

Safflower System in the Mogami River Basin
(Mogami River Basin Region, Yamagata)

GIAHS Application



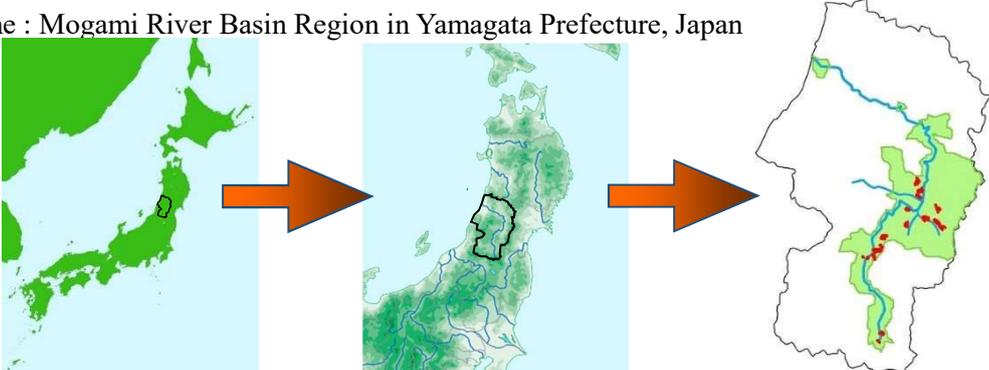
October 2021



Kimono dyed with safflower

Yamagata Safflower Promotion Organization

I. SUMMARY INFORMATION

<p>Name of the proposed GIAHS site</p> <p>Safflower System in the Mogami River Basin</p>
<p>Requesting Agency/Organization, and contact information</p> <p>Yamagata Safflower Promotion Organization Tel +81-23-630-2458 Members : Tourism-related organizations, Textile companies, Cooking schools, Government agencies and Safflower producers</p>
<p>Responsible Ministry and contact information</p> <p>Ministry of Agriculture, Forestry and Fishers of Japan Tel +81-3-6744-0250</p>
<p>Location of the Site</p> <ul style="list-style-type: none"> • Name : Mogami River Basin Region in Yamagata Prefecture, Japan  <ul style="list-style-type: none"> • Location : An area located in the northern part of mainland Japan facing the Sea of Japan • Geographic coordinates : Latitude:37°50' – 38°27'N , Longitude:140°02' – 140°26'E
<p>Accessibility of the site from major cities</p> <ul style="list-style-type: none"> • Tokyo Station⇒ 150 minutes (Rail)⇒ Yamagata Station • Tokyo International Airport⇒ 60 minutes(Air)⇒ Yamagata Airport
<p>Area of coverage of the GIAHS site and where necessary the buffer zone</p> <p>Total area of managed arable land in Mogami River Basin Region 1,375ha Buffer zone: Areas with records of safflower cultivation in the 17th and 18th centuries</p>
<p>Agro-ecological zone for agriculture, forestry, fisheries and aquaculture</p> <p>Steep terrain、 Humid, moderate soils、 Humid, poor soils</p>
<p>Topographic features</p> <p>Fertile fields in the Mogami River basin and mountains on both sides of the Mogami River</p>
<p>Climate type Koppen climate classification:Dfa Annual average temperature 12.7℃ Annual precipitation 1,243.5 mm The area has four distinct seasons, with heavy snow during winter.</p>
<p>Approximate population : Beneficiaries 617 farmers</p>
<p>Ethnicity/Indigenous population : N/A</p>
<p>Main source of livelihoods : Agriculture, Food Manufacturing, Tourism,</p>

II. EXECUTIVE SUMMARY

The Mogami River Basin is unique throughout the world for the way that small-scale farmers have for centuries leveraged the local topography and climatic conditions to cultivate safflower alongside various other crops, harvesting the petals to produce the raw material for a traditional red dye long used in Japan.

This safflower system depends on the practice of crop rotation and other traditional mixed land use techniques that take advantage of abundant snowmelt from the mountains surrounding the Mogami River and its tributaries, and of features of the terrain between the mountains and rivers. The main features of land use are: (1) use of sloping mountainside terrain for cultivating safflower and a diversity of other crops that can be grown using just snowmelt and natural precipitation, and use of flat land with abundant water supply to cultivate paddy rice, a core staple; (2) crop rotation and other land use techniques aimed at maintaining soil health and reducing risks to farming income; and (3) double cropping of safflower with other crops to make maximum use of the eight months in each year when cultivating crops is possible in this region of heavy snow.

In other parts of the world, safflower is grown almost entirely for oil extraction, but in the Mogami River Basin, it has been cultivated for 450 years as the raw material for a traditional red dye. Safflower originated in the Middle East, and after first spreading eastward via the Silk Road, came to be cultivated in various regions throughout the world, but the Mogami River Basin is now the only location worldwide where its cultivation for dye production continues to exist as an agricultural system.

Based on the land use described above, safflower cultivation in the Mogami River Basin makes use of the basin's fertile soil and favorable climatic conditions, including abundant summer sunlight and river mist around the harvest season. Proper management of the safflower fields and surrounding terrain provides habitat for rare plant species, and the safflower fields themselves are a valuable summer source of nectar for flower-visiting insects. Underpinned by the interwoven dynamics of these various elements, the resilient land use in this site creates a patchwork landscape unique to this region.

Safflower farmers themselves process their crop of safflower petals to produce benimochi (flat, disks of safflower containing red dye) as a dyestuff. They still use much the same unique methods as those depicted in mid-19th century folding screen paintings, including a process for oxidizing the petals to increase the red pigment content.

Red safflower dye, in the form of benimochi, was transported down the Mogami River for shipping via the Japan Sea to Kyoto, the center of Japanese culture, where it was sold for "ten times the price of gold, one hundred times the price of rice." Used to provide the red dye for rituals and for the creation of traditional Japanese costumes, benimochi has long been a part of Japan's cultural heritage. The trade with Kyoto introduced cultural elements that continue to enrich everyday life in the Mogami River Basin to this day. Strenuous efforts are being made to preserve the safflower system by teaching students at local elementary and junior high schools about safflower history and culture, and holding hands-on cultivation workshops and other events aimed at ensuring that knowledge and skills are passed on to future generations.

Japan designated Safflower System in the Mogami River Basin as Nationally Important Agricultural Heritage Systems (J-NIAHS) in 2019. Applying for GIAHS status has made residents even more aware of the importance of the safflower system as a heritage that should be preserved, and the number of safflower producers is steadily increasing. Our action plan proposes expanding the safflower cultivation area in conjunction with GIAHS designation to further ensure preservation of the safflower system. We take pride in the value of our safflower system as the only example worldwide of safflower cultivation for the purpose of producing red dye, and we will do our utmost to preserve the system and leverage it to benefit the local community.

Safflower System in the Mogami River Basin

Safflower system in the Mogami River Basin is unique throughout the world for the way that small-scale farmers have for centuries leveraged the local topography and climatic conditions to cultivate safflower alongside various other crops, harvesting the petals to produce the raw material for a traditional red dye long used in Japan.

Resilient Land Use

Spring-Summer Vegetables



Cabbage, Green soybean

Crop rotation

Spring-Summer Safflower



Double cropping

Agricultural diversity using natural recovery capacity

Fostering a food culture unique to the region

Summer-Autumn Vegetables



Mustard green, Buckwheat

Winter Snow



Mogami River Basin Ecosystem Functions

A source of nectar for pollinators (Japanese honeybee etc.)



Spring Snow melt

Summer River mist

Safflower spines softened by the river mist



Safflower fields



Mogami River

Rice fields



'Benimochi' for red dye



Kimono dyed with safflower

Traditional Techniques for Producing Dyestuffs