

Benchmark Case Study - Hawaii

(present management system)

Conservation Effects Worksheet

Truck Crop - Cabbage

(land use and crop)

Resource Setting: Maui, Hawaii

Soils - Keahua series - fine kaolinitic isohyperthermic Torroxic Haplustolls, 3-25% slope, 73°F mean temperature, cobbly structure, well drained, medium runoff, moderate permeability, 60+in. deep.

Elevation - **600-1500** ft. 3. Rainfall - 20 in.

Natural Vegetation - buffelgrass, feather fingergrass, ilima, kiawe, lantana, pitted beardgrass, redleg grass, uhaloa, hale koa.

Wind - high velocity area.

Air - minimal cane fire and volcanic emission pollution.

Average Air Temperature - 80°

Animals - deer, chukars, pheasant, dove, francolin

Growing Season - continual

Irrigation Availability - 5/8-2 in.

Present Management System:

- | | |
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| <ul style="list-style-type: none"> • Small-scale vegetable production system. Farmers specialize in 1-3 crops (cabbage, lettuce, broccoli, onion, and Irish potatoes most common). • Labor and fossil fuel dependent system. Tractors break and till soil. Seeding started in nurseries and transplanted to field by hand/machinery. Hand harvested. | <ul style="list-style-type: none"> • Chemical pest management techniques most commonly employed. Interest in integrated pest management, however, lack of information limits usage. • Nutrients supplied from petrochemical products. • Irrigation: Water available but expensive. • Produce is marketed locally on Oahu. |
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Resource Problems Before Treatment:

Soil erosion and surface runoff.

Weed and insect control.

Insufficient irrigation and nutrient application.

Low yield

Labor

| ACTIONS (Kinds, Amounts, Timing) | EFFECTS (Effects of Continuing Bench System) |
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| Soil Preparation | |
| Chisel 6 in. deep or Subsoil 1-1.5 ft. deep yearly Rotovate 2 days - 1 week before planting Shape into 36 in. beds. | Breaks compaction layer. Enhances water percolation. Requires tractor, fuel, machinery. Levels field, turns soil, kills weed seedlings. Provides added rooting depth. Channels away excess water. Increases surface runoff velocity. |
| Plant Preparation | |
| Grow seedlings in nursery 30-45 days Apply Dactal @ 4-6 lbs/100 gal/ac Transplant by hand/with machine in double rows 18 in. apart Plant section of field weekly | Increases seed germination and seeding survival rates. Reduces in-field production time. Controls weed seed germination. May cause surface and sub-surface water contamination. Requires labor/machinery/fuel Supplies correct amount of market demand |
| Crop Management | |
| Sprinkle irrigate immediately after applying Dactal and when plants and soil appears dry. Apply 10-30-10 @ 800 lbs/acre at planting, 14-14-14 or 16-16-16 with micronutrients 3 weeks after planting Apply dolomite @ 1 ton/ac. yearly. Apply pesticides when farmer sees insects or on weekly spray schedule with 20-24 ft. boom sprayer | Moves herbicide through soil. May provide adequate/inadequate soil moisture. Irrigated field borders provide wildlife feed and shelter. Over/under supply of plant nutrients. Soil pH change may/may not occur. Insects may/may/not pose economic problem. Requires tractor/machinery/fuel. |

| <p style="text-align: center;">ACTIONS (Kinds, Amounts, Timing)</p> | <p style="text-align: center;">EFFECTS (Effects of Continuing Bench System)</p> |
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| <p>Crop Management</p> | |
| <ul style="list-style-type: none"> - Dipel @ 1 lb/ac - MVP @ 1 qt/ac. for loopers diamond back moths. - phosgrin @ 12 oz/ac. for loopers & aphids. - Diazinon @ 8-12 oz/ac for cutworms. - Cygon @ 1 pt/ac. for aphids - Lannate for slugs and aphids <p>Apply copper powder for Alternaria fungus</p> <p>Hand Hoe</p> | <p>Bactericides are perceived to be more environmentally sound.</p> <p>Pesticide/nutrient loss may create surface and subsurface water contamination.</p> <p>Public concern about pesticide usage.</p> <p>Renders Dipel and MVP ineffective.</p> <p>May prune feeder roots. May spread fungus spores.</p> |
| <p>Harvest</p> | |
| <p>Hand harvest after 60 days of field growth. Transport via pick up truck to wholesaler.</p> <p>Rotovate residue.</p> <p>Fallow field for 20-100 dam</p> | <p>Labor must be available.</p> <p>Incorporates organic material</p> <p>Soil, retains water. Enhances soil fertility.</p> |
| <p>Comments:</p> <p>Action will vary among farmers</p> | |