

TYPHA FACTSHEET

*Cultivation, management &
opportunities in peatlands*



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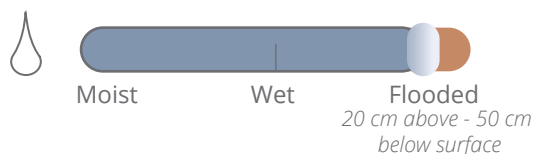
Guillaume Mesnildrey Chamber of Agriculture of Normandy

FAVOURABLE ENVIRONMENTAL CONDITIONS & STATE OF THE MARKET

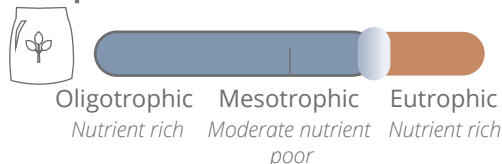


ENVIRONMENTAL CONDITIONS

• Water regime



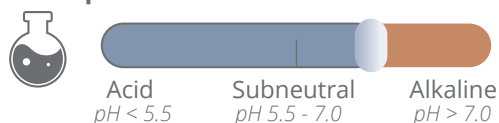
• Trophic conditions



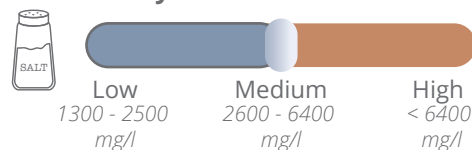
• Light conditions



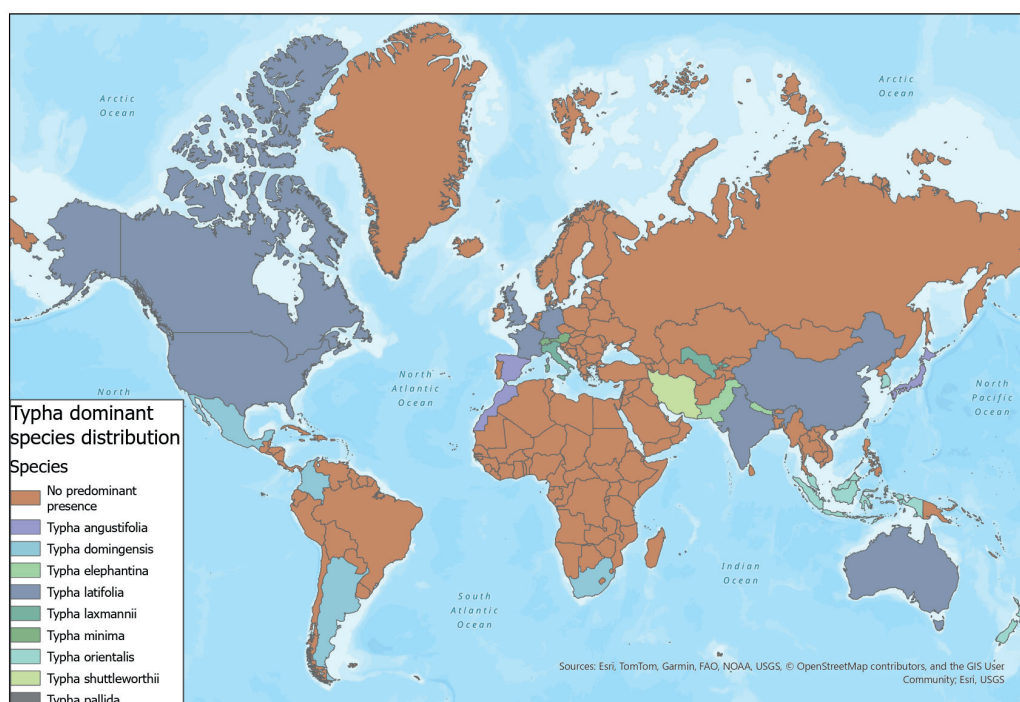
• Soil pH



• Soil salinity tolerance



CLIMATE COMPATIBILITY



STATE OF THE MARKET

Typha is a cosmopolitan, native to Europe, North America and Asia, and present across Africa and other tropical regions; it occurs on all continents except Antarctica. It is not a standard field crop, so there is no single global production table like maize or wheat. Instead, it is grown or tested in specific countries for biomass, building material, paper, packaging, and wetland management.

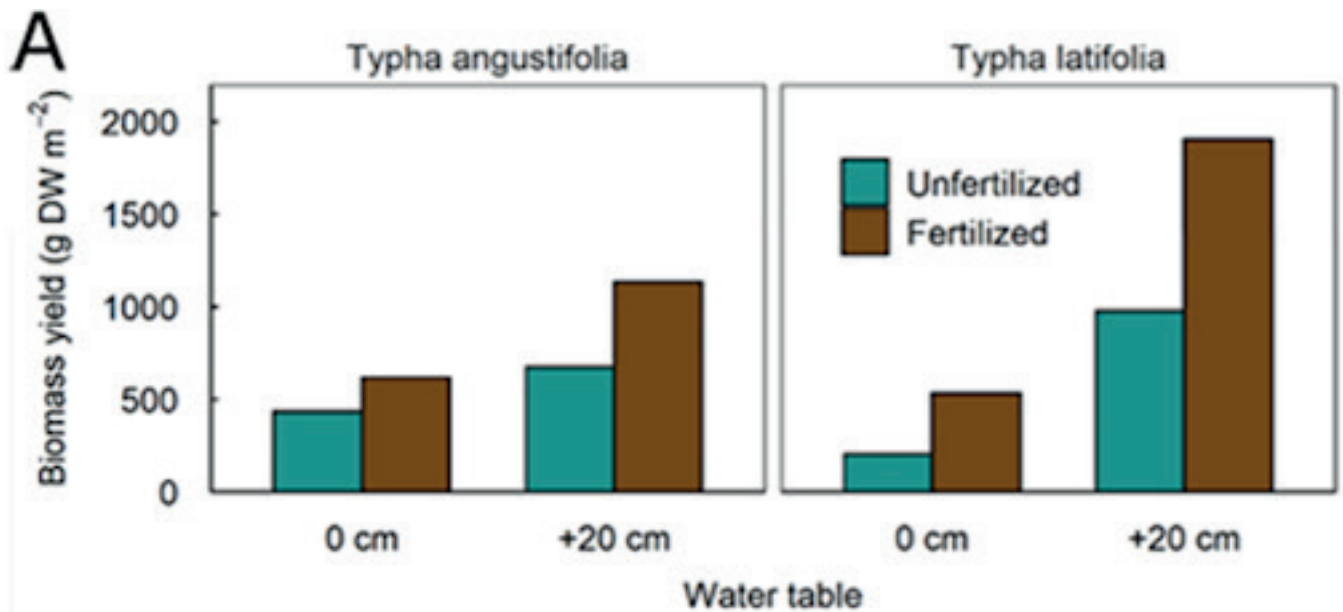
We can identify three patterns of production:

1. Dedicated paludiculture cultivation on rewetted peatlands, mainly in Europe
2. Utilization of invasive stands, especially in Nigeria and North America,
3. Emerging interest in production in other regions.

PRODUCTIVITY



Cattail is a plant with extremely **high biomass productivity** potential. Full yield can only be reached **2 to 3 years** after establishment. Under optimal conditions, a harvest can yield up to **30 tonnes** of dry matter per hectare. However, in most cases, this production potential will be limited by nutrient availability, less than optimal water level conditions or the maturity of the plant. It is also affected by the harvest period which is dependent on the privileged cattail uses and ability to control water levels. Thus, depending on the context, productivity is averaging between **6 and 18tDM/ha**.



Vroom et al. (2024)

The specific case of seed-heads production

For certain high value cattail outlets, focusing on the production of seed-heads is important. An ADAS British experiment reveals the following performances:

- An average of 40 seed-heads per square meter (independent of the plant density).
- A seed head side that range between 80 cm² for low plant density (30plants/m²) and 65m² for higher density (100plants/m²).

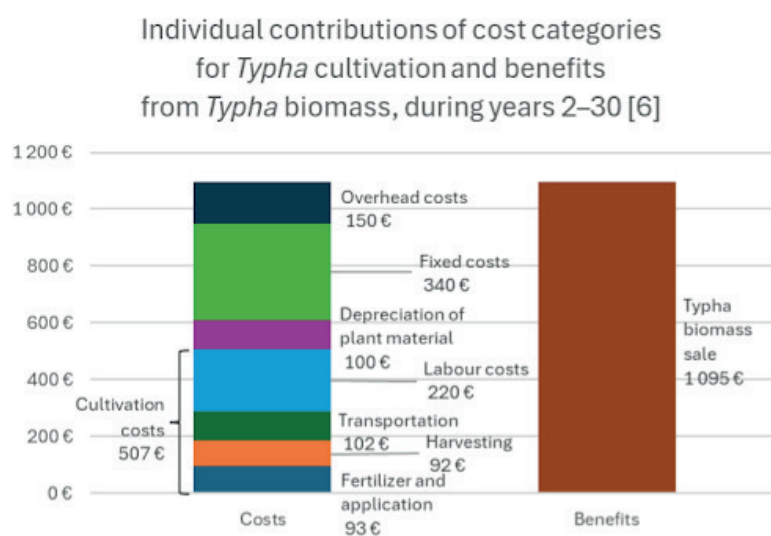
ECONOMIC CASE & IMPACT ON ENVIRONMENT



ECONOMIC CASE

Cattail biomass as insulation material in The Netherlands (2020)

In the hypothesis of a valorisation price of 150 €/tDM of cattail biomass with a conservative yield of 7,3 tDM/ha, the margin is quite positive. But if we factor in the depreciation of the investment, that margin becomes rapidly zero. In fact, the investment and cultivation costs is high and make the business model not very competitive. This highlights the current reliance of this business model on external financing solutions to fund the water restoration works (such as carbon credits, public subsidies...). blueberry farms generate satisfactory gross margins.



Overhead costs: administrative and office costs

Fixed costs: machinery costs and depreciation of buildings and machines

IMPACT ON ENVIRONMENT

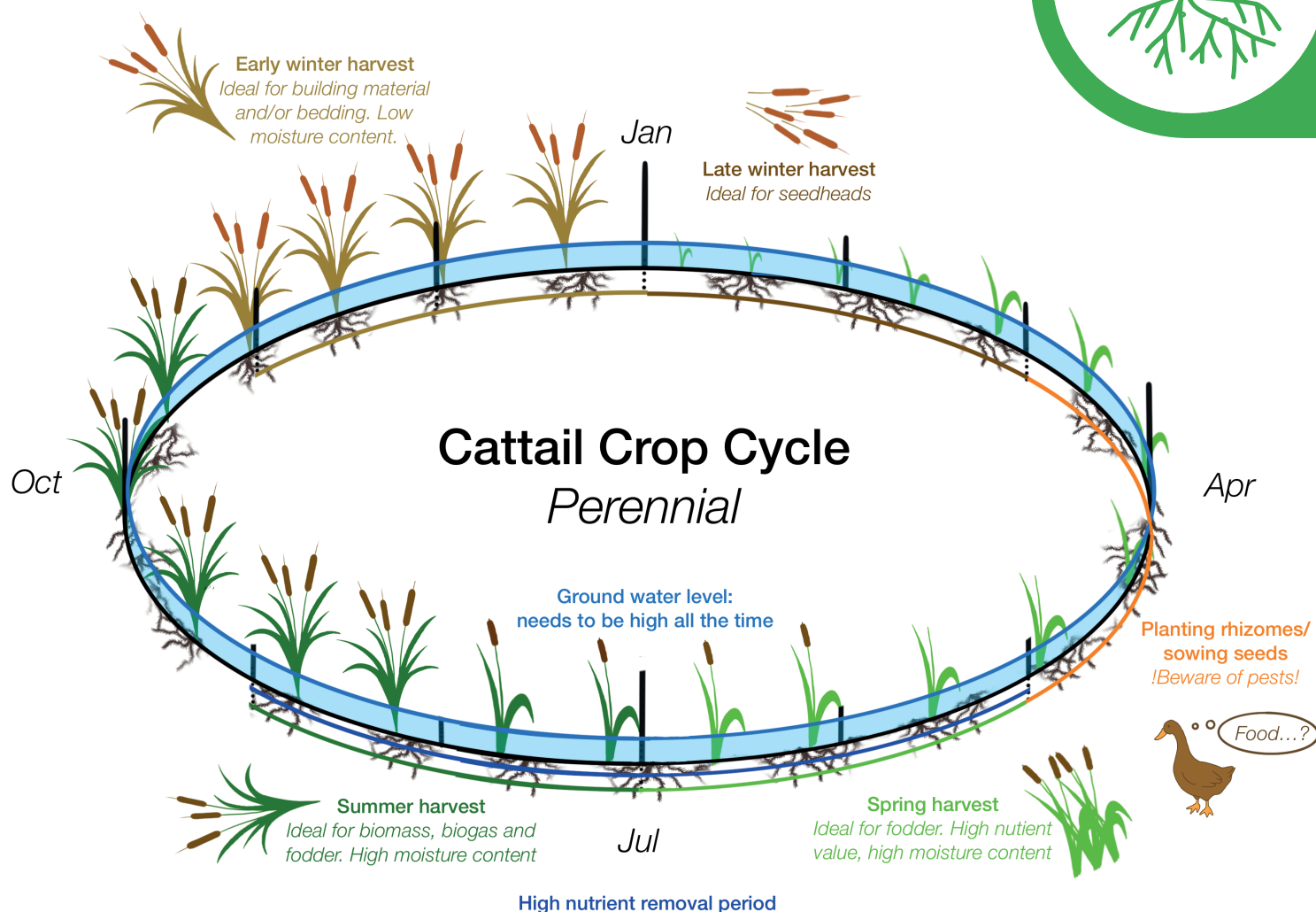
Cultivating Cattail on rewetted peatlands has lower climate and environmental footprint than keeping peatlands drained for conventional agriculture, improving water quality and nutrient retention:

- **Climate:** significant greenhouse gases reduction versus drained peat agriculture (10-20 t CO₂-eq ha⁻¹ yr⁻¹ less, depending on site and reference system). When biomass is harvested, it does not decompose and limits CH₄ and N₂O emissions. A Dutch analysis found that changing to *Typha* paludiculture reduced global warming impact by about 32% compared with dairy production on the same peatland.
- **Water and nutrients:** water-purification service to reduce pollution moving downstream thanks to strong nutrient removal (especially for phosphorus). *Typha* can thrive in nutrient poor environments but commercial cultivation in wetlands may require fertilization to significantly boost biomass and crop yields. As part of a restoration effort, fertilizer use must be managed carefully to avoid further nutrient pollutions.
- **Biodiversity:** positive on degraded drained peatlands (new wetland habitat), but potentially negative where *Typha* becomes invasive and displaces native communities in natural wetlands.
- **Products:** *Typha*-based insulation boards fit into low-impact bio-insulation category with lower embodied energy and emissions than mineral wool or EPS.

CROP CYCLE & HARVESTING



CROP CYCLE



WINTER HARVEST

Winter harvesting is the preferred method for producing insulation materials, construction fibres and bio-based products. The dry stems are cut above the water level to protect rhizomes and ensure regrowth the following year. Frozen ground improves accessibility and reduces soil damage.

Equipment

- Wetland harvester or tracked harvesting machine
- Balloon-tyred or low-ground-pressure vehicles
- Reaper-binder or mower
- Bale collection and transport equipment

SUMMER HARVEST

Summer harvesting produces green biomass suitable for fodder, biogas production and nutrient removal. Biomass contains higher moisture and nutrient levels than winter-harvested materials. In productive systems, one or two harvests per year may be possible.

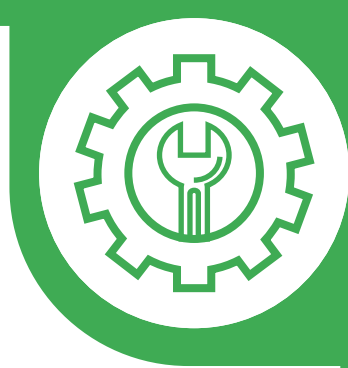
Equipment:

- Reaper-binder
- Crane-mounted mower
- Forage harvester or shredder
- Silage and storage equipment

LABOUR AND MANAGEMENT

Small pilot sites can be planted and harvested manually and commercial-scale production relies on specialised wetland machinery. Harvesting must take place above the water level; cutting below the water can damage rhizomes and reduce future yields.

TECHNICAL ITINERARY



NUTRIENTS

Typha is a nutrient-demanding crop and achieves its highest yields on nutrient-rich soils and in nutrient-rich water. Nitrogen is usually the main limiting nutrient. Typha can absorb large amounts of nutrients from water and soil, making it suitable for water purification and nutrient removal. Additional fertilisation is often unnecessary on fertile peat soils. .

WATER LEVELS

Typha thrives in permanently wet conditions. During establishment of the young plant, water levels should be kept at or slightly above the soil surface. Young plants perform best with shallow flooding of 0-20 cm above soil surface. Once established, water levels of +5-30 cm above the soil surface support optimum growth. Short drought periods can be tolerated, but prolonged drying reduces productivity.

DEVELOPMENT TIMELINE

- **Year 1:** Establishment and rapid shoot expansion. Small harvests may be possible.
- **Year 2-3:** Dense stands develop and commercial yields are reached
- **Long term:** Typha is a perennial crop. Rhizomes remain in the soil after harvest and produce new shoots every spring without replanting.

GROWING & PLANTING

From Seed

Typha can be established from seed, but germination requires stable waterlogged conditions with water levels around 0-5 cm above the soil surface. Seedlings are sensitive to drought and competition from weeds.

Planting

The most reliable establishment method is planting young plants or rhizomes in spring. Water levels should remain waterlogged or shallowly flooded during the first growing season to ensure rapid establishment.



COST OF SITE PREPARATION AND PLANT ESTABLISHMENT

The establishment cost can be very variable depending on the project site, environmental and productivity targets:

- **No to low costs:** on wet site with spontaneous development of cattail.
- **Intermediate cost (€ 3,000-€ 5,000 per ha):** if soil preparation and hydrological interventions are minimal (only soil milling, blocking ditches and adjusted weirs) with low plant densities (maximum 1 plant per m²).
- **High cost (€8,000-€ 34.000 per ha):** if significant hydrological works are conducted (excavating basins, building dikes, uses of pumps or irrigation pipes) with higher plant density.

Overall, site preparation is often the largest one-off costs and vary massively by site hydrology and planned infrastructure. Economy of scale can be quite important for the hydrological works. It will also provide larger volumes that can positively influence the prices and market opportunities.

POINTS OF VIGILANCE



WEED

Critical stage during and after the implementation and establishment phase. *Higher water levels effectively combat weeds.*

GRAZING

Geeze and other water birds can feed on cattail, especially at the establishment stage. *Lower water levels limit the capacity of the water bird to feed on cattail.*

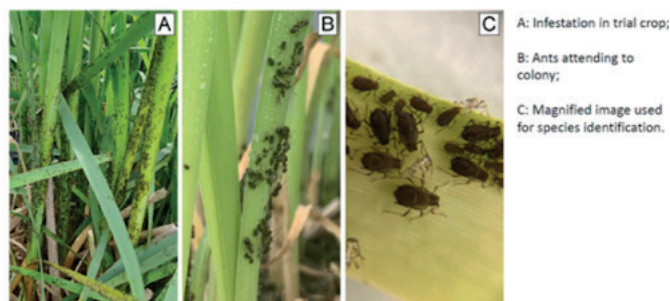
INSECTS

With normal pest population, impact on biomass yields is limited. Occasional infestations can cause significant damages. The potential for damage is correlated with higher levels of nutrient.

In the case of seed-head valorisation, phytophagous insects can significantly affect the quantity and quality of the seed-heads (fibre protrusion and longitudinal splitting or abortion).

Some identified insect pests are as follows:

- **Bulrush aphid (*Schizaphis scirpi*):**



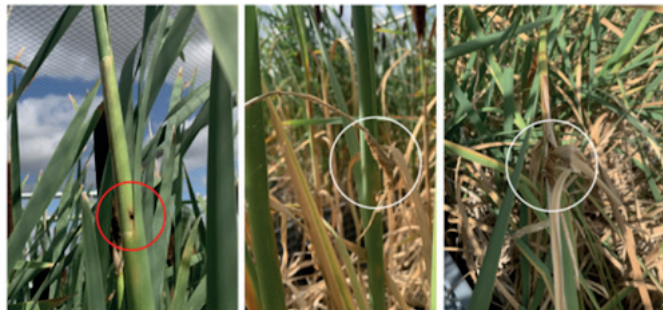
- **Bulrush cosmet moth (*Limnaecia phragmitella*):**



- **Bulrush wainscot (*Nonagria typhae*)**



- **Other moth larvae.**



Sources: [UK Moths](#), [Yorkshire Moths & Lepidoptera](#)

Observation during critical phases of the cattail cycle (like head formation) allow threshold-based interventions for pest controls. Control measures include biocontrol when possible and the removing of infested seed-heads.

Source of all the pictures in this part: I. Abdel-Aziz, 2025. Unlocking Typha: How to boost fibre production Typha latifolia Knowledge Exchange.

COMPATIBILITY WITH POLICIES



REGULATORY REQUIREMENTS

The cultivation of cattail on peatlands in the **European Union** must respect the “Good Agricultural and Environmental Condition 2” standard of the CAP. This means no deep ploughing, filling or depositing and no new drainage in peatlands.

Specific **national or local** regulations must also be considered. Wetlands could have different levels of protection regulating or banning agricultural practices. Authorization from the relevant local authorities (prefecture, water boards...) is often required, sometimes involving an Environmental Impact Assessment.

FINANCIAL INCENTIVES

Country	Subsidy scheme	Aid type
Germany	Eco-scheme (EL-0101 on climate and specifically EL-0101-03 on peatlands)	Depend on the lander
Germany	VIP – Vorpommern Initiative Paludikultur (Paludiculture incentives in the Western Pomerania region)	70-150 EUR/ha/yr
Germany	Fen Peatland Biomass (incentive to utilization of biomass from re-wetted peatlands in Lower Saxony)	60-250 EUR/ha/yr
The Netherlands	Agrarisch Natuur- en Landschapsbeheer (ANLb). (Wet management, biodiversity, water level)	300-1200 EUR/ha/yr
The Netherlands	GLB – basic payment (income support, only if parcel remains eligible agricultural land)	60-200 EUR/ha/yr
The Netherlands	GLB eco-scheme (climate, biodiversity actions)	60-200 EUR/ha/yr

Interreg



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