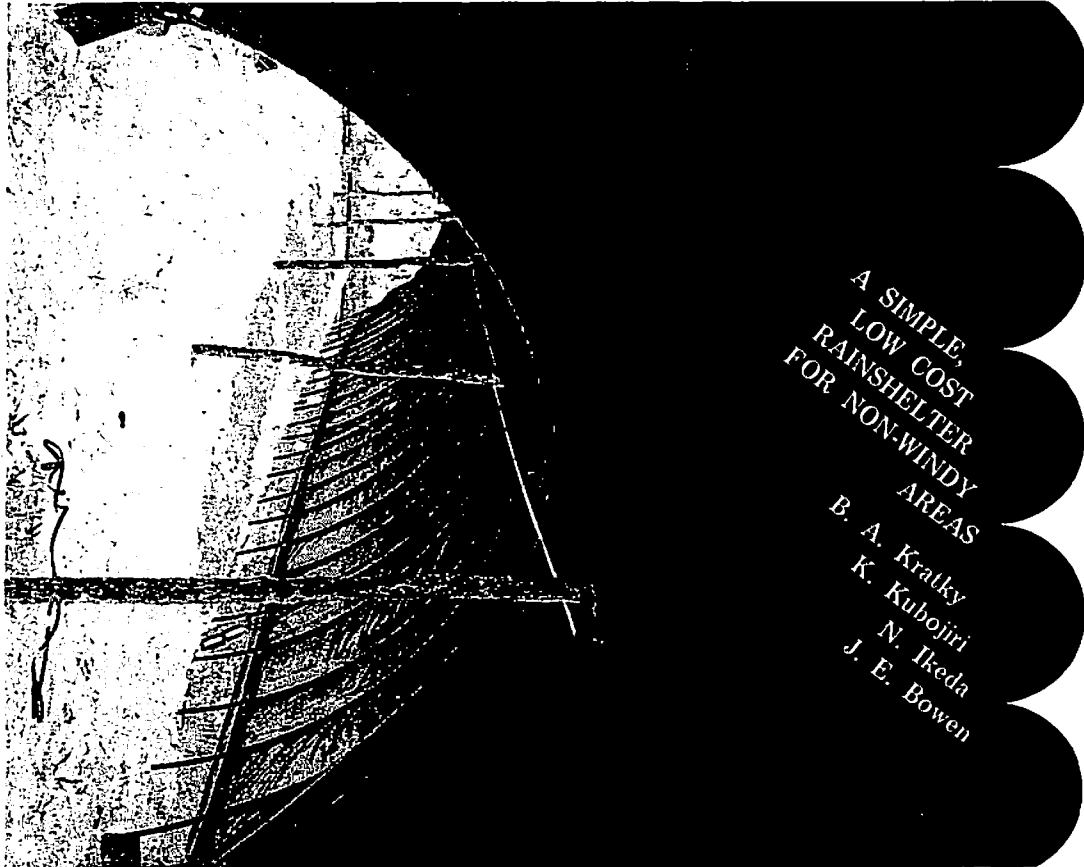


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A SIMPLE,  
LOW COST  
RAINSHELTER  
FOR NON-WINDY  
AREAS

B. A. Kralky  
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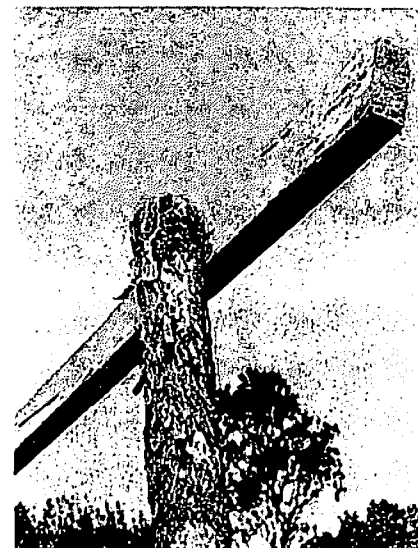
**A SIMPLE,  
LOW COST  
RAINSHELTER  
FOR NON-WINDY  
AREAS**

**B. A. Kratky<sup>1</sup>  
K. Kubojiri<sup>2</sup>  
N. Ikeda<sup>3</sup>  
Photography  
by J. E. Bowen<sup>4</sup>**

Perhaps the two most serious deterrents to construction of rainshelters for producing vegetables are a source of water for irrigation and the high cost and complexities involved in constructing rainshelters. This article will illustrate and describe how to construct a simple, low cost rainshelter which is 7½ ft. high and 14½ ft. wide. Both construction and change of the plastic covering can be accomplished rapidly. This rainshelter is *not* designed for windy areas but it can tolerate an occasional small gust of wind as might occur in the Volcano or Kainaliu, Kona areas; this rainshelter would not be expected to withstand the heavy winds of the Kamuela area.

**PROCEDURE**

1. Select a site. The land does not need to be level; however, water is applied more evenly by drip irrigation if the land is level.
2. Place 10 ft. long posts in a straight line 12-16 ft. apart. The top of the posts should be 7½ ft. high. Posts may be wooden or steel; an *ohia* post is illustrated. Spacing is dependent upon the possible use of the posts for a trellis structure.



3. Connect the posts with a 2" x 4" purlin.

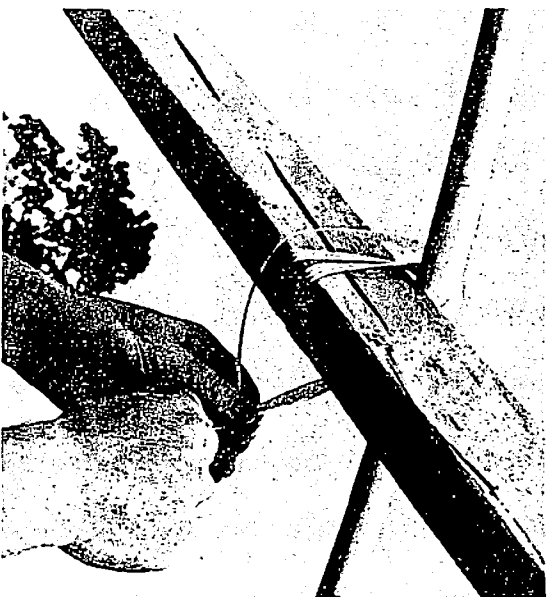
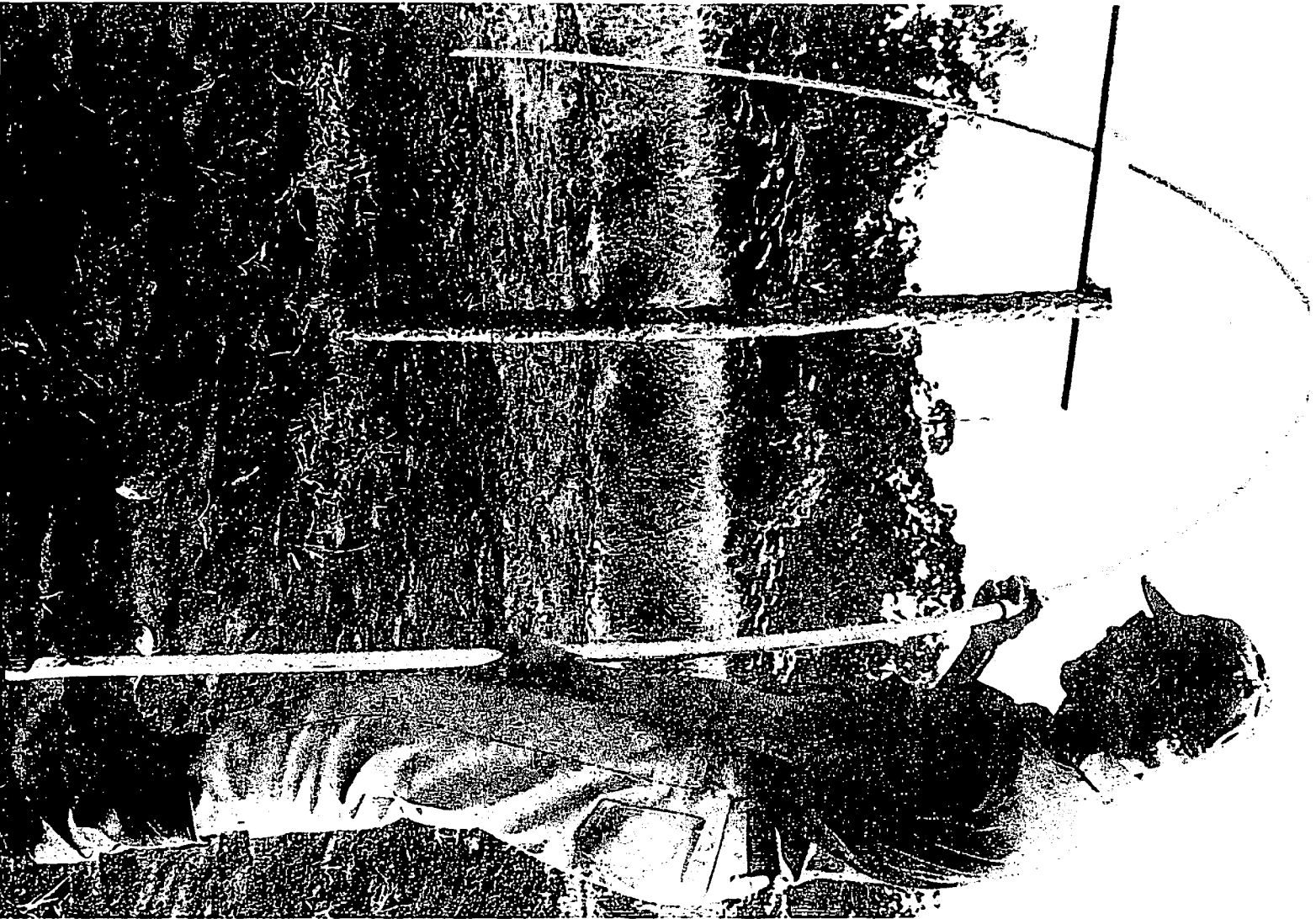


4. Assemble 25 ft. lengths of ¾" schedule 40 PVC pipes by gluing a 20 ft. length to a 5 ft. length. Thinner grades of PVC pipes are not recommended since they may crease immediately above the ground level.



5. Push one end of the PVC pipe 1 ft. into the soil at a distance of 7¼ ft. from the center purlin line.

<sup>1</sup>Associate Horticulturist, Department of Horticulture  
<sup>2</sup>Farm Foreman, Volcano Experimental Farm  
<sup>3</sup>Farm Manager, Kona Experimental Station  
<sup>4</sup>Plant Physiologist, Department of Botany



7. Tie the PVC pipe to the center purlin with a heavy gauge strip or a plastic strip to prevent lateral movement and to hinder forward-backward movement.



8. Wrap the ends of the 2" x 4"'s with plastic to prevent puncture of the plastic roof.

6. Bend the pipe over the center purlin to form an arch and push the loose end into the soil at a distance of 7 1/4 ft. from the center purlin line. The PVC pipe should rest loosely upon the center purlin. Arches should be spaced 3 ft. apart.



9. Unroll a 20 x 100 ft. sheet of plastic film. Use only a film which can be expected to last longer than one year such as Monsanto 602 (4-6 mil).

10. Sandwich the length edge of plastic between two 1" x 3" boards which have been painted white and nail these together. This operation is completed on the ground. As an alternative to 1" x 3" lumber various plastic film attachment devices are available and will facilitate this operation; however, this would prevent an added cost.



11. Place the plastic cover over the arches by lifting one side completely over the top of the arches and center purlin. *As few as two people can perform this operation; however, six people (three on each side) could place the cover on within five minutes.*

12. Adjust each side so there is about 1½ ft. air space and place a few cinder blocks or other weights to prevent either side from raising or lowering. If a greater air space is needed (e.g. at a lower elevation) either narrower plastic or longer arches may be used. Unless the rainshelter is to be cooled by a fan, *there must be an air space at the bottom or else the house will become excessively hot for most vegetables.*



13. On the ends of the house, connect the plastic film to a 20 ft. PVC pipe by taping or tying and proceed to roll about 1 ft. of plastic film onto the pipe. Tape or tie the bottom of the 20 ft. pipe to the end arch. *The house is now complete, and ready to produce high quality vegetables.*

#### CONSTRUCTION MATERIALS (for a 96 x 14½ ft. Rainshelter)

- a. 7-9 10 ft. long posts
- b. plastic film (20 x 100 ft.) with an expected life of greater than one year
- c. 400 ft. of 1" x 3" construction grade lumber
- d. 100 ft. 2" x 4" construction grade lumber
- e. 880 ft. of ¾" schedule 40 white PVC pipe
- f. Nails, heavy gauge string, white paint, cinder blocks or other weights, PVC glue