

# SUMMARY RESEARCH PROGRESS REPORT FOR 1997

## AND RESEARCH PROPOSAL FOR 1998

**Submitted to:**

**SLV Research Center Committee  
and the  
Colorado Potato Administrative Committee (Area II)**

**TITLE:** Using Crops to Control Pests and Enhance Potato Production

**PROJECT LEADERS:** Merlin Dillon, Area Extension Agent, Agronomy, Colorado State Cooperative Extension.

**PROJECT JUSTIFICATION:** Nematodes have become an important pest in SLV potato production and Verticillium (early dying) has been an important potato disease here for many years. Green manure crops of rape and sudan show great potential in reducing both Verticillium or nematodes. The effectiveness of these crops is not questioned; it has been demonstrated in other areas. What is needed, however, is information on how these crops will grow in our unique environment, especially when planted later in the season after some other crop. Dedicating one entire cropping year for a green manure crop is very expensive for the growers (no crop income). Fumigants can be used to control these pests; however, these chemicals are also very expensive and soon may not be available.

Research in other areas has shown the benefit of sudan and rape crops on these pests. In our area, Richard Zink conducted three years research into crop rotations showing the benefit of green manure sudan on reducing Verticillium. In that research, the sudan was planted early June and worked into the soil in late August. This project would repeat that treatment; but would also include sudan planted much later and incorporated into the soil after a hard frost. A hard frost on immature sudan produces prussic acid (HCN) which will reduce these pests in the soil.

This project would include sudan plantings July 15 to simulate plantings after an early vegetable crop (July 15) and sudan plantings August 15 to simulate planting after either malt barley or winter wheat. These dates are fairly late to produce much sudan biomass; however, we need to know what amount of plant biomass is produced and whether it can reduce either nematodes or Verticillium.

Winter rape would also be planted July 15 and August 15; again simulating planting after a previous crop. The crop material would then be incorporated as green manure into the soil at frost. A subplot sample of each treatment would be cut and weighed when it is green manured, to document the amount of crop material produced.

**PROJECT STATUS:** New

**SIGNIFICANT ACCOMPLISHMENTS FOR 1997:** Not Applicable

**OBJECTIVES FOR 1997:**

**The purpose of the project is to:**

1. Determine the feasibility of planting rape and sudan at various times during the crop year. This assumes a previous crop greatly improves the economic feasibility of using a green manure crop to reduce potato pests.
2. Quantify the amount of crop biomass that is produced when rape or sudan is planted at different times during the crop year.

**Specific objectives include:**

1. To plant winter rape at 3 dates during the growing season; harvest at two times of the season (August 15 and Frost.) Sudan would also be planted at 3 dates and harvested at two dates; not the same dates as rape.
2. The specific treatments would include:
  - A. Sudan (Trudan VIII) planted June 1; harvested for hay August 15; green manured after Frost.
  - B. Sudan planted June 1; green manured August 15.
  - C. Sudan planted July 15; green manured after frost.
  - D. Sudan planted August 15; green manured after frost.
  - E. Rape planted May 1; harvested for hay August 15; green manured after Frost.
  - F. Rape planted July 15; green manured after Frost.
  - G. Rape planted August 15; green manured after Frost.
3. Determine yield of all treatments when green manured; to determine the amount of crop biomass produced.

**FUNDING REQUEST:**

**1997 Allocation:** Not Applicable

**1998 Request:**

<b>Plot materials (stakes, herbicide, bags, etc)</b>	<b>\$500</b>
<b>Student Labor</b>	<b>\$2000</b>
<b>TOTAL:</b>	<b>\$2500</b>