

BLUEBERRY FACTSHEET

*Cultivation, management &
opportunities in peatlands*



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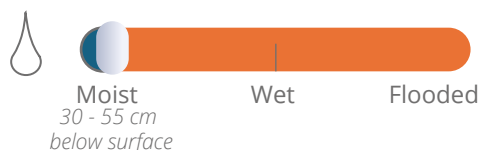
Freya Connolly The Rivers Trust

FAVOURABLE ENVIRONMENTAL CONDITIONS & STATE OF THE MARKET

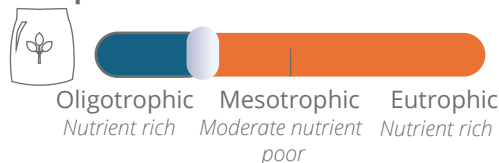


ENVIRONMENTAL CONDITIONS

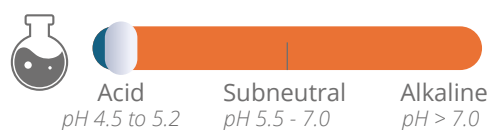
Water regime



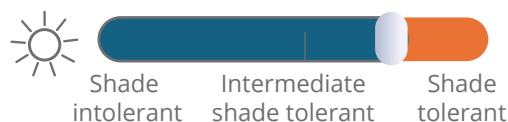
Trophic conditions



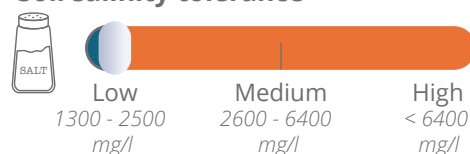
Soil pH



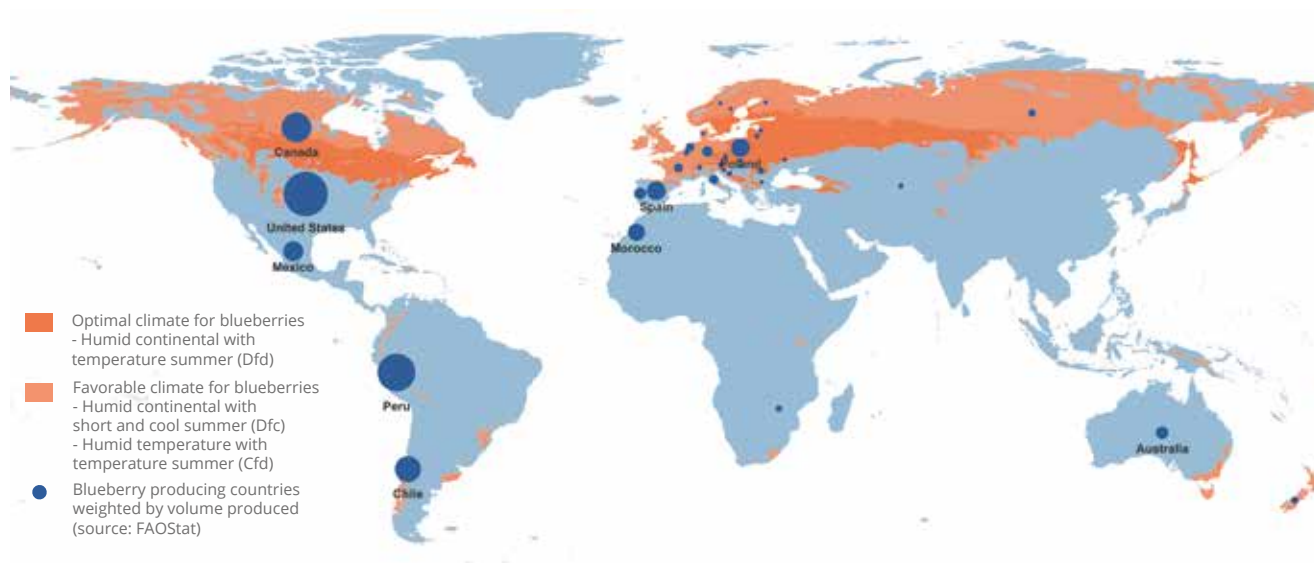
Light conditions



Soil salinity tolerance

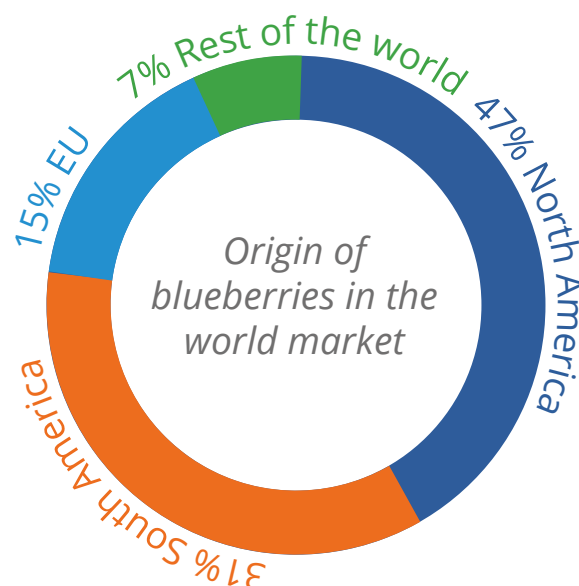


CLIMATE COMPATIBILITY



STATE OF THE MARKET

Global blueberry production increased by a factor of 3.59 between 2010 and 2024.. Peru's production has seen the sharpest rise, making it the world's second-largest producer behind the United States. This trend follows the development of **lower-latitude producers** such as Spain, Mexico, Peru, and Chile, which have established themselves as major players alongside the traditional blueberry-producing regions of northern North America, particularly by supplying **early-season and off-season fruit**.



PRODUCTIVITY



Experience in the **Baltic States** has shown that peat soils can support strong blueberry growth and high yields. In Latvia, approximately one-third of the total area under blueberry cultivation is located on cutover peatlands with bare peat. Several blueberry species are well suited to cultivation on peatlands, including:

- **Highbush blueberry (*Vaccinium corymbosum*)**: white-fleshed big fruit cultivated at large scale worldwide; native to North America.
 - The main cultivated species comprises a wide range of cultivars adapted to different climatic conditions. Cultivars developed for warmer regions have reduced chilling requirements, allowing longer growing periods and potentially higher yields while reducing the risk of frost damage.
 - Early and late maturing varieties enable farmers to take advantage of better seasonal market prices without sacrificing potential yield.
- **Lowbush blueberry (*Vaccinium angustifolium*)**: white-fleshed mid-sized fruit. Traditionally harvested from the wild, but also domesticated in North America and Northern Europe.
 - Typically produces a commercial harvest every other year (biennial production cycle).
- **Half-highbush blueberry (*Vaccinium corymbosum* x *Vaccinium angustifolium*)**: an interspecific hybrid of lowbush and highbush.
 - Combines the cold hardiness of lowbush blueberries with the larger fruit size and productivity of highbush varieties.
- **Bilberry (*Vaccinium myrtillus*)**: red-fleshed small fruit native to Europe.
 - Not yet domesticated but it could be possible.
 - Decades to reach the maturity required for full berry production potential, hurting business viability.
 - High yield variability linked to weather conditions (cold winter, lack of snow, spring frost, summer drought).

CROPS	SYSTEM	REFERENCE	PRODUCTIVITY
 Highbush blueberry <i>Vaccinium corymbosum</i>	Intensive cultivation (tunnels sometimes with no or artificial soil)	Average in Spain and Peru (FAOStats)	12,6 t/ha
 Half highbush blueberry Hybrid of <i>Vaccinium corymbosum</i> x <i>angustifolium</i>	Open field cultivation	Experiment in Poland (<i>W. Wroblewska, J. Pawlak and D. Paszko, 2024</i>)	9,2 t/ha (average maturing) 7.5 t/ha (early and late fruiting)
 Lowbush blueberry <i>Vaccinium angustifolium</i>	Cultivation on cutover peatlands with foliar fertilization	Experiment in Latvia (<i>A. Karlsons & A. Osvald, 2019</i>)	5,0 to 7,1 t/ha
 Bilberry <i>Vaccinium myrtillus</i>	Semi natural cultivation	Average in Canada (FAOStats)	3,7 t/ha
	Potential if domesticated	Hypothesis in Europe (<i>R. Nestby, D. Percival & AL., 2011</i>)	0.1 to 2.4 t/ha
	Traditional wild gathering	Examples from Russia (<i>Abel, S. & Kallweit, T., 2022</i>)	2.5 to 5.5 t/ha

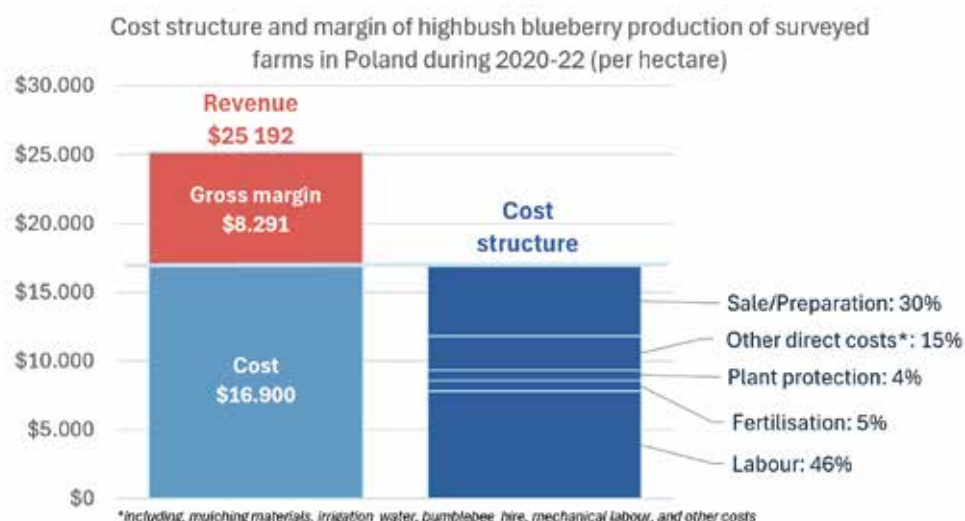
ECONOMIC CASE & IMPACT ON ENVIRONMENT



ECONOMIC CASE

Highbush blueberry farms in Poland (2020-22)

For blueberries, the main cost remains the work force with some high seasonal needs. For blueberries destined to the fresh market, labour-intensive hand-picking is needed to harvest fruits without damage. Other orchard maintenance tasks, such as pruning are also carried out by hand and therefore labour-intensive. Even with this high workforce need, most blueberry farms generate satisfactory gross margins.



IMPACT ON ENVIRONMENT

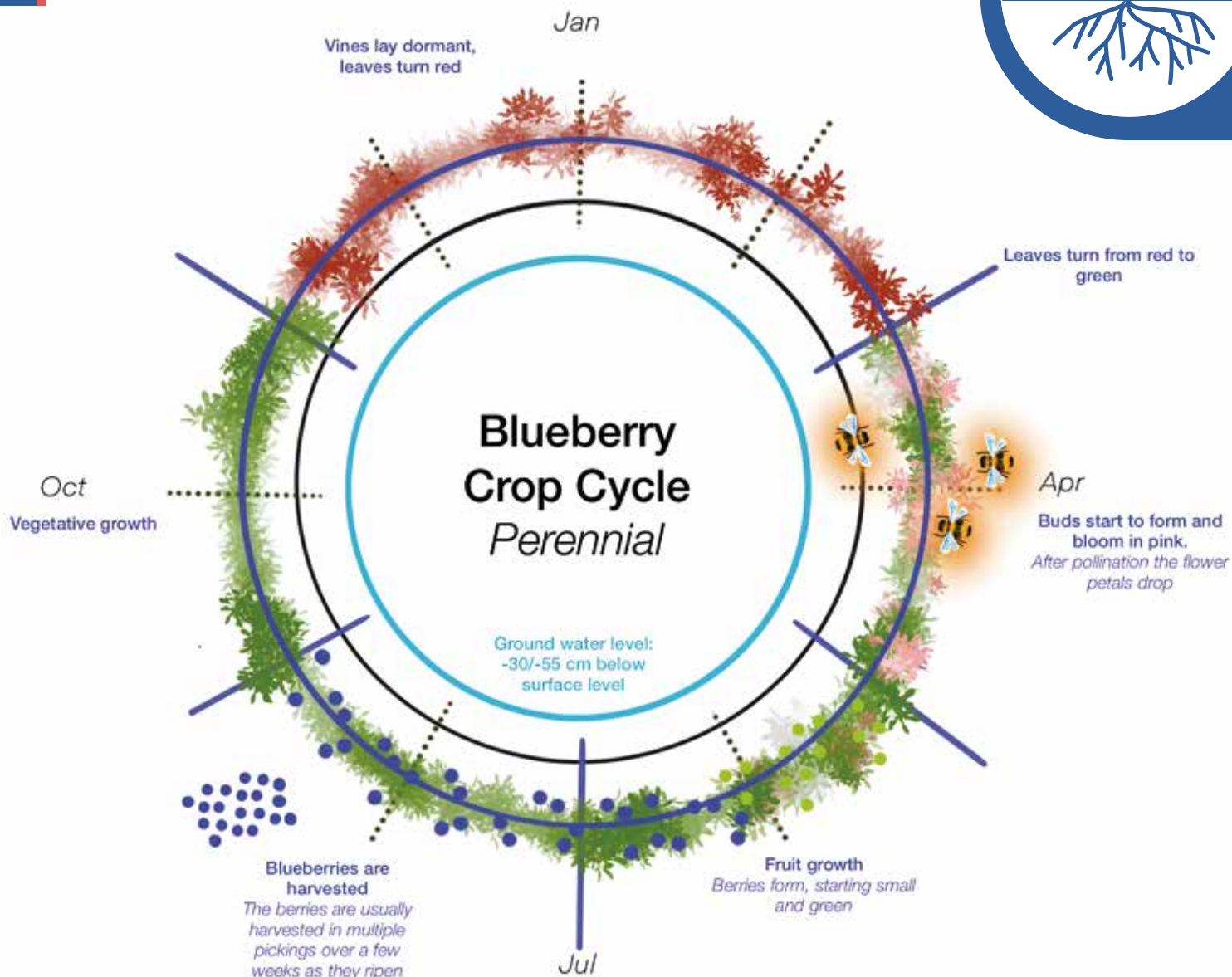
Blueberries represent a promising high-value crop for peatland agriculture. However, the environmental sustainability of their cultivation is strongly influenced by water table management and input intensity. Although drainage can enhance root aeration and reduce disease incidence, it can also increase peat oxidation and associated carbon losses. Consequently, sustainable production should maintain a sufficiently high water table to conserve peat, while preventing prolonged waterlogging that may adversely affect crop performance and yield.

Aspect	Potential Benefits	Key Risks
Climate	Suitable for acidic peat soils; if no further drainage, can reduce carbon losses	Drainage can increase peat oxidation causing CO ₂ emissions, and subsidence
Biodiversity	Flowers provide forage for bees and other pollinators, some research suggest older plantations benefit flora and fauna biodiversity	Monocultures may reduce habitat diversity; risk of spread into natural peatland areas and competition with wild bilberry
Agrochemicals	Relatively low fertiliser requirements	Fungicides and fertilisers may affect pollinators, aquatic species, and peat soil health
Water Quality	Low nutrient demand compared with many crops	Nutrient and pesticide runoff can impact nearby drains, streams, and wetlands

CROP CYCLE & HARVESTING



CROP CYCLE



LABOUR AND MANAGEMENT

Fresh-market production requires significant manual labour during harvest. Processing production relies largely on mechanical harvesting. Multiple harvest rounds may be required due to irregularities in ripening and seasonality.

MANUEL HARVEST

Hand picking is mainly used for fresh-market blueberries. This method minimizes damage to the berries and provides the highest fruit quality.

Equipment

- Harvest buckets or collection trays
- Hand tools for pruning and maintenance
- Sorting and packing equipment

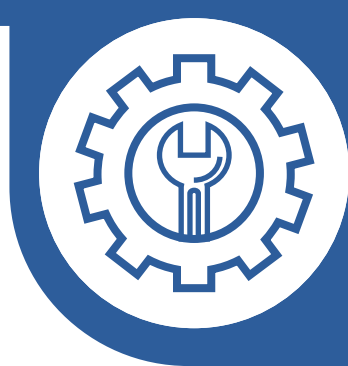
MECHANICAL HARVEST

Mechanical harvesting is commonly used for processing blueberries destined for juice, jams, frozen products and food ingredients. Mechanical harvesters shake berries loose and collect them efficiently.

Equipment:

- Over-the-row blueberry harvester
- Catching plates and collection conveyors
- Sorting and cleaning equipment
- Transport bins and storage containers

TECHNICAL ITINERARY



NUTRIENTS

Blueberries grow best in acidic soils (pH 4.0–5.5) with moderate nutrient availability. Excessive fertilisation can reduce plant health and fruit quality. Nitrogen is the most important nutrient and is usually applied in spring and early summer to support shoot growth and berry production. Organic matter contributes to moisture retention and long-term nutrient supply.

WATER LEVELS

Blueberries prefer moist but well-drained soils. During establishment, soil should remain consistently moist to support root development.

Mature plants are sensitive to drought, especially during flowering and fruit development.

Waterlogging should be avoided, although some varieties can tolerate temporarily high groundwater levels. Irrigation is often required during dry periods.

GROWING & PLANTING

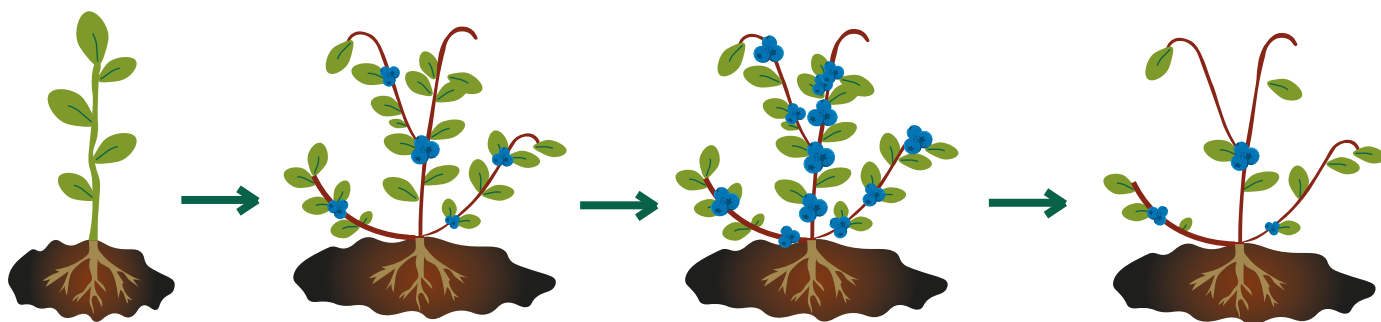
From Seed

Blueberries can be grown from seed, but germination is slow and plant characteristics may vary. Seed propagation is mainly used for breeding rather than commercial production.

Planting

Commercial plantations are usually established using nursery-grown plants. Spring is generally the preferred planting period, although autumn planting is possible in mild climates. Plants require acidic soils and benefit from mulching to conserve moisture and suppress weeds.

BLUEBERRY GROWING



Years 1–2: Root establishment and vegetative growth.

Year 3: First commercial harvests become possible.

Years 5–7: Plants reach their full production potential.

Years 20–40: Blueberries are perennial shrubs and can remain productive for 20–40 years with proper management

POINTS OF VIGILANCE



ENVIRONMENTAL & AGRONOMIC RISKS

- Due to their shallow roots, blueberries are susceptible to **weed competition**. While acidic peat soils may limit weed growth, localised fertiliser can create favourable conditions for weeds [2].
- A major concern in NWE, **spring frosts** often occur during the most vulnerable growth stage (bud break to bloom). Frost damage is visible as browning or blackening of flower centres and can increase susceptibility to pathogens.
- **Drought stress** may become more frequent as climate change increases the duration of dry periods. Blueberries are particularly vulnerable due to their shallow root systems, resulting in wilting, reduced growth, leaf scorch, and smaller berries.
- Acidic peat soils support blueberry growth but may also favour some fungal pathogens.
- Sphagnum and other organic substrates can improve aeration, although compaction and waterlogging may increase root disease risk.

PESTS

A range of pests can affect blueberry production, including thrips, aphids, beetles, caterpillars, leaf miners, and birds. Birds are often the most significant pest, causing direct fruit losses. Netting is the most reliable control measure, while acoustic deterrents such as ultrasonic devices or bird-of-prey calls generally have limited effectiveness [2].

KEY PEST RISK: SPOTTED WING DROSOPHILA (DROSOPHILA SUZUKII)

The most significant fruit pest of blueberries in Europe. Unlike many fruit flies, SWD lays eggs in ripening fruit, leading to substantial yield and quality losses. The pest thrives in cool, humid conditions and may be favoured by the sheltered, moist microclimate often associated with peat-based production systems.

Symptoms:

- Egg laying and larval development in ripening fruit.
- Fruit softening and collapse.
- Significant yield and quality losses.

Management:

- Monitoring: Early-season baited traps to detect pest presence.
- Cultural control: Frequent harvesting and removal of overripe or fallen fruit, which act as breeding sites.
- Physical control: Netting may help reduce pest entry but can increase humidity, potentially creating favourable conditions for SWD.
- Chemical control: Targeted insecticide applications where monitoring indicates a significant infestation risk.
- sourcing healthy plants with good traceability.



POINTS OF VIGILANCE



DISEASES



Phytophthora root rot (highest concern)



Botrytis (grey mould), particularly where humidity is high and airflow is poor



Stem cankers and dieback diseases (Botryosphaeria, Phomopsis, Godronia)



Mummy berry (Monilinia vaccinii-corymbosi)

KEY DISEASE RISK: PHYTOPHTHORA ROOT ROT

Major global disease, thrives in wet, poorly aerated soils. Strongly linked to water table management (too high = very high risk).

Symptoms:

- Root decay, stunted growth
- Leaf yellowing/reddening and dieback
- Can kill entire plantings

Management:

- Monitoring- Poor growth in wet spots or yellowing leaves are indicators of root rot.
- Cultural control- **Ensure drainage/ aeration using a raised bed system.** Start with the sourcing healthy plants with good traceability.



Healthy roots



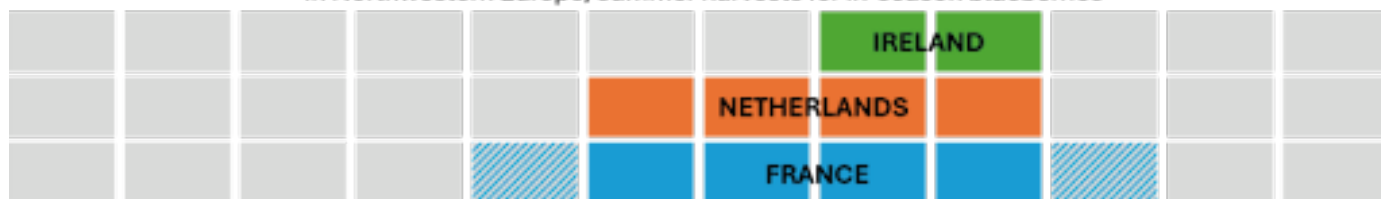
Damaged roots



Three blueberry products are shown: a bag, a carton, and a box, all featuring a blueberry logo. The bag is a simple blue shape with a white circle containing a blueberry. The carton is a blue rectangular box with a white circle containing a blueberry. The box is a blue rectangular box with a white circle containing a blueberry.

A SEASONAL AND GLOBALIZED MARKET

The **wholesale prices** observed show a premium for berries sourced from domestic markets rather than imported ones. Thus, berries purchased out of season may, ironically, be less expensive than in-season berries.



A 3x10 grid representing a simplified map of the Iberian Peninsula. The grid is color-coded: teal for Portugal, yellow for Spain, and red for Morocco. Diagonal hatching is used for coastal areas. The word 'PORTUGAL' is written in the teal area, 'SPAIN' in the yellow area, and 'MOROCCO' in the red area.

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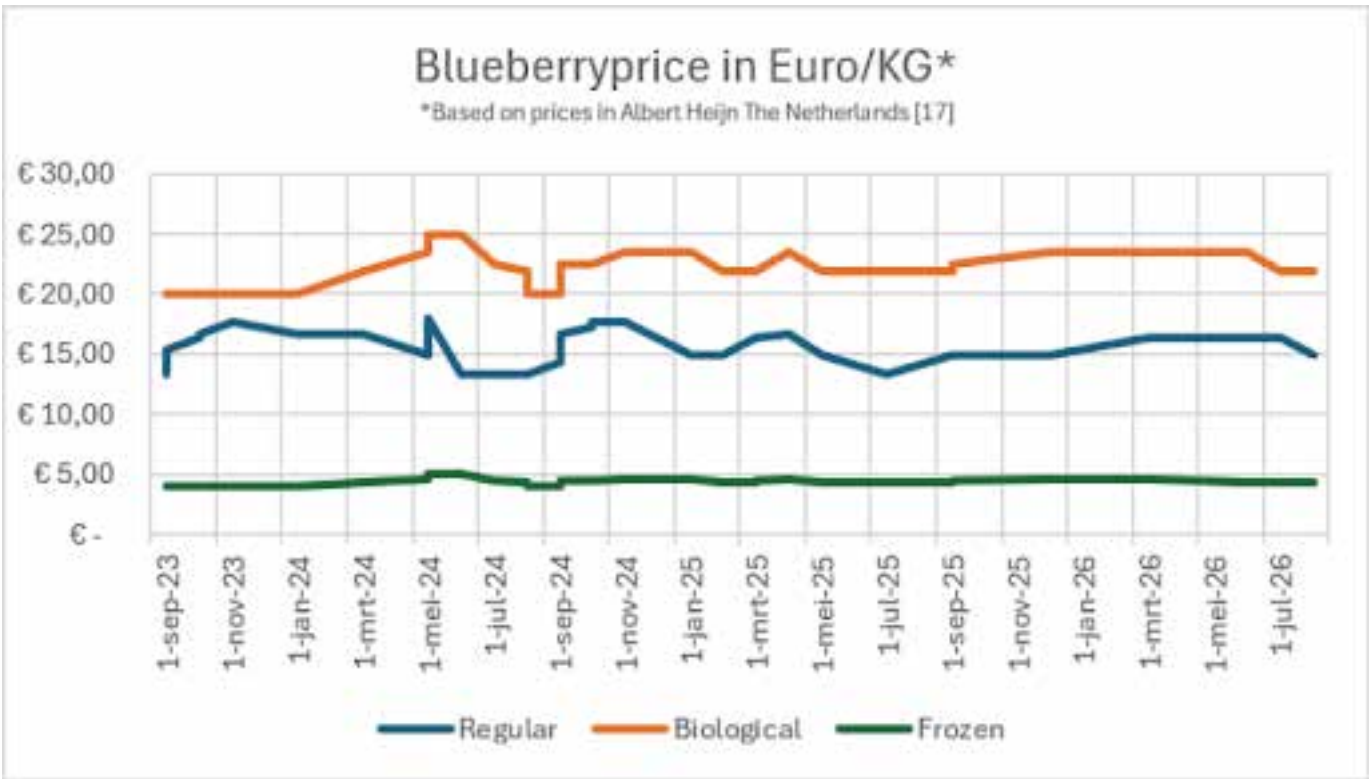
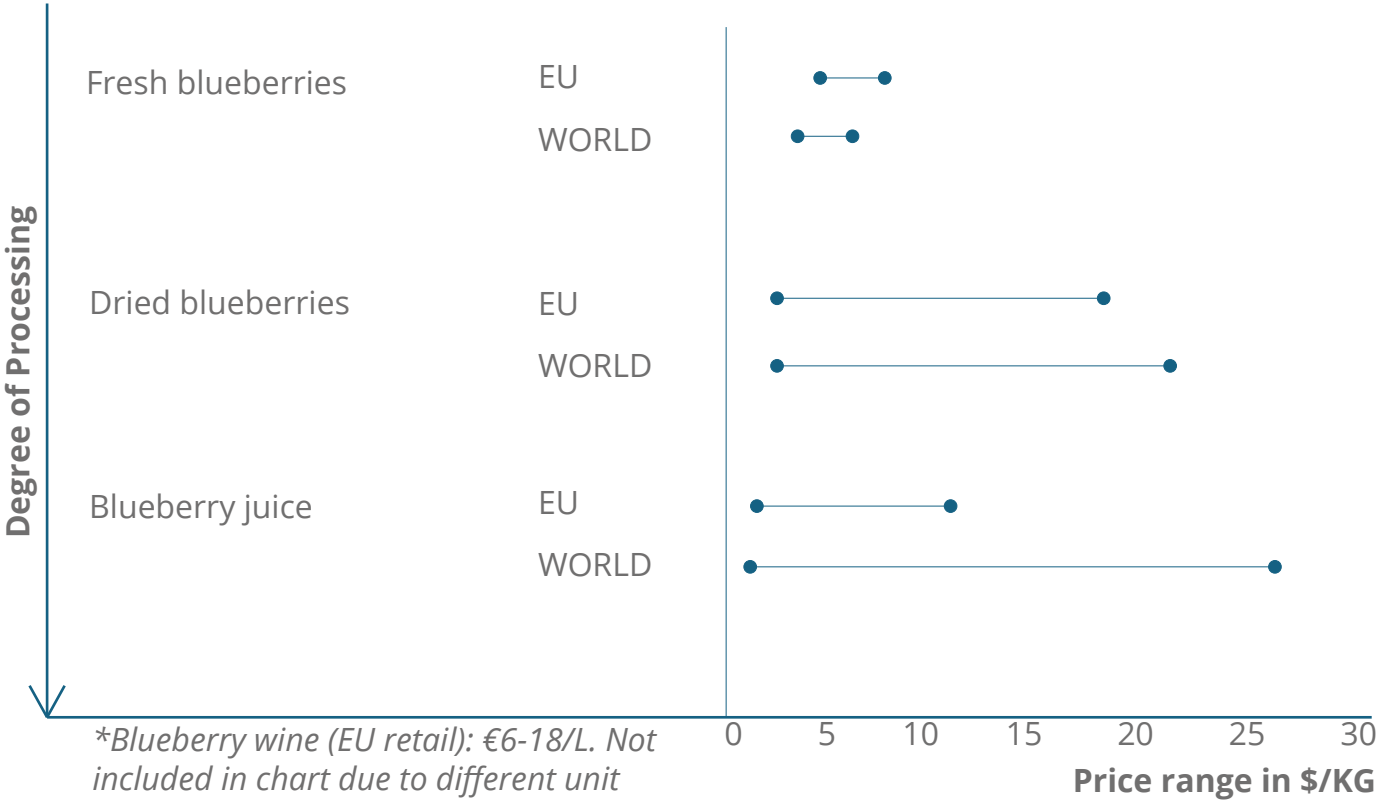
January	February	March	April	May	June	July	August	September	October	November	December
							POLAND				

PRICES AND VALORISATION



PRICE OF THE PRODUCTS

The following price ranges have been selected based on manufacturer listings. The European market and World market are rather similar but vary widely based on the season.





COMPATIBILITY WITH POLICIES

REGULATORY REQUIREMENTS

The cultivation of blueberries 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
France	CAP coupled support for small-scale producers (<5 ha) for fruits and vegetables	1,588€/ha/year
Ireland	Horticulture Capital Investment Scheme (HCIS)	No direct mention of paludiculture, but longstanding scheme to assist with start-up and scale up
Ireland	Peatlands for Prosperity – Just Transition Fund (2024-2027)	Free hands-on support to farmers interested in paludiculture
Ireland	Basic Income Support for Sustainability (BISS)	BISS payments are capped at an effective maximum of €66,000 per farmer annually.
The Netherlands	Eco-scheme of Common-Agricultural-Policy Subsidies for ‘long-yearly’ crops	Point based system that could allow access to 3 levels of remuneration: 60€/ha (bronze), 100€/ha (silver) or 200€/ha (gold)
The Netherlands	National funds such as: - Subsidiestelsel Natuur en Landschap (SNL) - Subsidieregeling Kwaliteitsimpuls Natuur en Landschap (SKNL) - Het Groenfonds	Diverse project fundings for area planning, groundwater raising, and biodiversity-friendly management

Interreg



Co-funded by
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