

FEASIBILITY STUDY RESULT ON INTRODUCING MILK THISTLE (*SILYBUM MARIANUM L.*) IN MONGOLIA

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ABSTRACT

Milk thistle, Silybum marianum(L.) Gaertn., is grown throughout the world for its hepatoprotectant flavonolignans, known collectively as silymarin. Silymarin is found primarily in the seeds. Milk thistle was grown outdoor field for determination of plant growth, seed yield under various variants of row spacing (30x20, 40x20 and 50x20) and different sowing dates (May 20, May 30 and June 10). Plant height measured (ranging from 43.5-82.6cm) and yield (ranging from 5.24-70.31cg/ha) that there was a significant difference among different sowing dates and row spacing.

Keywords: Milk thistle, silybum marianum,

INTRODUCTION

The milk thistle is a thistle of the genus *Silybum* Adans., a flowering plant of the daisy family (Asteraceae). They are native to the Mediterranean regions of Europe, North Africa and the Middle East. Members of this genus grow as annual or biennial plants. The erect stem is tall, branched and furrowed but not spiny. The large, alternate leaves are waxy-lobed, toothed and thorny, as in other genera of thistle. The lower leaves are cauline (attached to the stem without petiole). The upper leaves have a clasping base. They have large, disc-shaped pink-to-purple, rarely white, solitary flowerheads at the end of the stem. The flowers consist of tubular florets. The phyllaries under the flowers occur in many rows, with the outer row with spine-tipped lobes and apical spines. The fruit is a black achene with a white pappus.

Milk thistle is a medicinal plant whose use has been documented since ancient times as a treatment for liver and bile-related diseases, as well as acute *Amanita* mushroom poisoning.

Current studies have explored milk thistle's use against various types of cancer, for cholesterol control, and for blood sugar control in those with type II. Many of these benefits are attributed to the phenolic content of the plant's leaves and seeds, which, like many secondary metabolites, are known to be affected by biotic and abiotic factors. The seeds contain a group of hepatoprotectant phenolic compounds known as flavonolignans. Flavonolignans are formed from a coupling of a flavonoid, taxifolin (dihydroquercetin), and a phenylpropanoid lignan component, coniferyl alcohol. The primary bioactive flavonolignans include silybin A, silybin B, isosilybin A, isosilybin B, silychristin, and silydianin. These compounds, along with taxifolin comprise the hepatoprotectant complex called silymarin. Since these valuable medicinal compounds are found primarily in the seeds, factors regulating seed production in milk thistle crops are important.

In our experiment, the first time, Milk thistle was grown in Mongolian environment condition for determination of plant growth,

THE OBJECTIVE

The objective of this experiment was to find out adequate row spacing and sowing date in Mongolian environmental condition. Outdoor experiment was conducted during the vegetation period of 2010-2011 at the Agro-

MATERIALS AND METHODS

Plants were sown in three different dates (20 and 30th of May and 10th of June) along with three alternative row spacing (30, 40 and 50cm) has been employed in order to determine the potential for cultivating milk thistle on Mongolian soil for the first time, using one seed source from Russia. The experiment was done with 3 replications which were arranged in 27 systematical complete blocks.

RESULTS

1. Milk thistle grew from seedling to maturity in 105-113 days in our experiment. The shortest growing duration recorded in variants of sow in 50x20 row spacing on 30th of May. It was 3-10day shorter than other variants.
2. The highest height(82,6cm) was obtained in the second planting date of 30th of May. Highest values were recorded in the second time of planting 30th of May with 50cm row

DISCUSSION

From this study it was concluded that increasing row spacing affected the plant growth and growing duration.

When the sowing date was postponed, longer duration of the vegetative growth was observed. This could be the result of the characteristics of climate in this particular year. According to our experiment the 30th of May, which is the most appropriate date to sow milk thistle, should be further approved.

Decreased yield and overall plant vigor occurred when milk thistle was grown in high

seed yield under various levels of population density stress and different sowing dates.

park of University of Mongolian Agriculture (Zaisan, Ulaanbaatar).

5 plants from each block were chosen at random to determine the parameters and at maturity the blooms were harvested, and growth data including blooms per plant, bloom diameter, days to maturity, stem height, leaf size and number, root depth, 1000 seed yield and weight were collected. Statistical analysis was performed.

spacing compared to the other variants. These traits including capitol diameter (3,9cm), number of capitols per plant (46), 1000 seed weight (30,6g), seed yield (70,41cg/ha) were recorded in 50cm row spacing on 30th of May.

3. When statistical analyses were calculated, the HCP_{05} was 9.48 cg/ha, significant difference between the variants.

density conditions. The decreased seed yields and numbers were consistent with lower bloom diameters and number of blooms per plant, as was previously described by Gabucci et al. (2002). However, these findings disagree with seed yields and flavonolignan effects reported by Omer et al. (1993).

Further research in Mongolia could include population density and field capacity effect in flavonolignan content.

SUMMARY

1. On the feed field 50x20cm with in 30 of May is a good sowing time and has been ripened early to 3-10 days than other trails
2. On the feed field 50x20cm more than 4-33 g leafs and 558-1506 g green matter comparative with other trails and its depend to leaf size and pieces and green matter
3. Seed yield is a important point of yield

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4. LSD₀₅ = 0.62 ton/ha seed yield is a significantly different between trails variants
5. In Mongolia feasibility sowing time of *Silybum marianum* L is a 30 of May and with 50x20 cm feed field
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