions of the disease occurrence (the occurrence in autumn, the overwintering condition and relationship of the disease occurrence between spring and autumn),

2. correlation of meterological condition to the spread of the disease

3. correlation of the disease occurrence in the fields for forecasting to general occurrences in the fields in the prefecture in concern.

Form 12. Survey of transitional conditions of the occurrence of powdery mildews of cereals in the model-fields for forecasting and in the fields of early incipient occurrence.

Barley, Naked barley, and Wheat

Date of survey	Conventional manuring plot		Nitrogen-rich plot		Remark
	Rate of diseased leaf (%)	Degree of occurrence	Rate of diseased leaf (%)	Degree of occurrence	
Date Date - - -					

Variety name	
Date of the incipient occurrence	

General comment.

General conclusions should be written down about the transitional conditions of the disease occurrence, correlation of meteorological conditions to the disease occurrence, and relationship of the occurrence of the disease between the fields for forecasting (or the fields of early incipient disease occurrence) and general fields in the prefecture in concern.

Form 13. Survey on the occurrence of scab of cereals in the variety-preservation fields.

Variety name	Heading stage			Blooming stage	Milky ripe stage		
	Incipient	Max.	Late		Rate of diseased ear (%)	Rate of diseased spikelet (or grain %)	Rate of damage (%)

Comparison to the ordinary year	
Degree of the spreading speed	Advance or Delay

Transitional conditions of the disease occurrence on barley, naked barley, and wheat (representative varieties) may be examined.

(Survey results conducted every 5 days after heading)

Date of survey	Date	Date	Date	Date	Date
Rate of damage (%)					

General comment

Conclusions should be written down about the bearing of the variety used, meteorological conditions, and other factors on the disease occurrence.

Form 14 Survey of the occurrence of the late blight of potatoes

(a) Survey in the model-fields for forecasting

Date of survey	Incipient occurrence Date	Degree of occurrence				
		Date	Date	Date	Date	Date
Current year						
Comparison to the ordinary year						
Remark						

Note.

Data on transitional condition of the disease occurrence, the date of incipient occurrence in the ordinary year, and advance or delay of peak of disease spread should be written down in the remark column.

(b) The survey in the fields of early incipient occurrence:
It should be prepared based on the survey method in the fields for forecasting.

Form 15

Determine suitably the forms for reporting the results of surveys and observations as to other plant diseases, and submit them.

Form 16 Daily record of light trap catches

Name of the insect pest							
Name of observation site	(1)			(2)	(3)	(4)	
Date of collection			Total	Do.	Do.	Do.	
1 2 3 4 5 . . . 28 29 30 31							

Five-day record of light trap catches

1st 5-days					
2nd 5-days					
3rd 5-days					
4th 5-days					
5th 5-days					
6th 5-days					

Notice:

1. For example, the light trap catches on June 20 mean the number of adults of an objective insect pest taken out from water pan or box fixed under a light in the morning of June 21.

2. Put down '0' in the column of catches when there was no catch of the objective insect though light trap worked. When the light trap did not work, put down '-' in the column of catches, and in the column of remark; mention the observation site by number and the reason why the light trap did not work e.g., (1) the filament of bulb has burnt out, or (4) power suspension.

3. As to the table of five-day record: In the case of five-day totals with one or more nights of no function of light trap, e.g., two nights, multiply the totals of actual catches for the three nights by 5/3 and put down the answer with parenthesized 2 (=number of night(s) of no work of the trap) at the top right of the answer.

4. In the column of remarks note down such items as unusual mass-flights, useful meteorological information, alteration of light trap, explanations of ambiguous points etc. if necessary, in addition to the reason for no record of light trap catches.

Form 17 Five-day record of light trap catches

Name of the insect pest							
Month & no. 5-day period	Name of observation site	(1) ♀	(1) ♂	(1) Total	(2) Do	(3) Do	(4) Do	Remark
April	1							
	2							
	3							
	4							
	5							
	6							
May	1							
	2							
	3							
	4							
	5							
	6							
~	~	~	~	~	~	~	~	~
November	1							
	2							
	3							
	4							
	5							
	6							
Total								

Notice:

1. Put down '0' in the column when there was no catch of an objective insect pest, and '-' when the light trap did not work.

2. When there was no record of light trap catches for two days because of no illumination of the light, for example, multyply the total catches for the other three (= 5 - 2) days by 5/3 and put down the answer.

3. As to the final "five-day" period of an odd month, or six days: When there was no record of light trap catches for two days in the period, or six days, multyply the total catches for the other four (= 6 - 2) days by 6/4 and put down the answer.

4. As to the column of remarks: When there was no record of light trap catches because of no illumination of the light in an observatory station (e.g. 3), for example, put down 'No record because of an accident.' At the same time note the date of the first catch, that of peak catches, that of the final catch, etc.

Form 18 Types and patterns of adult catches by light trap

Name of the insect pest													
Observation site / Items		(1)		(2)		(3)		(4)		(5)		(6)		Remarks
		Current yr.	Comp. to ord. yrs.	Current yr.	Comp. to ord. yrs.	Current yr.	Comp. to ord. yrs.	Current yr.	Comp. to ord. yrs.	Current yr.	Comp. to ord. yrs.	Current yr.	Comp. to ord. yrs.	
1st brood adults	Date of the first catch													
	Date of peak catches													
	5-day period of peak catches													
	Date of 50% catches													
	Date of the final catch													
	No. total days when a or more adults were captured													
	Total catches													
	Sex ratio ♂/♀													
2nd brood adults	Date of the first catch													
	Date of peak catches													
	5-day period of peak catches													
	Date of 50% catches													
	Date of the final catch													

Continued

Continued

	No. total days when one or more adults were captured Total catches Sex ratio ♂/♀							
	Date of the first catch Date of peak catches 5-day period of peak catches Date of 50% catches Date of the final catch No. total days when a or more adults were captures Total catches Sex ratio ♂/♀							
Outline of the types of light traps (water pan or box type, kinds of lights, etc.) and other things as to light traps.								

Notice:

1. Note down the date as 5.10 instead of May 10.

2. The date of the first catch means the date when one or more adults of the insect were captured by the light trap for the first time in the season. The date of peak catches is the middle date of the five consecutive days with the highest number of catches as a whole, and these five days are termed the period of peak catches. The five-day period including the date of peak catches is termed as the five-day period of peak catches. The date of 50% (adjult or moth, fly, etc.) catches is the date when the accumulated number of daily catches exceeds a half of the total catches in the generation. The date of the final catch is the date when one or more adults were finally captured in the generation. However, there are often some cases in which the number of adults captured does not drop off between the two successive generations, and the distinction between the two periods of adult appearance becomes difficult. In such cases the middle date of the period of five successive days supposed to be the end of the period of adult appearance, having the lowest moving average value of the number of adults captured, is deemed to be the date of the final catch in the generation: one half of the number of adults captured on that date is deemed to be the number of adults belonging to the foregoing generation. When a half of the number of adults captured on that date yields the decimal 0.5, the decimal is added to the number of adults belonging to the foregoing generation.

When at the end of a generation there occur two or more bottoms in the curves showing the relative abundance of adults captured, the middle date with the smallest moving average value is deemed as the date of the final catch. If the judging of the date of the final catch is made by methods other than those described here, it shall be reported clearly with necessary explanations.

The methods and items mentioned above are decided, based on the rice stem borer. The methods and items for other insect pests shall be determined similarly to those for the rice stem borer.

3. As to the culumn of 'comparison to ordinary year: Put down '-' when the time of appearance or the abundance is earlier or lower than in average years, and '+' when later or higher.

Form 19 Notice for drawings of the curves showing the seasonal prevalences of insect pests

The curves showing the seasonal prevalences of the rice stem borer, paddy borer, and other insect pests shall be drawn as follows:

1. The graphs should be drawn on each sheet of paper for every kind of insect pests and every observation site respectively.

2. The abscissa and the ordinate represent the period and the number of individuals captured, respectively. Every five-day period (or ten-day period in some insect pests which are examined once a month) is graduated in every five mm on the abscissa.

3. The scale unit on the ordinate may be graduated optionally in consideration of showing the prevalences clearly and intelligibly. Having been once determined, however, the scale unit on the ordinate should not be changed even in some cases of a large number of catches. When there are some light trap records having been obtained for several years and the minimum and the maximum value of catches for those years have been shown, the scale unit on the ordinate shall be determined with due consideration for such values. It is convenient for comparison of the results of annual occurrences in an insect pest not to change the scale units on the both abscissa and ordinate.

4. Draw the curves showing female, male, and the total of both female and male prevalences (in the rice stem borer and paddy borer) by red, blue, and black lines respectively.

Form 20 Survey of overwintering in the rice stem borer

Items \ Time of Survey		Survey before overwintering	Survey after overwintering
Date of survey			
Rice Stubbles	No. all the stubbles examined		
	No. stubbles infested		
	No. stubbles in which borers are found		
	No. living larvae		
	No. dead larvae		
	No. living pupae		
	No. dead pupae		
	No. empty pupae		
	Mortality		
Rice Strows	No. all the stems examined		
	No. stems infested		
	No. stems in which borers are found		
	No. living larvae		
	No. dead larvae		
	No. living pupae		
	No. dead pupae		
	No. empty pupae Mortality		
No. larvae cut at harvest			
Estimated total density /10 are			
Estimated no. living borers /10 are			
Body weight / larva			

Form 21 Survey of development and vitality of overwintering larvae of the rice stem borer

(a) Body weight / overwintering larva

No. individuals	Body weight	No. individuals	Body weight	No. individuals	Body weight	No. individuals	Body weight	No. individuals	Body weight
1		11		21		31		41	
2		12		22		32		42	
3		13		23		33		43	
4		14		24		34		44	
5		15		25		35		45	
6		16		26		36		46	
7		17		27		37		47	
8		18		28		38		48	
9		19		29		39		49	
10		20		30		40		50	

Body weight / larvae (mg) =

No. larvae weighed =

(b) Emergence from larvae incubated at 25°C

The date of the beginning of incubation;

Date of examination (Days after incubation)	No. adjults obtained			Date of examination (Days after incubation)	No. adults obtained		
	♀	♂	Total		♀	♂	Total

Avg. period in days before pupation =

% emergence =

% mortality =

Form 22 Survey of the larval density of the rice stem borer and the damage in the paddy field

Name of the insect pest			
Items	Period of the most intense infestation by larvae in the 1st generation	Last period of infestation by larvae in the 1st generation	Last period of infestation by larvae in the 2nd generation
Date of the survey			
No. hills examined			
No. hills infested			
No. all the stems examined			
No. stems infested made up as follows:			
No. stems with infested only sheath parts			
No. dead hearts			
No. white heads			
No. stems in which borers are found			
No. living larvae			
No. dead larvae			
No. living pupae			
No. dead pupae			
No. empty papae			
% stems in which borers are found			
% mortality			
Estimated no. living borers /10 are			

Outline of the types and patterns of the culture in the paddy field for the survey

Position of the field; pref., county, town, village, sect., lot no.

Variety of rice;

Patterns of the rice culture: Distance between hills; cm × cm

No. hills / m^2

Date of transplanting:

Remarks:

Notice:

1. When adults and nymphs were counted separately in the macropterous and brachypterous forms, and younger, middle, and older instars, divide each column of I and II into smaller sections and put down the results in each of those sections.

2. Calculate the density / 10 m^2 in the case of the survey described in II and III in nursery beds.

Form 23 Survey of larval development in the 1st generation of the rice stem borer

Field sampling inseection

Item \ Date of Survey			
No. living larvae			
No. deal larvae			
No. pupae			
No. empty pupae			
Accumulated rate of pupation (%)			
Accumulated rate of emergence			

Cyst method

Item \ Date of observation				
No. larvae prepared for the observation				
Categories of cysts				

Form 24 Survey of overwintering and density in each generation of the paddy borer

Time of Survey / Item	Just before pupation	Just before emergence	Larvae in the 1st gn.		Larvae in the 2nd gn.	
			Period of the most intense infestation	Last period of infestation	Early period of infestation	Last period of infestation
Date of survey						
No. all the rice seedlings examined in nursery beds						
No. rice seedlings infested in nursery beds						
No. all the stems examined						
No. stems infested made up as follows:						
{ Nó. dead hearts						
{ No. white heads						
No. living larvae						
No. dead larvae						
No. living pupae						
No. dead pupae						
No. empty pupae						
% overwintered borers						
% pupation						
Estimated no. living borers /10 are						

Form 25 Survey of the egg-laying in the paddy borer

Date / Place							
No. egg-masses / 10 m^2 in each nursery bed							
No. egg-masses / 10 m^2 in each paddy field							

Form 26 Survey of the adjult flight into paddy fields in the white-backed planthopper and the brown planthopper

(a) Survey by sticky traps

Date / Place					Remarks

Notice: Put down briefly the conditions and circumstances of the places where sticky traps are settled.

(b) Survey by other methods

Put down as similarly to those described in (a).

Form 27 Survey of the densities of planthoppers and leafhoppers

Name of the insect pest				
Kinds of surveys	Items	(1) Last in the nursery period	(2)	(3)
I	Tap-and count push-aside-and-count method No. adults counted No. nymphs counted Total Density / 10 m^2 Survey of the egg-laying No. stems with eggs laid / hill			
II	No. egg-laying punctures / stem No. eggs hatched / stem No. eggs not hatches / stem No. eggs parasitized / stem Estimated no. eggs not hatched / hill No. eggs / 10 m^2			
III	Sweeping method No. adults captured No. nymphs captured Density / 10 m^2			

Form 28 Survey of the time of termination of diapause in the smaller brown planthopper and the green rice leafhopper

Items \ Date					
No. insects examined					
Gonad index					
Comparison to the ordinary					

Notice: The minor and the major axis of a testicular follicle are measured and the gonad index is represented with the index number:

$(\text{minor axis})^2 \times (\text{major axis})$

Form 29 Survey of the population density after overwintering in the green rice leafhopper and the smaller brown planthopper

Name of planthopper or leafhopper										
Site of survey	Date of survey	Method of survey	No. insects/10 m^2							% emergence as adults
			Nymphal instar						Adult	
			1st	2nd	3rd	4th	5th	Total	Macro-pterous / Brachy-pterous	
①	1 2 3 4 5 ⋮									
②										

Notice: 1. In areas where Nephotettix cincticeps, N. impecticeps and, N. apicalis coexist, species are to be discriminated.
2. Vegetation at the survey site is recorded in the column of site of survey.

Form 30 Survey of the occurrrence of virus diseases

Name of virus disease			
Date of survey			
No. hills examined No. hills infected % hills infected			

Form 31 Survey of the seasonal fluctuations in adults of the rice leaf miner, the smaller rice leaf miner, the rice stem maggot or the rice leaf beetle by sweeping

Item / Date of collection / Name of place	No. adults caught by 50 double strokes of sweeping							

Form 32 Survey on the seasonal fluctuation in larvae and pupae of the rice leaf miner

Items \ Date	①	②	③	④		⑮
Nursery bed:						
Approx. no. seedlings / m^2						
No. seedlings examined (usually 50 seedlings)						
No. seedlings infested						
Total no. leaves						
No. leaves infested						
% leaves infested						
No. living larvae						
No. dead larvae						
No. pupae						
Calculated no. living larvae / 10 m^2						
Paddy field:						
No. hills / 10 m^2						
No. leaves of 25 hills examined						
No. leaves infested						
% leaves infested						
No. living larvae						
No. dead larvae						
No. pupae						
Calculated no. living larvae / 10 m^2						

Outline of the types and patterns of culture in the nursery bed and paddy field for survey

Nursery bed for the survey

Position ; pref., county, town, village, sect., lot. no.,

Rice seedling : variety of rice: type of nursery bed;
date of sowing: rice seeds/10 m^2;

Paddy field for the survey

Position; pref., county, town, village, sect., lot no.,

Rice plants: variety of rice; type of cultivation;
date of transplanting;
type of transplanting and density of hills;

Remarks:

Form 33 Survey of the state of oviposition of the smaller rice leaf miner

Items \ Date							Remarks
Graminaceous wild grasses (as to 100 leaves)							
No. leaves with eggs laid							
No. eggs laid							
% leaves with eggs laid							
No. eggs laid / leaf							
Nursery bed (as to 50 seedlings)							
No. leaves with eggs laid							
No. eggs laid							
% leaves with eggs laid							
No. eggs laid / leaf							
Paddy field (as to 25 hills)							
No. leaves with eggs laid							
No. eggs laid							
% leaves with eggs laid							
No. eggs laid / leaf							

Position of the site of survey

pref., country,

town, sect.,

village,

Form 34 Survey of emergence in the rice stem maggot in regions of two or three generations a year

Place of the collection of pupae	No. of pupae used	No. of empty pupae at the beginning of the observation	Date of beginning of the observation	No. of adults emerged and daily hate of emergence (%)				
				Date	Date	Date	Date	Date

Notice: Put down the number of adults at the upper part and the daily rate of emergence at the lower part of each square section.

Form 35 Survey of the ovi position of the rice stem

Brood	1st brood adults	2nd brood adults	3rd brood adults
Date of the survey			
Place for the survey			
No. of stems with eggs laid			
No. of eggs laid			
Remarks			

Notice: When even one egg is found in a stem, the stem is regarded as a stem with egg(s).

Form 36 Survey of the infestation with the rice stem maggot

Place for survey	Name of rice varieties	Leaves infested				Ears infested				Remarks
		Date of survey	No. of stems examined	No. of stems infested	% stems infested	Date of survey	No. of ears examined	No. of ears infested	% ears infested	
I	1									
	2									
	3									
	4									
	5									
II	1									
	2									
	3									
	4									
	5									

Notice:

(1) The survey shall be made for 25 hills in each variety.
(2) At least several representative varieties shall be designated in the district.
(3) Even the stem with one leaf injured is regarded as a stem infested.
(4) Put down such characteristics of each variety as the time of maturation, time of heading, etc., and also relative rate of cultivated area of each variety in the district and others in the column of remarks.

Form 37 Survey of the seasonal fluctuation and infestation in the rice leaf beetle

Items \ Date								
No. seedlings or hills examined								
No. stems examined								
No. stems infested								
No. leaves examined								
No. leaves infested								
No. egg-masses laid								
No. living larvae / no. dead larvae								
No. cocoons								
No. adults								
Calculated no. living individuals / 10 m^2								

Notice: Even the stem with a single leaf infested is regarded as stem infested. The leaf fed even a little by a larva(e) is regarded as leaf infested.

Form 38 Survey of overwintering adults in the black rice bug

Position of the place	Date	Area of over-wintering site	No. all adults / m^2	% mortality of adults	No. adult survivors / 10 m^2	Remarks

Form 39 Early discovery of the black rice bug on dikes and in paddy fields

Site of survey	Items	Date					
Dike and Nursery bed	Area examined						
	No. adults						
	Calculated no. adults/10 area						
Paddy field	No. infested hills/25 hills						
	No. adults						
	1st - 2nd instar (young nymphs)						
	3rd - 4th instar (middle nymphs)						
	5th instar (old nymphs)						
	No. egg-masses/25 hills						
	No. eggs not hatched/25 hills						
	No. eggs hatched/25 hills						
	No. stems/hill(mean from 25 hills)						
	No. leaves/ hill (do.)						
	Plant height (do.)						
	Colour of leaves						
	No. dead hearts/hill						
	No. white heads/hill						
	Calculated no. adults/10 are						
	Calculated no. nymphs/10 are						

Outline of the types and patterns of the culture in the paddy field for the survey

Position of the field; pref., country, town, sect., lot no. village,

Variety of rice;

Date of the earliest finding of the 1st brood adults;

Date of the peak appearance of the 1st brood adults;

Patterns of the rice culture: Type of rice nursery;

Density of hills transplanted;

No. seedlings / hill;

Date of transplanting;

Date of heading;

Date of harvest;

Fertilizer application;

Notice:

1. An infested hill means the one on which at least either one adult or one nymph is found.

2. Body lengths of nymphs: 1st - 2nd instar(- - 2 mm); 3rd - 4th instar(2.5 - 5.8 mm); 5th instar(7.2 mm).

3. When several varieties of rice plants were examined in the same area for survey, summarize the results for each variety on separate sheet of Form 39.

From 40 Survey of the overwintering adult density of the southern green stink bug

Items	Fields			
No. living adults	dry grasses	grasses	upland crops	others
No. dead adults due to { parasitic / fungi / others				
No. living adults / m^2				
Culculated no. living adults / 10 m^2				

Notice: The vegetation in a survey field must be described in column for remarks.

Form 41 Survey of the nymphal occurrence of the southern green stink bug on other host plants than rice

	Fields								
	Chinese milk vetch		Rape		potato		Wheat & barley		
Date	Current year	Comparison to ordinary year	Current year	Comp. to ordinary year	Current year	Comp. to ordinary year	Current year	Comp. to ordinary year	Remarks

Notice: The position of each site for the survey must be described in the column of remarks.

Form 42 Survey of the occurrence of the southern green stink bug in paddy fields

(a) Survey in paddy fields under early cultivation

Items	Date				Remarks
No. adults / 25 hills					
No. nymphs / 25 hills					
No. eggs laid / 25 hills					
No. eggs hatched / 25 hills					
No. eggs not hatched / 25 hills					
No. eggs parasitized / 25 hills					
Culculated nos. adults & nymphs / 25 hills					

(b) Survey in paddy fields under middle cultivation

(c) Survey in paddy fields under late cultivation

} are to be summarized respectively according to (a).

Form 43 Survey of the number of rice plant skipper adults flying to alluring flowers

Name of the place		I		II	III	Remarks
Items		No. adults observed	weather	Do.	Do	
No. adults observed	Date month, 1 2 3 4 5 Total of the 5-day-period . . 26 27 28 29 30 31 Total of the 5-day-period					
Grand total no. adults observed						
Remarks						

Notice:

1. The number of adults observed at about 10 a. m. is written into the given column.

2. Weather conditions around the time of observation are written into the given column together with the amount of cloud.

3. When other plants than red clover are used as alluring flowers, write the kinds of these plants into the column of remarks.

Form 44 Survey of the larval abundance of the rice plant skipper and the infestation

Name of the place	Survey field	Variety of rice	Date of trans-planting	Date of survey	No. skippers/10 m^2			
					larvae	pupae	empty pupae	folds
	1 2 3							
	1 2 3							

Notice: Designate paddy fields cultivated in usual manners with common rice varieties in the district.

From 45 Survey of the abundance of eggs of the green rice caterpillar

Items	Date			
No. eggs laid / 25 hills				
Comparison to the average years				

Form 46 Survey of the pink borer after overwintering

On the rice stubbles

Items \ Date						
Body weight / 50 larvae (g)						
No. larvae						
No. pupae						
No. empty pupae						
No. dead larvae						
No. dead pupae						

Notice:

Make the report as to the survey of Coix lacryma-jobi Linn., as same as in the rice stubbles.

Form 47 Survey of the larval body weight in the pink borer

No. individuals	Body weight (g)	No. individuals	Body weight (g)	. . .	. . .
1		5			
2		6			
3		7			
4		8			

Form 48 Survey of the occurrence in each generation of the pink borer

Time of Survey / Item	1st generation		2nd generation		3rd generation	
	Period of the most tense infestation	Last period of infestation	Period of the most intense infestation	Last period of infestation	Period of the most intense infestation	Last period of infestation
No. hills examined						
No. stems examined						
No. hills infested						
No. stems infested						
No. young larvae						
No. middle larvae						
No. of older larvae						
Total no. larvae						
No. pupae						
No. empty pupae						
Estimated density/ 10 are						

Form 49 Survey of the larval densities of the armyworm in wheat and barley, and maize fields, in spring

Crops	Items / Names of place	No. larvae				
		Younger instars	Middle instars	Older instars	Total	Remarks
Wheat or Barley	(1)					
	(2)					
	(3)					
Maize	(1)					
	(2)					
	(1)					
	(2)					
	(3)					

Form 50 Flight of adults of the armyworm to flowers

Date / Items							
No. adults flying to flowers / 10 m^2							
Comparison to ordinary year							

Form 51 Survey of the density of the armyworm in paddy fields

Items \ Time of the survey				
No. larvae / 10 m^2 :				
younger instars				
middle instars				
older instars				
total				
No. living pupae /10 m^2				
No. dead pupae /10 m^2				
No. empty pupae /10 m^2				
Remarks				

Form 52 Survey of the larval occurrence and infestation with the sweetpotato leaf worm

Name of varieties	Date / Items					Remarks
	Estimated no. all the leaves / 10 m^2					
	Estimated no. leaves fed / 10 m^2					
	Intensity of infestation					
	Estimated no. larvae / 10 m^2;					
	Body length: 0–1 cm					
	Body length: 1–5 cm					
	Body length: 5 cm –					
	Body length: total					
	Estimated no. all the leaves / 10 m^2					
	Estimated no. leaves fed / 10 m^2					
	Intensity of infestation					
	Estimated no. larvae / 10 m^2;					
	Body length: 0–1 cm					
	Body length: 1–5 cm					
	Body length: 5 cm –					
	Body length: total					

Put down the time of seed potato setting in the bed, that of transplanting in the field, and other items regarding culture in the column of remarks.

Notice:

(1) Make the survey as to more than two representative varieties in the district.

(2) Show clearly which nursery bed or field the survey was made in.

Form 53 Survey of the occurrence and infestation with the 28-spotted lady beetle

Items \ Date	
No. adults / m^2 No. egg masses / m^2 No. eggs / m^2 No. larvae / m^2; younger instars middle instars older instars total No. pupae / m^2 Estimted nos. larvae & adults / 10 m^2	
Outline of the types and patterns of the culture in the field for the survey	1 Name of the variety; 2 Date of planting seed potatoes; 3 Time of budding; 4 No. hills / 10 m^2; 5 Fertilizer applcation; 6 Flower stage; 7 Yellow-leaf stage; 8 Time of harvest;

For 54 Summarized table of the area of crop fields in each degree of occurrence

Name of the plant disease or insect pest										
(1) Examination	(2) Place for survey	(3) Cultivated area of rice (or wheat, barley, & potato)	(4) Frequency of the degrees of occurrence in each area						Remarks
			I	II	III	IV	V	Total	
1									
2									
3									
4									
5									
6									
7									
8									
9									
10									
Total or average									

Notice:

Put down the name of such administrative units as country, city, town, village, etc. in the column (2).

II Form for Forecast Information

_____* Occurrence Forecast Information for Ordinary Crops No.**

. . . , . . . , . . . ***

. . . prefecture

(1) Name of the disease or insect pest

Text of the information

(The text should give concretely and, as possible, quantitatively, site, time, abundance, degree of occurrence, etc. The conditions and trends in the current year are to be compared with those in the previous and the ordinary years.)

Bases of the information

(List the reasons to explain the grounds for the forecast. When the information is obtained from forecast equation(s), both the quotation(s) and the value(s) obtained are to be shown.)

Comments on the control

(Useful methods, suitable time of control, etc. are shown. concretely.)

Remarks

(2) Name of the disease or insect pest

(The same shall apply hereinafter.)

* Fiscal year.

** Use serial number throughout every fiscal year.

*** Date.

III Form for Alarm Notice

Red-coloured margin

* Forecast Information for Ordinary Crops

Alarm Notice No. . . . .**

. . . . , . . . , . . . ***

. . . prefecture

Name of the disease or insect pest

(a) The place where occurrence or outbreak of the pest is apprehended.

(b) The prospective time of the occurrence or outbreak. (The time of occurrence in the current year is always compared with those in the previous and the ordinary years.)

(c) The prospective degree of infestation and the damege estimated. (Those in the current year are always compared with the records in the previous and the ordinary years.)

The items (a — c) are to be concretely and briefly shown respectively.

(d) Bases of the alarm

They are briefly explained. Description of the status of occurrence just before the issuing of the alarm should be added.

(e) Control measures.

(f) Remarks

* Fiscal year.

** Use a series of numbers throughout every fiscal year.

*** Date.

IV. Form of Monthly Report.

_____ * Monthly Report on Occurrence Forecast Information for Ordinary Crops

, , , **

. . . . prefecture

1. General meteorological conditions.

(Meteorological elements such as temperature, amount of rainfall, duration of sunshine during, the period should be recorded. Miscellaneous meteorological incidents such as the first snow, season snow, the first frost, late frost, hail, flood, etc. should also be put down.)

2. Growth and cultivation conditions of the crops.

(General remark and the examination results for the respective crops should be recorded.)

3. General outline of the occurrence of plant diseases and pests.

(General outline of the occurrences of major plant diseases and pests such as the incipient occurrence, first trapping or collecting, unusual flight, period of maximum occurrence, occurrence area (including) partially damaged fields), occurrence pattern, occurrence conditions, etc. should be recorded.)

4. Outline of the survey and observation results.

(The outlines summarized in the current period should be recorded. Numerical values should be included, as possible.)

5. Others

* Fiscal year
** Date

V. Form of Annual Report.

The form will be shown elsewhere in connection with the Outline of the Grant for the Promotion of Plant Disease and Pest Control.

VI. Figures of the illustrated standard of the occurrence of leaf blast of rice plants on the basis of severity.

In order to express the degree of the occurrence of leaf blast, the number of lesions per leaf and the rate of the lesion area may be appropriately used. In surveys covering wide areas, this is inconvenient because of efficiency, and appropriate classfication such as very high, high, medium, low, none (designated as V, IV, III, II, and I respectively) is preferred. Data in different years at different stages, and in different regions should be compared, and individual bias of observers should minimized. Therefore, the survey standard has been prepared. The degree of the severity of the disease is shown in the following 5 classes, based on the rates of lesion areas $\left(\frac{\text{Lesion area (\%)}}{\text{Total leaf area}}\right)100$, For the calculation of the total leaf area, the leaf sheath and senescent leaves should be excluded).

Index	I	II	III	IV	V
Degree of severity	None	Light	Moderate	Heavy	Severe
Lesion area (%)	0	below .5%	6 - 2 %	2.1-10%	Over 10.1%

Yield loss or damage caused in the respective degree of the disease severity as indicated in the above table is not always the same, and other factors such as presence or absence of the dwarfing, condition or type of lesions, i.e. whether they are of progressive (development of grey, round pattern) or resting (development of brown, elongated pattern) type, and their rate, the leaf order of the diseased part, etc., should be taken into consideration. The following signs may be added to express the intensity and condition of the disease:

a. .... case where dwarfing appears in one of the new leaves.

b. .... case where progressive type lesions occupy more than 20 % of the number of the lesions.

c. .... case where considerable number of lesions are seen on new leaves (top and 2nd leaves).

Description should be made like IIa, IIIab, Va "bc, etc.,

The sign IIIa implies larger amount of damage than in the sign III. In order to assess lesion area by named eye observation, the illustration of actual area of lesions expressed in mm^2 should be referred. In the standard of the illustrated figure, leaf VII should not be added because of senescence. Also, lesions with the ones solid black contour mean resting type, and those with dotted contour mean progressive type.

I = 0%
VIII means senescence.

IIb = 0.2%

IIb = 0.2 %

II = 0.2 %

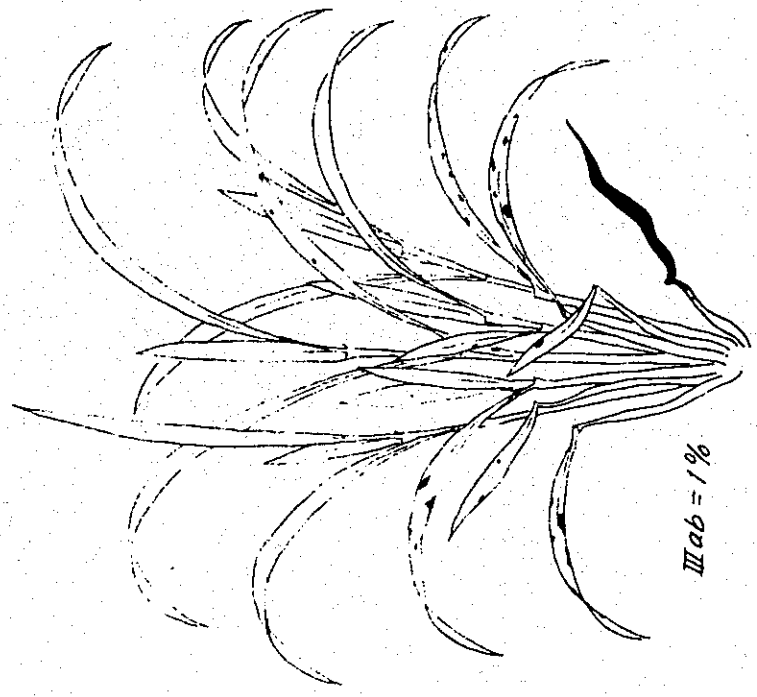
IIbc = 0.5 %

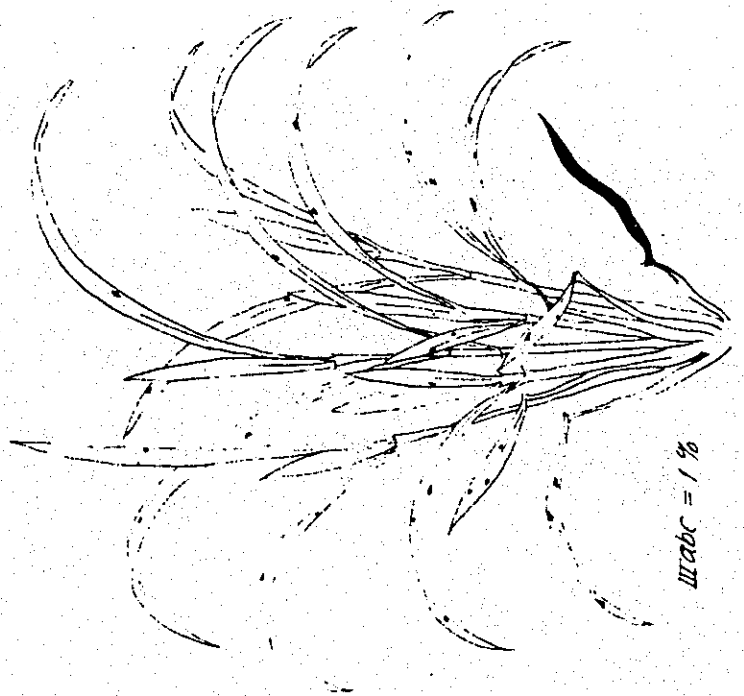
IIb = 0.5 %


Пабс = 0.5%
П = 0.5%

IIIb = 1 %

III = 1 %


IIIab = 1 %


IIIabc = 1 %

Шг = 2 %
Шбс = 2 %

IIIabc = 2%

IIIa = 2%

IIIa'bc = 2%

IVbc = 5%


IV = 5%

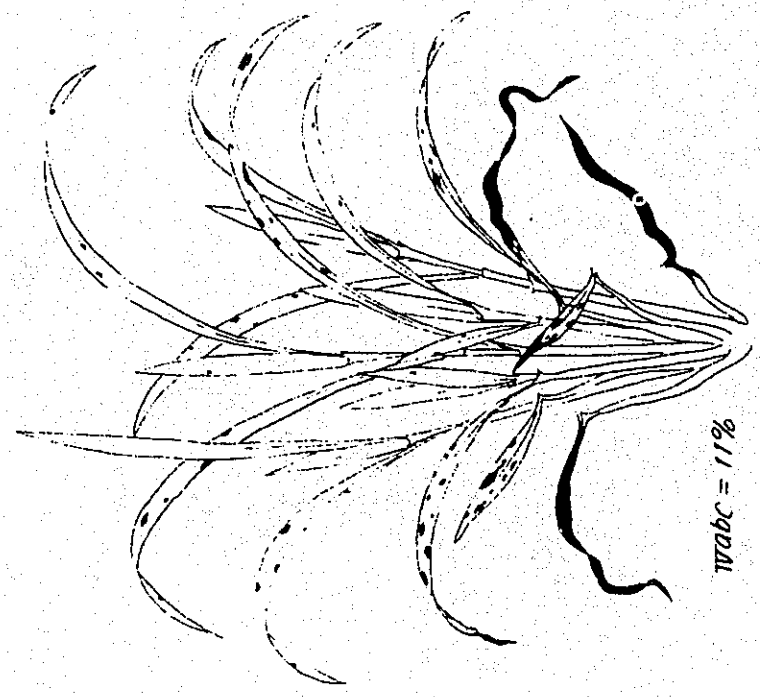

IV 5%

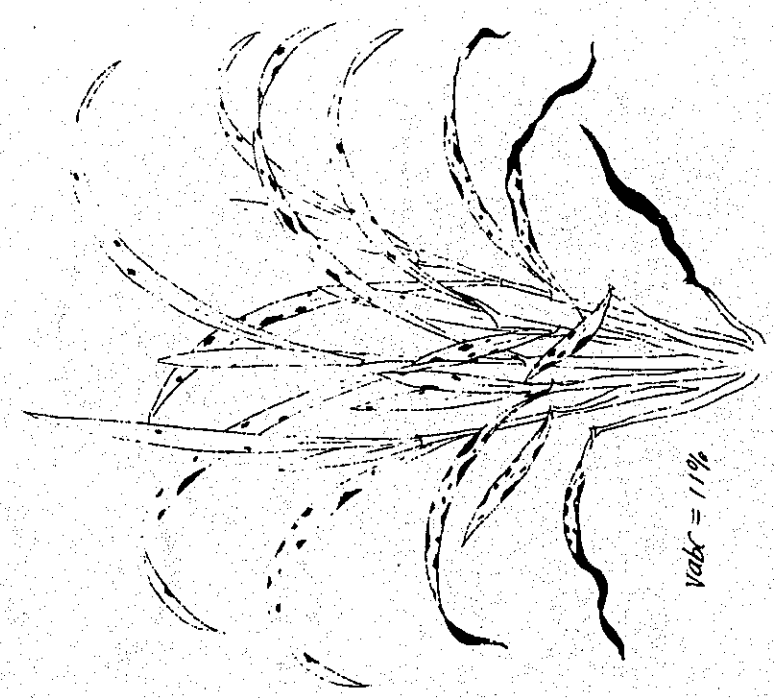
Wa'k = 5%

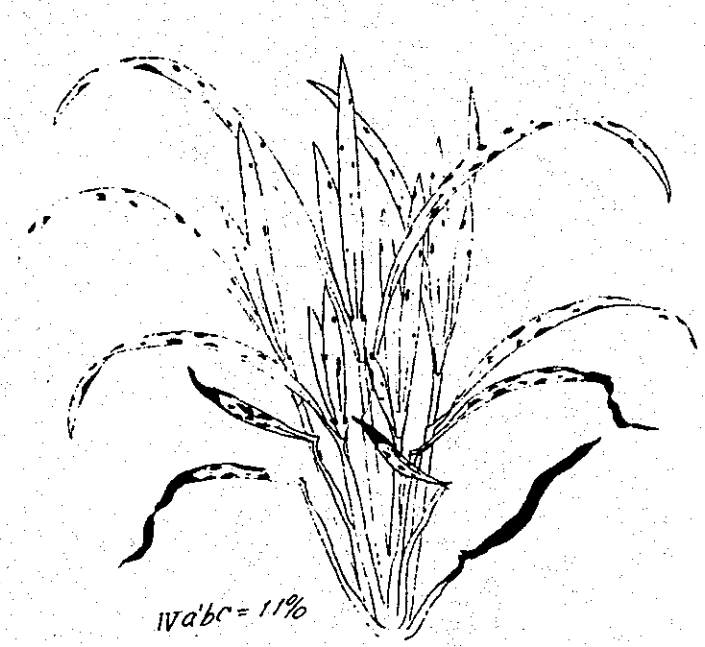
Wabc = 5%

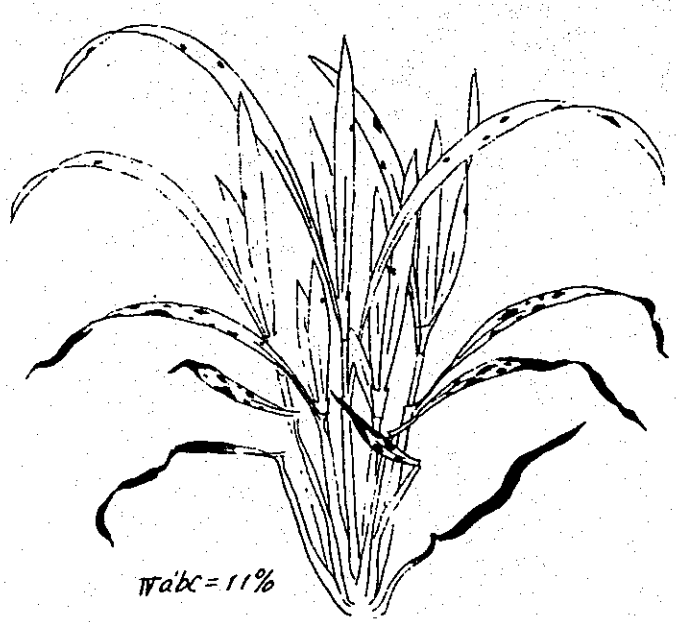
IV bc = 11%

IV = 11%


Vabc = 11%

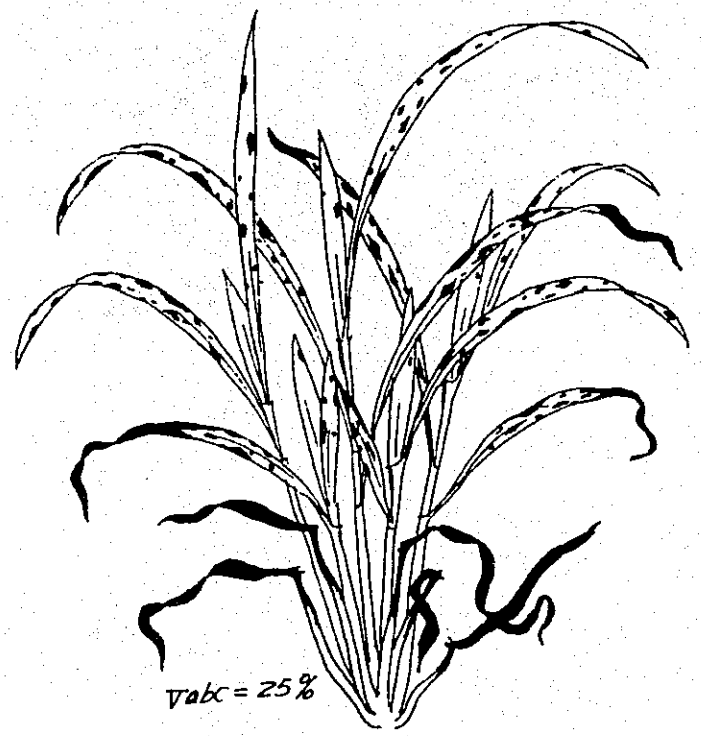

Vabr = 11%


IVa'bc = 11%


IVa'bc = 11%


IVa'bC = 11%
VbC = 25%


V = 25%


Vabc = 25%

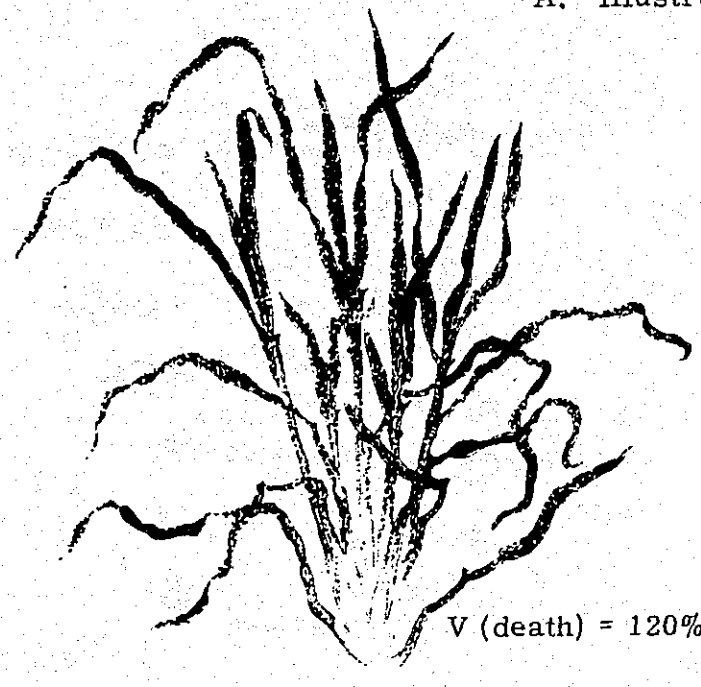
Va'bc = 25%
Va'bc = 25%

Vabc = 55%
Vbc = 55%

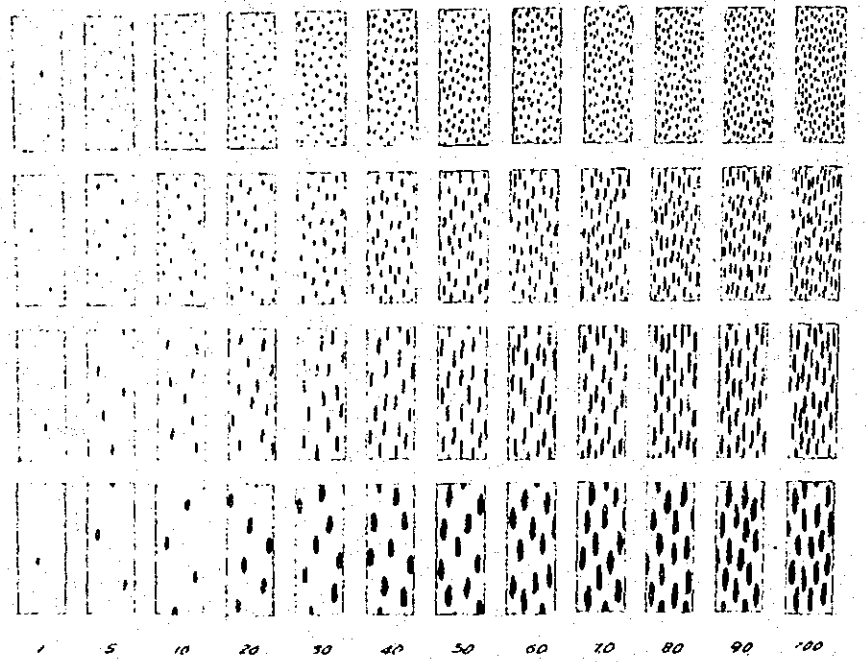
Va"bc = 55 %
Va'bc = 55%

VII. Illustrated standard of the occurrence of rusts of cereals on the basis of severity

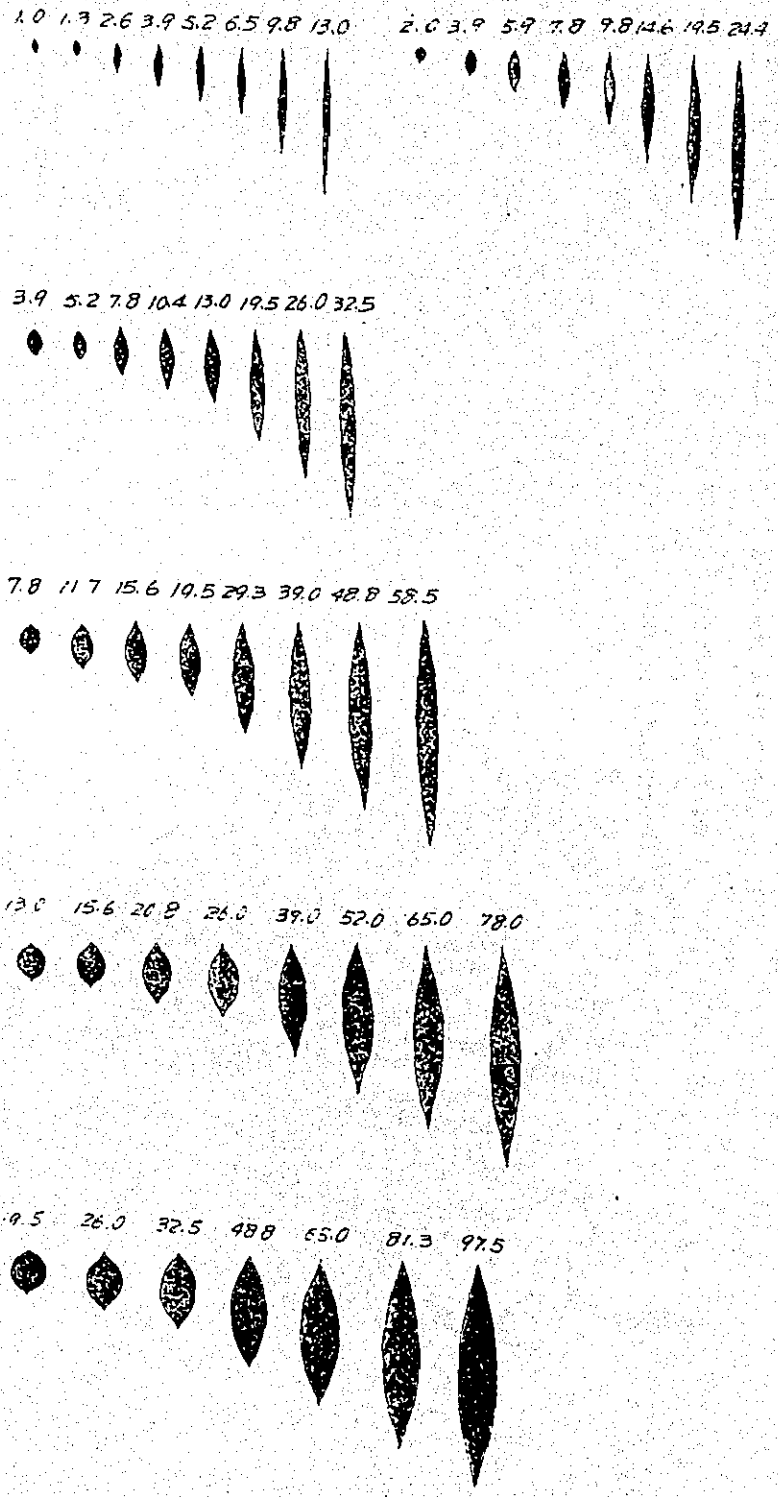
A. Illustrated standard (applicable to leaf dwarf, and stem rusts)



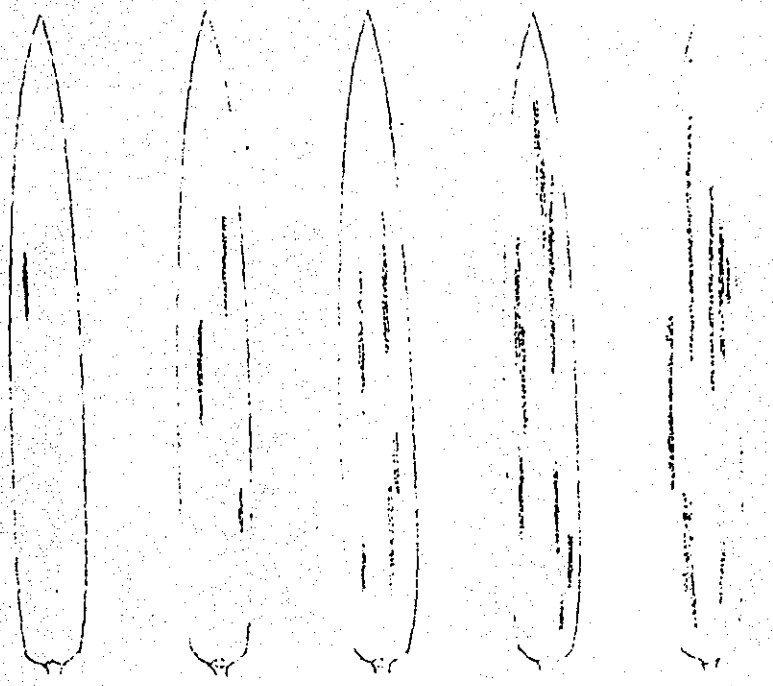
V (death) = 120%



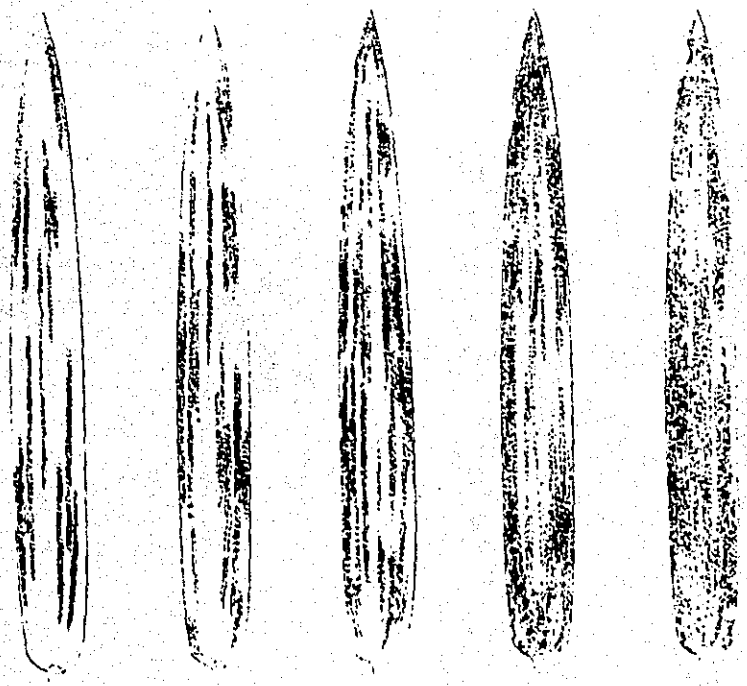
(Supplement) Illustration of actual area of lesions drawn to a scale of 1/2. (mm^2)



B Illustrated standard (applicable to stripe rust)



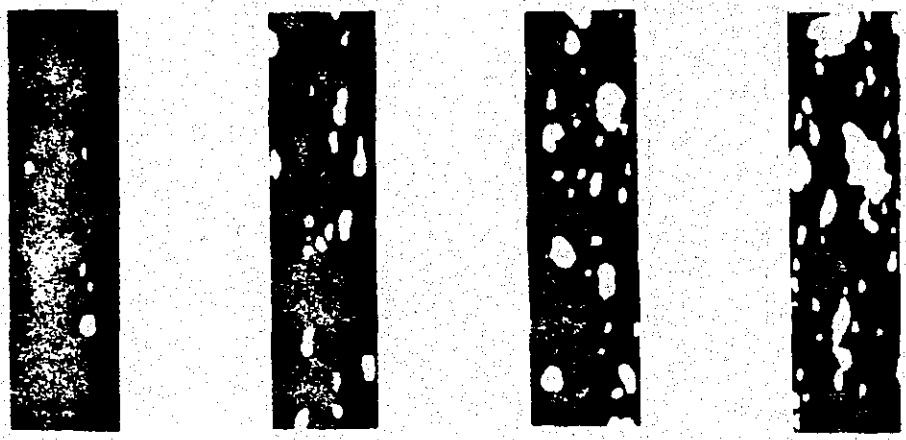
1 5 10 20 25



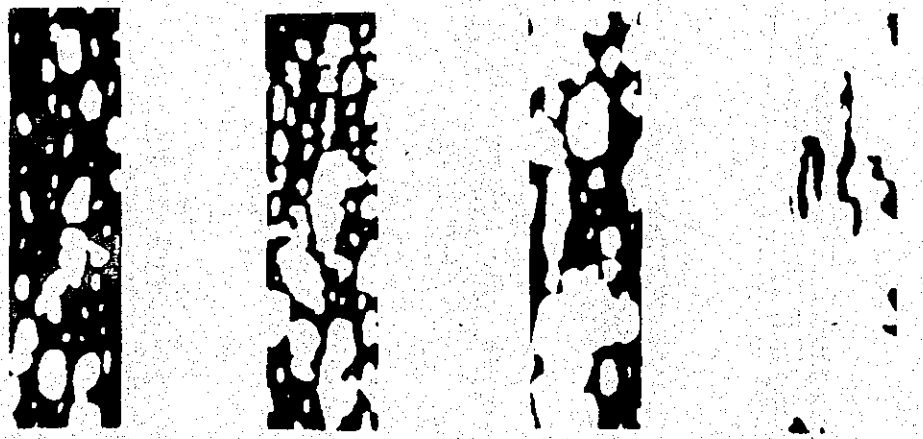
35 50 65 75 85

(Note) The figures designate the rates of actual areas of the lesions.

VIII Illustrated standard of the occurrence of powdery mildews of cereals on the basis of the degree of severity.



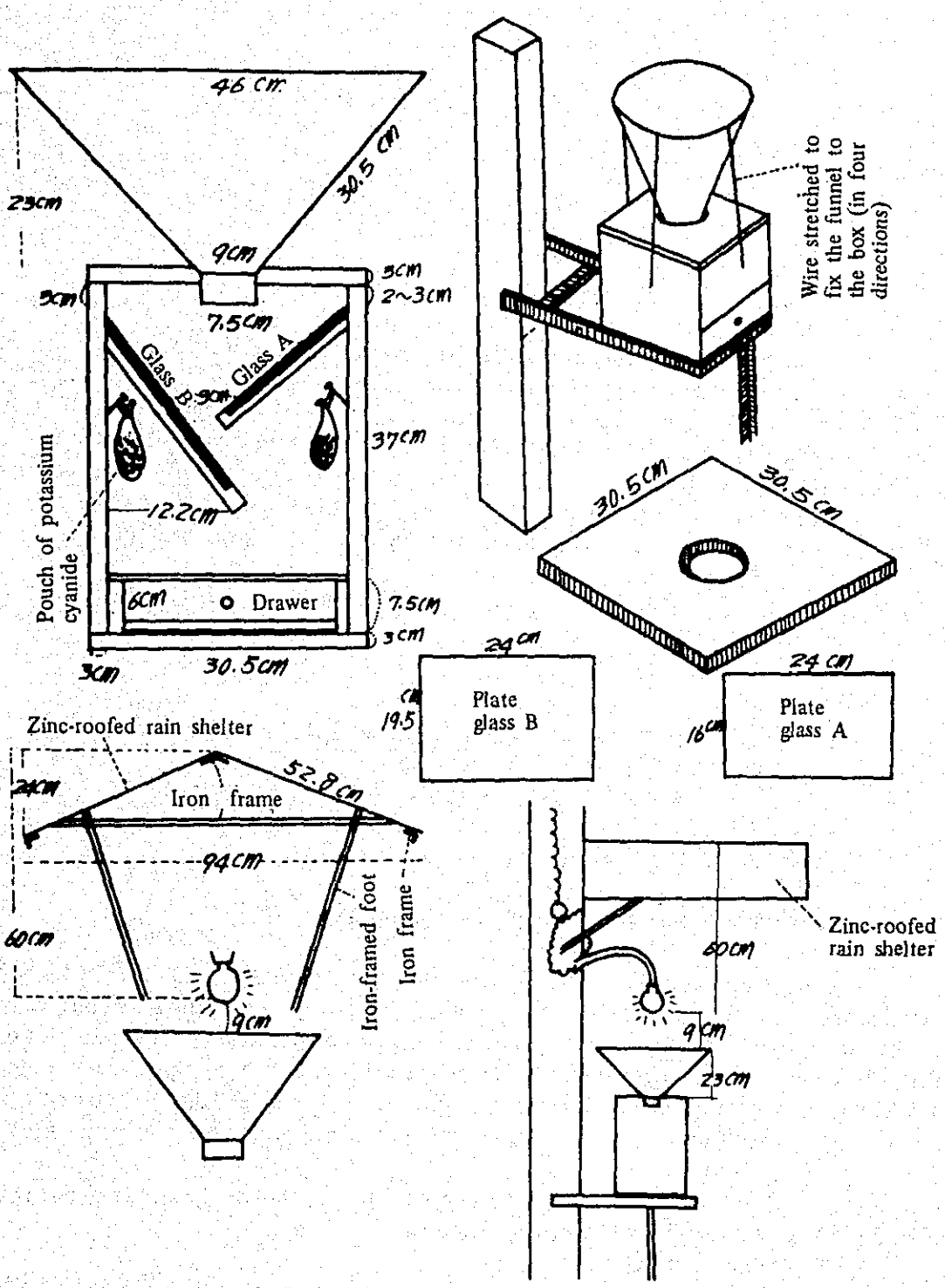
1 5 10 20



30 50 70 85

(Note) The figures designate the rates of actual lesion areas.

IX The structure of the light trap for prediction



Appendix

I. The Syllabi for the Establishment and Management of Farmer's Model- Fields for Determining the Period for Pest Control

(.....)

Revision of the act 29, No. 492
April 28, 1954

(Notice by the Director of the Bureau of Agricultural Improvement)

1. Purpose of establishing the model-fields

Specific surveys and observations may be conducted in the model-fields for determining the plant disease and pest control period, with the purpose of controlling rice blast, rice green leafhopper, and other important plant pathogens and pests. The information may be distributed to practice the suitable control measures in the respective districts, or regions in concern, and also the data may be obtained to increase the accuracy of the forecast for the occurrence of plant diseases and pests.

2. Kinds of fields and places for establishing the fields

(1) Kinds of fields

(a) fields for the rice blast survey

(b) fields for the rice stem borer survey

3. Design of the fields

(1) Fields for the rice blast survey

(a) A field may be devided into 2 plots; one is a plot conventionally cultivated under the general cultural practices in the region concerned, and the other a plot manured with nitrogen-rich fertilizer. The degree of increased amount of nitrogen in the nitrogen-rich plot is optional, but nitrogen should be given enough to make the occurrence in the N - rich plot earlier and more abundant than in the conventional plot.

(b) The test variety should be selected from the varieties commonly used in the region concerned.

(c) As a technique to make the disease occurrence earlier in season and more abundant, use of a variety susceptible to the rice

blast, and placing a heap of artificially or naturally infected rice straws in the plot may be recommended.

(2) Fields for the rice stem borer

(a) One of representative varieties grown widely over the district should be cultivated in the field in ordinary manners accepted by the growers.

(b) For convenience of collecting the daily light trap catches, a standardized light trap (60 watt, double-filament, and frosted bulb, and water-tray or box-type) is settled at a place so apart from the field that the abundance of the rice stem borer within the field is not disturbed.

(3) Control measures in the model-fields.

The control measures using agricultural chemicals should be taken in the model-fields only when most of the growers in the region in concern practice this control measure, but not allowed to do when only a few growers there may do it, because the model-field must be representative of the region concerned.

(4) Establishment of the model-fields.

Forecastor in the agicultural experiment station (changed the name to prefectural forecastor in the revised law), and inspectors (district inspectors in the revised law) in any plant disease and pest control station will determine a plan establishing the model-fields in surveying fields, and checking the data obtained in the district concerned. They must communicate with the staff of the extention service as often as possible.

4. Management and survey in the model-fields

(1) Management of the model-fields

Growers may be asked to manage the model-fields on the basis of the plan.

(2) Inspector

(a) Inspectors may be selected among reliable technical experts for plant disease and pest control in the district concerned. Extention people are expected to help them in surveying and observing the model-fields.

(b) The inspectors must be informed of the purpose of establishing the model-fields, and trained about the survey and observation methods.

(3) Survey items

The items may more or less vary according to differences in the plant disease or pest in question in different areas. A certain degree of modification may be necessary in the following items, but any survey using a high degree of technique is advisably not to be included.

(a) Fields for the rice blast survey

(Leaf blast)

° Growth condition of rice plants (height, number of tillers, number of leaves, leaf colour, etc.)

° Incipient occurrence of the blast

° Trends of spreading (number of lesions, lesion type, colour, the degree of severity, etc.)

(Neck blast)

° Conditions of the leaf blast occurrence, especially in booting stage and in heading stage (pay especial stten-tion to the development of lesions on upper leaves)

° Growth conditions of rice plants (delay of heading is especially important)

°Collection of the information on weather conditions in the early heading, and heading stage

(b) Field for the rice stem borer survey

(1st brood moths)

° To count the light trap catches to grasp both the type of moth appearance and the period of peak moth appearance

° To record the earliness or lateness of the time of trans-planting in the country or section and estimate the number of moths emerging after the transplanting of rice seedl-ings

° To examine the emergence of moths from overwintered larvae kept artificially, if possible (To examine the moth emergence trend from at least one hundred over-wintered larvae)

(2nd brood moths)

° To count the light trap catches to grasp both the type of moth appearance and the period of peak moth appearance

° To count the frequency of stems infested by 1st brood larvae (To count the frequencies of stems infested not only in the field but also several other fields applied and not applied with insecticides, if possible)

° To make survey of the abundance in the field between the last period of the 1st brood larval stage and the period of pupation, if possible

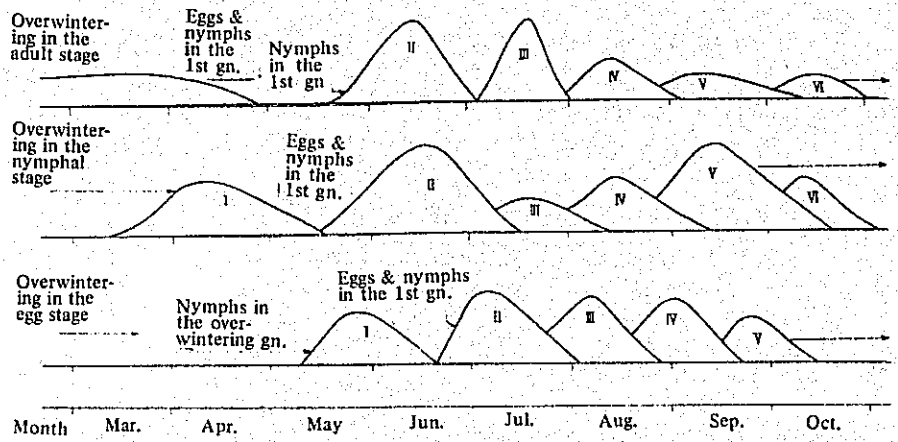
5. Report of the survey results

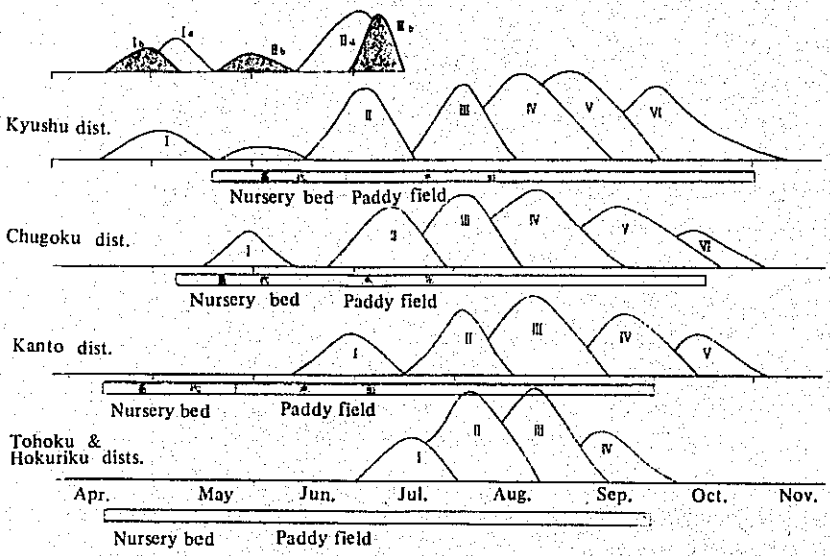
The results of the survey and observations obtained from the model-fields must be reported periodically to the agricultural experiment station and plant disease and pest control station concerned, so that the data may be available for general use cussions in the forecasting. The date of reporting may be determined according to the items of the survey.

6. Determination, and communication of the data on appropriate control measures

Observers (district forecastors) in the plant disease and pest control station concerned may analyze the data given in the periodical reports from the inspectors, togerther with information from the prefectural agricultural experiment station and plant disease and pest control station, receiving advice from the forecaster (prefectural forecaster). After summing up the results, and determing the appropriate time of control for the plant disease or pest in question, they must distribute the information to district offices as soon as possible.

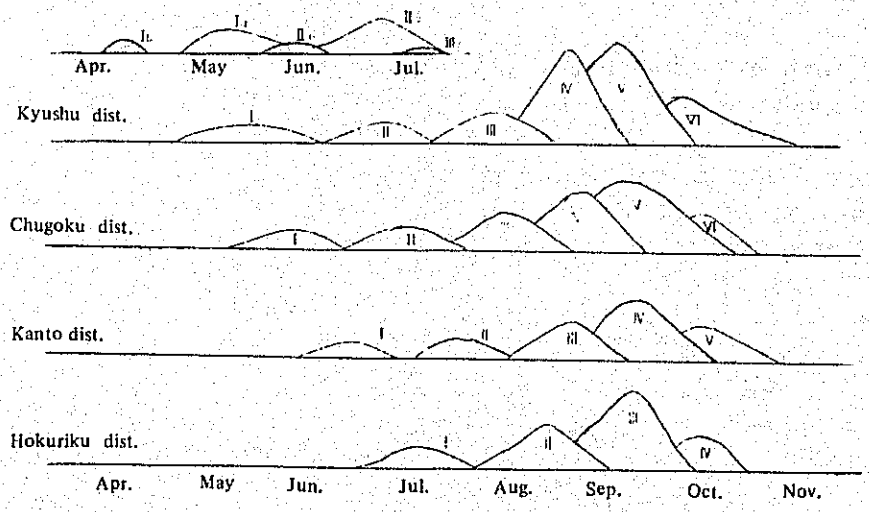
II Schematic patterns of seasonal prevalence and how to count the number of occurrences in planthoppers and leafhoppers



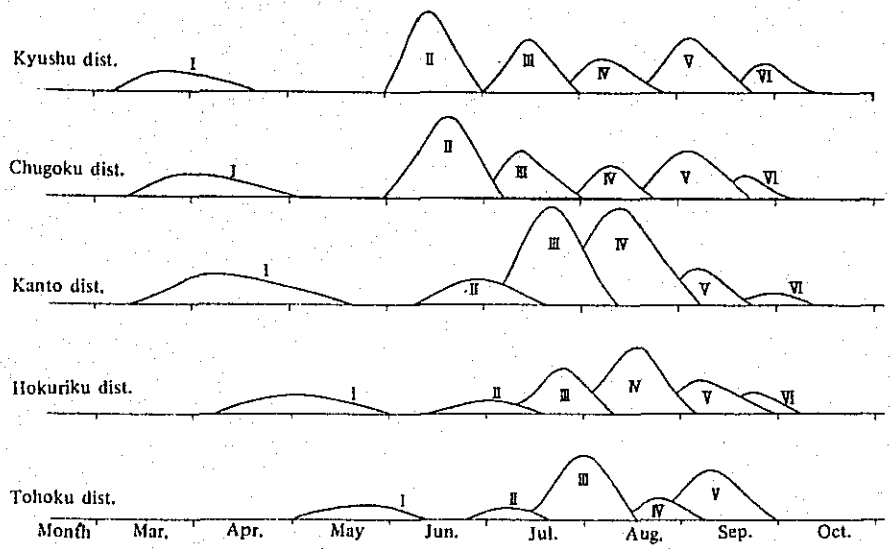


White-backed planthopper

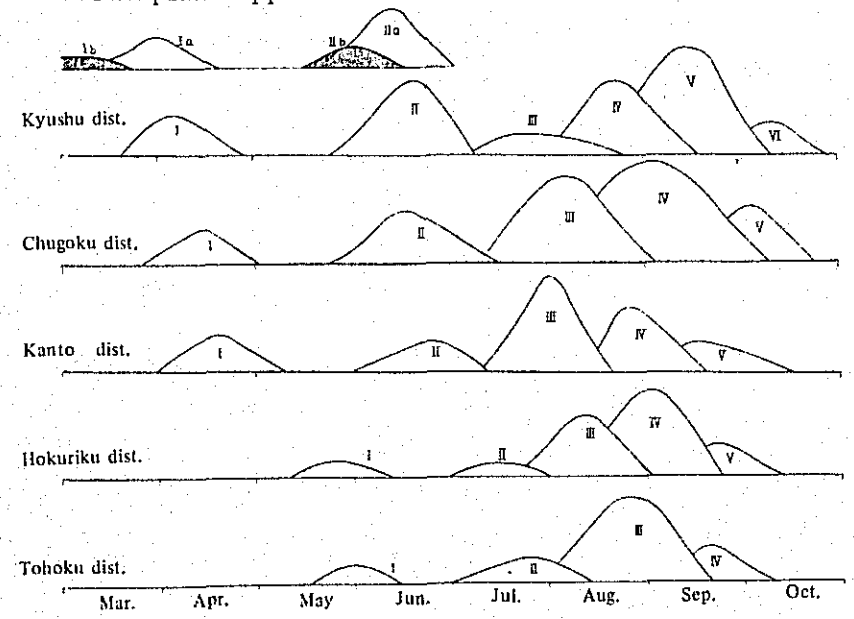
In the western part of Japan especially in warmer districts the 1st- and 2nd-brood adults consist of various individuals having overwintered in egg or nymphal stages. In other parts, on the other hand, the 1st-brood adults consist of those having overwintered in the egg stage. (I_a; adults which had overwintered in the egg stage. Ib; adults which had hatched before the coldest period of winter and overwintered in the nymphal stage.)



Brown planthopper



C. Smaller brown planthopper



D. Green rice leafhopper