ORGANIC HIGH DENSITY

PRODUCTION OF

MEDICINAL HERBS

GRANT NUMBER– FNE03-489

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Project Name and Contact Information

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Contact Information— Matthias Reisen, 9198 Rt. 415, Avoca. New York. 14809. 607-566-2701

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Goals

The goal of the project is to look at production of medicinal herbs and the feasibility of producing them at a competitive price. It will look at the agronomic and economic feasibility of cultivating eleven medicinal herbs by the use of high density production . Data will be collected on a square foot basis and a evaluation will be may as to the potential of supplying a fast growing medicinal herb market. This grant was submitted as a production grant as the title suggest but as with everything that is produced the end question is how will we market. We will look at the feasibility for marketing in various dimensions such as: herbs-spices, dietary supplements, phytomedicines, flowers and fragrances. This will demonstrate alternative marketing possibilities for specialty crop production in the Northeast.

Goals (cont.)

The marketing potential for medicinal herbs is only limited by the farmers ability to create a market niche with a product that they enjoy producing and will fit into one of the aforementioned categories.

Herbs-spices: an herb is any plant used as a medicine or seasoning and a spice is an aromatic vegetable substance used to season food or add zest or interest. A company in New Mexico has a product line of over 100 products containing lavender. They add red and green chilies to lavender and other herbs for aromatic and seasoning zest.

Dietary supplements: these products contain herbs in one form or another and are regulated by numerous government agencies. This is not a recommended avenue.

Flowers: medicinal herbs are being used in the cut flower industry. A grower than has the potential to market the plant as a medicinal herb or a cut flower whichever provides the greatest profit. Examples would be echinacea, yarrow, blue vervain, calendula and wood betony.

Fragrances: any plant that gives a quality of fragrant, sweet, or pleasant odor. This venue has great potential in the creation of salves, creams, essential oils and countless other skin care products.

Phytomedicines: this is a product that uses a plant to produce a medicine. This industry has been in existence since creation and the allopathic medicine industry is based on plant medicines. Research is on going, as is the product line up. Enter this field with caution as there are different plant heroes each year and you may produce a crop for a fallen hero.

Our market has been with dried and fresh medicinal herbs. We started production in1991 and did it part time until 1993 at which time our market had expanded enough to provide full time employment to my wife and I. Since that time our production has continued to expand and we needed to look at a more efficient way to produce our herbs. Marketing has not been the problem in our operation, the expansion of market has depleted our inventory and we continue to run out of certain medicinals in February or March.

For Northeast farmers to be competitive in today's world market a need to explore more efficient production systems that will replace wild crafting (harvesting in the wild) is needed.

Farm Profile

Our farm consists of 20 acres purchased in 1982. It had been part of a large dairy farm and we purchased the main house and barn and milked cows until 1989. In 1991 we started producing medicinal herbs and marketing via a mail order business. We have been steadily increasing production and marketing techniques until today we produce approximately 2000 pounds dry herb and 1000 pounds fresh herbs a year, for markets thought-out the USA, though primarily in the Northeast. We only sell what we grow and market approximately 60 different medicinal herbs.

We have a 18X 50 greenhouse for production of transplants and a 30X50 greenhouse that is used as a drying facility for the medicinal herbs. The basement of the old dairy barn is used for storage of our herbal inventory and the machinery used in the operation.

This is our full time business and livelihood. In addition to growing medicinal herbs we provide programs to the community on alternative health care and there uses of medicinal herbs.

We are also currently involved in two other projects :

(1).New York State Department of Agriculture and Markets, under the Grow New York Program. New York Grown Chinese Medicinal Herbs– is a project designed to establish capacity for domestic production of a number of Chinese medicinal herbs, including necessary market data and tests. Trial plots of Chinese medicinal herbs were established on five certified organic farms in New York and we were one of those.

(2). U.S.D.A.'s Value Added Producer Grant Program– this is a nationwide feasibility study of direct marketing Chinese medicinal herbs to health practitioners. The study was conducted by five medicinal plant grower associations representing farms in Califor-

Farm Profile (cont.)

nia, Minnesota, New Mexico, New York and West Virginia. These states are represented by association members who work together in a national steering committee know as the Medicinal Herb Consortium. The Consortium has met through teleconferencing since 2001 to explore the emerging market for domestically-produced, certified organic and ecologically-grown Chinese herbs.

Additional information about these projects can be obtained from: Jean Giblette, hfg@capital.net.

Participants

The primary participants in the project were myself and my wife Andrea. All work was conducted by us from growing transplants, planting, weeding, harvesting, drying, shipping, data connections and conclusions.

Two collaborators were consulted:

(1). Conrad Ritcher, Goodwood, Ontario, Canada LOC1AO, Consultant– President of Ritchers Herb Company.

(2). Rosemary Gladstar, P.O. Box 420, E. Barre, Vermont05649 Consultant– herbal educator President and founder of United Plant Savers and Sage Mountain Native Plant Preserve and Retreat Center.

Our technical advisor was:

Monika Roth, 615 Willow Avenue, Ithaca, New York 14850 Development and Marketing Specialist, Cornell Cooperative Extension.

Project Activities

This project explored the potential of growing organic medicinal herbs in high density plantings. We constructed 11 beds, 36 inches wide, a length of 100 feet each. There was an 18 inch walkway between each bed allowing for weeding and harvesting from both sides. We grew the transplants for the beds in our certified organic greenhouse.

The seeds of the herbs were seeded in our organic greenhouse between March 21 to March 28. The time required to seed this amount of seed was six hours. The transplants were than planted to the field between May 1 and May 15, except St Johnswort which was planted to the field July 20th because of its slow growth habit. Each bed required 6 hours to plant. No harvest can be expected from St Johnswort until the second year..

The transplants were planted on 6 inch centers, requiring 1200 plants per bed. The size of the beds (300 sq. ft.) allowed for easier calculation of data.

The eleven herbs chosen were: Calendula (Calendula officinalis), Blue Vervain (Verbana hastate), Mint (Mentha spp),Nettle (Urtica dioica), Self Heal (Prunella vulgaris), Ansie Hyssop (Agastache foeniclum), Lemon Balm (Melissa officinalis), Skullcap (Scutellaria laterifolia), St Johnswort (Hypericum perforatum), Catnip (Nepeta cataria) and Yarrow (Achillea millefolium).

These herbs were chosen because we have grown them over the years and require more production to meet our market.

The production of these herb crops were recorded on a form provided by NOFA-NY called Certified Crops Harvest Record . A copy is enclosed in the report.

Our harvest started with Calendula on July 30th, which is than picked on an average of 3-4 days depending on climatic conditions and continued until frost. The remainder of the herbs were harvested between September 1st and September 20th except for St Johnswort which was not harvested until the following year.

NOFA-NY Certified Organic, LLC

Farm Name: _____

Certified Crops Harvest Record _____
year

Note: **If harvest equipment is used for both certified and non-certified crops, you must document equipment clean-out and purging of crops. Submit a copy of this form at the time of renewal of your certification.**

Harvest Date	Field ID#	Crop	Amount Harvested lb. / ton / bu.	Storage Location [bin #, silo # barn]	Loss, Shrinkage, Cull Amount %	Lot # if applicable	Date Sold *or* ☐ check if to be used on farm

Retain a Copy For Your Records

Results

On our farm in the years that we have been farming (since 1982) we have not experienced any serious insect or disease infestations. This remained constant though out the period of our grant. We feel this is a result of our organic practices, maintaining good soil tilth, cover crop rotations, proper ph , border establishment for ecology diversity of insects, birds and beneficial predators and just overall good stewardship practices.

We noticed no differences with the plantings of our high density medicinal herb beds with regard to insect and disease problems. On the overall the high density beds were strong and vigorous and suppressed weed growth was apparent. Time required for the high density planting (6 hours per bed) was not any greater than for conventional 36" or 20" row space planting. Time required for preparation of high density was less by half (2 hours as compared to 4 hours) because of the reduction in space required (600 row feet is required to plant 1200 plants 6" on center). No wildlife damage was experienced because plantings were in close proximity to the house and barn and two resident dogs.

No organic fertilizer was applied except to the transplants in the greenhouse prior to plantings in the field. Fertilizer applied in the greenhouse was Neptune's liquid analysis 2-3-1 fish and seaweed. It was applied at the rate of one quart per 50 gallons of water . This was applied for a six week period at a cost of $67.00 for the 5 gallons which was consumed during that period.

Organic germination –potting soil that was OMRI approved was used for seeding and transplanting. From the germination seed bed the seedlings were transplanted into 48 count seed flats. This required approximately 300 seed flats. The seedlings remained in these until they were transplanted in the high density beds.

Results (cont.)

Specific results for each herb follows. The information contained for 2003 is that from the high density production beds. Production records for other years are total harvest from the farm which was harvested from conventional row spacing (36" or 20") or harvested wild on the farm.

Calendula– high density is not recommended. Dry harvest for 2003 was 10 pounds, in 02 it was 36 pounds and in 04 it was 21 pounds (both 02 and 04 plantings were on 24 inch row spacing). It is felt that Calendula needs space for it to produce to its fullest potential.

Blue Vervain– high density is recommended. Dry harvest for 2003 was 9 pounds plus 60 pounds fresh. 2004 was 13 pounds dry plus 52 pounds fresh and 2002 was 5 pounds dry.

Mint– high density is recommended. Dry harvest for 2003 was 27 pounds and 2004 was 19 pounds (this reduction in 2004 was due to weather conditions and being unable to harvest at proper times). 2002 dry harvest was 8 pounds.

Nettle– high density is recommended but do not expect maximum production until the second or third year as nettle takes time to become established. Dry harvest for 2003 was 10 pounds, 2004 was 30 pounds. We expect higher production in 2005. We also feel that nettles benefit from high levels of organic matter being applied each fall.

Catnip– high density is recommended. Dry harvest for 2003 was 20 pounds dry and this is from two cuttings. Catnip is not a perennial and needs to be planted yearly if multiply cuttings are to be made as this stresses the plant.2004 production was 33 pounds and 2002 was 52 pounds.

Yarrow– high density is recommended. Dry harvest for 2003 was 15 pounds.2002 production was 45 pounds and 2004 production was 20 pounds

Results (cont)

Self Heal– high density is not recommended. Dry harvest for 2003 was 10 pounds.2002 was 13 pounds and 2004 was 20 pounds Self heal is a slow growing plant an weed competition was intense and it is much easier to manage in 24 inch row spacing and have better longevity. It is a low growing spreading plant making any type of cultivation difficult.

Anise Hyssop– high density is recommended. Dry harvest in 2003 was 12 pounds, 2004 was 7.5 pounds (this was from a tender perennial which sometimes doesn't over winter in our area).2002 production was 1 pound.

Lemon Balm– high density is recommended but not at the 1200 plant population per bed. We would suggest 600 plants per bed or 12 inch row spacing. Dry harvest for 2003 was 18 pounds plus 75 pounds fresh, 2004 was 15 pounds dry plus 47 pounds fresh.. This reduction was due to plants being to crowded which suppressed plant growth.. 2002 production was 12 pounds.

Skullcap– high density is recommended. Dry harvest was 15 pounds for 2003 plus 50 pounds fresh, 2004 was 8 pounds dry and 65 pounds fresh.. 2002 was 35 pounds.

St Johnswort– high density is not recommended. This is a tricky plant to grow with varied results from year to year. Our 2003 planting was a failure with about 50 plants surviving from the 1200 planted. I think part of it may be soil borne diseases but more so I believe that St Johnswort is a community plant and needs to be interspersed among the plant community in small groups if it is to grown without chemicals or soil treatments. More research needs to be done looking at possible bio-dynamic treatments to grow St Johnswort on a larger scale. 2002 production was 35 pounds fresh, 8 pounds dry.

Results (cont.)

Following is a five year average (1997– 2001) of production from the same herbs that were used in the high density production beds. This average is taken from total harvest on the farm including conventional row and wild harvest on farm..

Anise hyssop-7 pounds; blue vervain-9 pounds; catnip-43 pounds; calendula-14 pounds; mint-10 pounds; self heal-9 pounds; nettle-154 pounds; lemon balm-47 pounds; skullcap-32 pounds; St. Johnswort-32 pounds; yarrow-47 pounds.

This information does not gave a clear picture as to the potential of high density production because it is not comparing square foot production to square foot production. Previous production was not calculated on a square foot basis it was just taken as a total on farm production.

Economics

The data in the results will allow each individual grower to plug in a dollar figure as to what they are expecting to receive from a buyer and than decide whether it is economically feasibility to grow that crop or if they would be better growing another crop. For example: we sell our calendula for $36.00 per pound, so for 2004 we harvested 21 pounds @ $36.00 per pound = $756.00 from 300 sq. feet of space. A grower can now plug in the $ figure they are being offered and an expected yield and determine what they can most profitably grow.

Assessment

The project has allowed us to look at what crops are the most profitably and also allowed us to assess which ways are the best way to grow them. It has, at least to us, shown the need for additional research on the best and most feasibility way to grow St. Johnswort.

It was not a grant to look at marketing as we have an established market but needed to look at increasing our production.

A better line of communication needs to be established between the farmer and their view of what is expected an what is expected from the grant reviewers.

Outreach

January-2004, presenter at Cultivating and Marketing Wild Quality in Medicinal Plants, Philmont, New York. 55 attendees

February - 2004, presented at Pennsylvania Association for Sustainable Agriculture annual conference at State College, Pennsylvania. Approximately 1200 attendees. My class had 50-60 in attendance.

February-2004, presenter at New York State Direct Marketing Conference, Binghamton, New York .

August-2004, Andrea presented at the Women's Herbal Conference, Peterbourgh, New Hampshire. 500-600 attendees.

September-2004, poster board presenter at SARE Setting the Table Conference, Burlington ,Vermont.

November-2004, presentation in Chinatown , New York. 50 attendees.

January 20, 2005– presentation in Sante Fe, New Mexico to growers and health practitioners. The project will talked about.

February-2005,presenter at Pennsylvania Vegetable Growers annual meeting. Hershey, Pennsylvania.

June-2005, presenter International Herb Symposium, Wheaton College, Ma. 400-500 attendees.

There have numerous other impromptu gathering where various aspects of the project were discussed.

All of our presentations are given from the Native American traditions of an oral presentation with no handouts. A number of our presentations are audio taped and these are available to growers that wish such information. Most all of our presentations are accompanied with a slide presentations which most attendees appreciate more than handouts.

With this final report being completed there will be this available to growers wanting additional information or contact information, which is another valuable tool for education.

Adoption

We plan on incorporating the concepts and ideas we have learned from the project into our farm operation. The concept of high density production works well for the growing of a high value or niche market crop. With the concepts learned from this project we will look at the reminder of our medicinal herbs and see which ones can be adapted to this system..

Summary

The purpose of the project was to look at the feasibility of producing medicinal herbs using high density plantings (1200 plants per 300 sq. ft.).

Eleven beds, 36 inches wide and 100 feet long, with an 18 inch walkway between each bed were constructed. Transplants were planted on 6 inch centers, requiring 1200 plants per bed.

The eleven herbs chosen were: Calendula, Blue Vervain, Mint, Nettle, Self Heal, Ansie Hyssop, Lemon Balm, Skullcap, St. Johnswort, Catnip and Yarrow.

The results of the project were very informative and surprising to us, having grown herbs since 1991 it provided us with new ways to approach the production of medicinal herbs. By looking at high density for the production of our other medicinal herbs we can better utilize land resources, machinery and labor costs. It has also shown us that additional research is needed for small farm producers.

Green Blessing
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