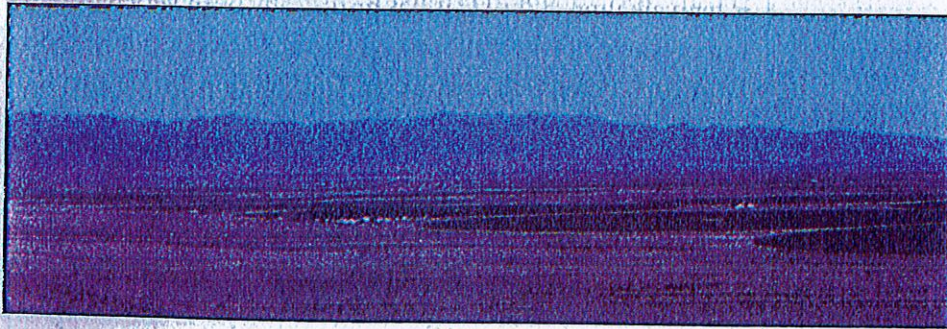


## APPENDIX 1.4

# Ten-Year Alfalfa Study Showing Higher Production Rates Using Bio N Liven and Carbon Answer by Environmental Care & Share, Evergreen, Colorado

BY GLOBAL MERIT GROUP



View of Farr Family Farms in Central Nevada, where the ten-year alfalfa study was conducted.

Production at Farr Farms in Central Nevada went from a four-ton average to more than a six-ton average, and this level was sustained for ten years with the application of Bio N Liven and Carbon Answer by Environmental Care & Share of Evergreen, Colorado.

**Location:** United States, Central Nevada

**Soil Type:** Alkaline, 8.5 pH

**Application:** One liter of Bio N Liven, one liter Carbon Answer per season. Applied through pivots at the early stages of each crop. In 2010–2012, the next generation line, named Nano Ag, was used instead at an equivalent rate.

**Weather:** 90 to 100 degrees F. Arid, with little rainfall (five inches per year).

**Irrigation:** Center pivots, ¼ mile long; 120 acres each.

**Production:** Production went from a four-ton average to more than a six-ton average, sustained for ten years.

**Procedure:** The study was done using fourteen center pivots of 120 acres each. Ten pivots were selected for treatment, and four were used for control

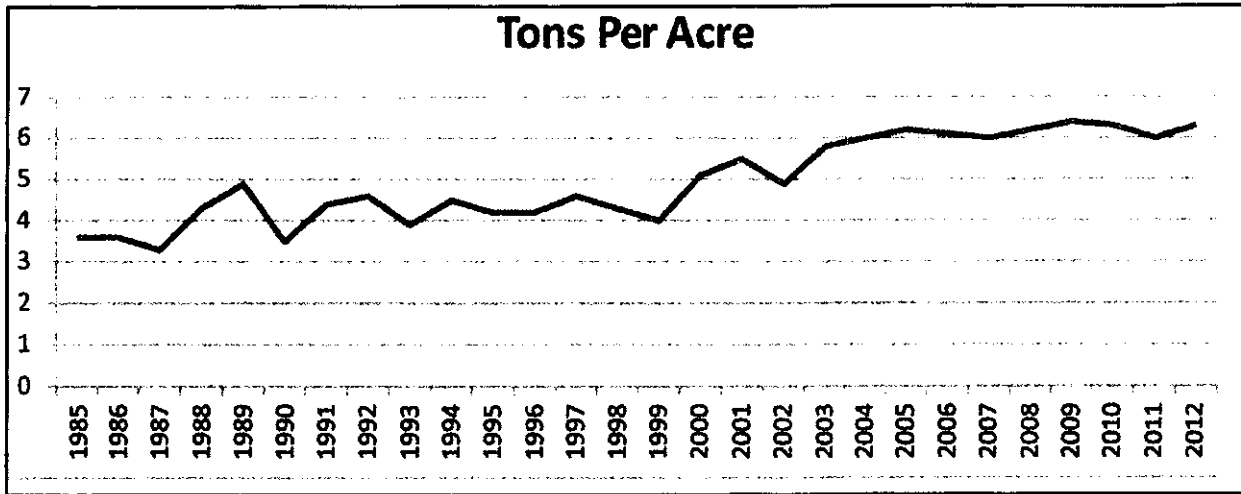
**Harvest:** Three cuttings per year, using one-ton square balers.

## HISTORY

Located in Central Nevada, at 5,000 feet in elevation, the soil is high alkaline, 8.5 pH. It has historically been very hard, taking in water slowly, making it difficult to develop new crops. Four tons per acre is the average production in the previous twenty years (see Figure 1). One thousand gallons of water per minute are required to adequately irrigate each pivot.

## RESULTS

- Hay that normally requires forty days to reach full height (thirty inches) began reaching it in thirty days, cutting ten



**Figure 1.**  
Chart depicting a twenty-five-year history of alfalfa fields in Central Nevada.

days off of the growing time of each crop. This resulted in greater production.

- Treated fields began requiring less water to produce, and irrigation rates were reduced over several years, to 700 gallons per minute.
- Treated fields increased in quality and quantity while using 30 percent less water.
- Treated fields increased their yield by two tons per acre on average (one and one-half more than the control).
- The alfalfa crop life increased from five to eight years. Fields remained fully productive, still producing six tons per acre through year eight.
- The seed germination rate was 98 percent.
- Treated fields received very little damage from pests; pesticides were generally eliminated.

The growing time of each crop was shortened by ten days.

Treated fields required less water and increased in production quality and quantity.

Crop life increased from five to eight years.

Treated fields had little damage from pests.

## CONCLUSIONS

After conducting this study for ten years, the findings are as follow:

- Treated fields function at optimal levels with 30 percent less water.
- Field life increased from five to eight years between rotations.
- Production increased two tons per acre (one and one-half tons more than control fields).
- Quality also increased in spite of larger crops.
- Fertilizer was reduced.
- Pesticides were generally eliminated with no noticeable change for ten years.
- The farm saved sixty dollars per acre in irrigation costs.
- Income increased \$200 per acre in production.
- Profits per acre increased \$300.
- This increased profitability and crop vitality make the difference between success and failure.

As the conclusions show, income and profits increased, fertilizer usage was reduced, pesticides were generally eliminated, and crop quality increased. In addition, field life increased from five to eight years between rotations and the farm saved sixty dollars per acre in irrigation costs.