



AVRDC  
World Vegetable Center

# International Cooperators' Guide

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## ***Procedures for Chili Pepper Field Evaluation Trials***

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### ***Introduction***

These suggestions are intended for researchers evaluating the International Chili Pepper Nursery (ICPN) trials, coordinated by AVRDC. (Other researchers interested in testing chili peppers under their local conditions might also find the procedures useful.) In order that data recorded at different locations can be compared, it is essential that data collection be done uniformly. These instructions were developed to provide uniform procedures. For more information on seedling and crop production, see the AVRDC Cooperators' Guide *Suggested Cultural Practices for Chili Pepper*.

### ***Choice of land***

Select an area which is well drained and has fairly uniform fertility and slope.

### ***Experimental design***

A randomized complete block design with four replications is suggested (Figs. 1,2).

### ***Number of entries***

In addition to the entries included in the ICPN, it is expected that two local varieties will be added at each location for comparison. Each seed envelope contains approximately 200 seeds, more than enough for an initial two-row plot trial (20 plants/plot) with four replications.

### ***Plot specifications***

Each plot should be on a raised bed 1 m wide and 5 m long, with two rows of plants 50 cm apart. Plant spacing within rows should be 50 cm. The suggested distance between furrows is 1.5 m, thus giving a plot size of 1.5 x 5 m (7.5 m<sup>2</sup>).

### ***Seedling establishment***

Ideally, seedlings should be raised in seedling trays using a sterile sowing medium so that healthy, vigorous seedlings are produced. If seedlings are started in a soilbed, the soilbed should be sterilized by burning a layer of rice straw or other organic matter on top of it before sowing. Seedlings should be raised in a greenhouse or screenhouse, or protected with nylon netting to keep out aphids and whiteflies, so that plants are not infected with viruses prior to transplanting.

### ***Transplanting***

Under favorable environmental conditions, plants will reach the five-leaf stage about four to five weeks after sowing. This is the time to transplant. Plant border rows of a local variety around the trial (Fig. 1).

### ***Cultural practices***

For recommended cultural and management practices after transplanting, see *Suggested Cultural Practices for Chili Pepper*.

### ***Harvesting***

Fruits should be picked when they have turned completely red, and yields should be reported on a fresh-weight basis. Under optimum conditions it takes about 55–60 days after flowering for the first fruits to fully ripen. Chili pepper production can continue for several months under optimum conditions, but we recommend that yield data be recorded for only 10 weeks. Harvests should be performed weekly as fruits ripen. Copies of the data sheets should be made for use at each harvest.

**Fig. 1. Sample field layout for one replication**

Border	1	2	3	4	5	6	7	8	9	10	11	12	Border
XX	ZZ*	ZZ*	ZZ*	ZZ*	ZZ*	ZZ*	ZZ*	ZZ*	ZZ*	ZZ*	ZZ*	ZZ*	XX
XX	ZZ	ZZ	ZZ	ZZ	ZZ	ZZ	ZZ	ZZ	ZZ	ZZ	ZZ	ZZ	XX
XX	ZZ	ZZ	ZZ	ZZ	ZZ	ZZ	ZZ	ZZ	ZZ	ZZ	ZZ	ZZ	XX
XX	ZZ	ZZ	ZZ	ZZ	ZZ	ZZ	ZZ	ZZ	ZZ	ZZ	ZZ	ZZ	XX
XX	ZZ	ZZ	ZZ	ZZ	ZZ	ZZ	ZZ	ZZ	ZZ	ZZ	ZZ	ZZ	XX
XX	ZZ	ZZ	ZZ	ZZ	ZZ	ZZ	ZZ	ZZ	ZZ	ZZ	ZZ	ZZ	XX
XX	ZZ	ZZ	ZZ	ZZ	ZZ	ZZ	ZZ	ZZ	ZZ	ZZ	ZZ	ZZ	XX
XX	ZZ	ZZ	ZZ	ZZ	ZZ	ZZ	ZZ	ZZ	ZZ	ZZ	ZZ	ZZ	XX
XX	ZZ	ZZ	ZZ	ZZ	ZZ	ZZ	ZZ	ZZ	ZZ	ZZ	ZZ	ZZ	XX
XX	ZZ	ZZ	ZZ	ZZ	ZZ	ZZ	ZZ	ZZ	ZZ	ZZ	ZZ	ZZ	XX
XX	ZZ	ZZ	ZZ	ZZ	ZZ	ZZ	ZZ	ZZ	ZZ	ZZ	ZZ	ZZ	XX
XX	ZZ*	ZZ*	ZZ*	ZZ*	ZZ*	ZZ*	ZZ*	ZZ*	ZZ*	ZZ*	ZZ*	ZZ*	XX

X = border plant variety; Z Z\* = border plants that will not be harvested; Z = a plant of the entry assigned to that plot. Vertical lines represent furrows between the plots. Plots should be laid out in order within each rep (1–12, 13–24, 25–36, 37–48) as shown on the accompanying data sheets.

**Fig. 2. Plot randomization for four replications of a randomized complete block design**

<b>Plot for Rep 1</b>	1	2	3	4	5	6	7	8	9	10	11	12
<b>Plot for Rep 2</b>	13	22	18	17	20	21	15	14	23	16	24	19
<b>Plot for Rep 3</b>	34	31	25	29	28	36	33	30	26	35	27	32
<b>Plot for Rep 4</b>	37	44	43	41	45	47	40	42	38	46	48	39

**Data to be gathered**

Record location-specific (latitude, elevation, soil type, etc.), experiment-specific (soil texture, plot size, etc.), and phenotypic data (fruit yield, days to 50% anthesis, etc.) on the accompanying data sheets. Phenotypic data should be recorded on a plot basis (border plants around the trial should NOT be included in data collection) The four most important traits to measure are days to 50% anthesis, days to 50% maturity, fresh biomass, and fresh ripe fruit yield.

- 1 **Days to 50% anthesis:** Number of days after transplanting (DAT) to 50% anthesis (50% of the plants in a plot have open flowers at the first node). Check plots three times per week.
- 2 **Days to 50% maturity:** Number of days after transplanting (DAT) to 50% maturity (50% of the plants in a plot have ripe fruits at the first node). Check plots three times per week.
- 3 **Fresh biomass:** After the last harvest, randomly choose 5 plants per plot and cut them off at the ground. Remove all fruits and record fresh weight of the plants.
- 4 **Fresh ripe fruit yield:** Marketable yield of fresh, red fruits harvested from each plot over a 10-week period. Record the first and last harvest dates.
- 5 **Fruit weight:** Average weight (grams) of 10 fresh, ripe fruits from the second harvest.
- 6 **Fruit length:** Average length (cm) of 10 fresh, ripe fruits from the second harvest.
- 7 **Fruit width:** Average width (cm) of 10 fresh, ripe fruits from the second harvest.
- 8 **Biotic stress:** It is suggested that observations on disease(s) and insect(s) present in the plots be recorded when damage is most serious. Record symptoms as “none”, “mild”, or “severe”.
- 9 **Remarks:** Any other interesting observations not recorded elsewhere.



**Data sheet for recording total yield and other pheontypic traits for Reps 1 and 2**

Location:

Harvest dates: 1st:

2nd:

3rd:

4th:

Plot	Rep	Entry	Days to 50% anthesis (DAT)	Days to 50% maturity (DAT)	Fresh biomass (5 plants) (g)	Total fruit yield (kg)	Average fruit weight (g)	Average fruit length (cm)	Average fruit width (cm)	Biotic stress notes	Remarks
1	1	1									
2	1	2									
3	1	3									
4	1	4									
5	1	5									
6	1	6									
7	1	7									
8	1	8									
9	1	9									
10	1	10									
11	1	11									
12	1	12									

13	2	12									
14	2	1									
15	2	9									
16	2	6									
17	2	3									
18	2	10									
19	2	5									
20	2	2									
21	2	4									
22	2	11									
23	2	7									
24	2	8									

DAT = days after transplanting

Please send form to: Dr. Paul Griffike, AVRDC – The World Vegetable Center, P.O. Box 42, Shanhua, Tainan 74199, Taiwan, ROC  
 Phone: 886-6-583-7801 ext. 330 Fax: 886-6-583-0009 email: gniffike@avrdc.org

**Data sheet for recording total yield and other pheontypic traits for Reps 3 and 4**

Location:

Harvest dates: 1st:

2nd:

3rd:

4th:

Plot	Rep	Entry	Days to 50% anthesis (DAT)	Days to 50% maturity (DAT)	Fresh biomass (5 plants) (g)	Total fruit yield (kg)	Average fruit weight (g)	Average fruit length (cm)	Average fruit width (cm)	Biotic stress notes	Remarks
25	3	7									
26	3	4									
27	3	1									
28	3	9									
29	3	8									
30	3	5									
31	3	12									
32	3	3									
33	3	10									
34	3	2									
35	3	11									
36	3	6									

37	4	11									
38	4	6									
39	4	7									
40	4	10									
41	4	2									
42	4	4									
43	4	5									
44	4	1									
45	4	9									
46	4	8									
47	4	3									
48	4	12									

DAT = days after transplanting

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