Abbreviated agronomics of cultivation for Tall wheatgrass, selection Bamar as a source of dry mass and biomass

Recommended plantation production life 7 years - possibly 10 years – with the use of the guidelines below.

1. Frost resistance up to -25°C.

2. Choice of stand – plantations may be established on most soil types including adequately irrigated sandy soils of class V, excluding wetlands and mucksoils. Tall wheatgrass produces a deep root system, which provides access to water from deeper soil layers during draught. The plant builds the root system over 2 years, so the dry mass yield in the first year will be around 10-12 t/ha and in the II year 12-14 t/ha.

3. Field cultivation in the year of sowing – undesirable weeds: couch grass, loliums (ryegrasses).

a) Gliphosate (e.g. Rpoundup or its substitutes) spraying should be applied at 3,5-5 l/ha (150-300 l of water per ha).

4. Soil preparation as for rapeseed plantations (good crumble structure of the soil).

5. Sowing time – from early spring until the15th of August. It is possible to delay sowing, however the plant needs to form 4-5 leaves before vegetation ceases.

a) seeds germinate 30- 35 days,

b) plants emerge from the soil up to 54 days from the date of sowing

c) the seeds reach full germination capacity after 4-5 months from the date of harvest (dormancy period).

6. Seed row spacing: 25-30 cm (eg. every second coulter of a cereal drill).

7. Sowing depth: 1-2 cm (as winter rapeseed).

8. Sowing rate: 13-15 kg/ha, 15 kg/ha with inadequate soil preparation, 20kg in case of delayed sowing (this concerns seeds which have not passed their dormancy period after harvest).

In view of the seed size, it is recommended to perform adequate drill adjustments with setting as for cereals or coarse grains. Control of settings and equipment during sowing is highly recommended, as seed size and their lack of looseness may block the sowing tubes.

9. It is also recommended to treat the seed with an ecological bacterial fertilizer for grasses, commercialized as Azotobakteryna, which provides plants with atmospheric nitrogen. More information on this product may be found on the following website: www. biofood.com.pl

10. Fertilisation in pure elements:

Caution: The plant does not change leaf color due to nitrogen fertilization.

Years	Dry mass – for burning	Biomass – for fermentation
Before sowing	- 30kg N/ha in quick acting form - 60 kg P_2O_5/ha - 60 kg K_2O/ha	- 30kg N/ha in quick acting form - 60 kg P_2O_5/ha - 60 kg K_2O/ha
Harvest years	After vegetation onset: - I dose - 30-40 kg N/ha – quick acting form - II dose after 2-3 weeks - 40-50 kg N/ha in slow acting form, eg. urea - fertilisation: P_2O_5 -60 kg /ha, K_2O - 60 kg /ha after harvest or in early spring	- 100-130 kg N/ha Turing vegetation It is possible to harvest 2-3 cuts. The dose should be spread depending on the number of cuts. - fertilization: P_2O_5 -60 kg /ha, K_2O - 60 kg /ha in the fall or early spring

11. Chemical weed control (as for cereals) during the vegetation period – Puma Uniwersal (Fenoxaprop P- etyl 69 g/l, Mefenpyr di-ethyl 75 g/l) 1l/ha + Chwastox Extra 300 SL (MCPA at 300 g/l) 3 l/ha (150-300 l of water/ha) or other similar herbicides.

a) with early sowing, weeds can be controlled mechanically, by mowing .

12. Flowering, under HR Bartążek conditions occurs in the II-III decade of July.

13. Harvest time for biomass – in the climatic conditions of HR Bartążek it is the III decade of October, untill frosts. Biomass harvest may be accelerated by desiccation of the plantation, spraying it with Reglone 3-4 l/ha (150-300 l water/ha). Desiccation occurs within 14 days after spraying. Chemical desiccation may be applied from the milk-ripe stage, i.e. at the end of August/ beginning of September.

14. Harvest technology:

Mowing, as low as possible

-straw cutters or swathers are recommended, but cutting can also be performed by other cutting machines. Harvest and baling may be delayed to frosty weather.

- it is not recommended to use cereal combine harvesters for dry mass harvest – they are ineffective and inefficient, harvesting proceeds very slowly as the straw shakers, ventilators and thrasher jam due to high volumes of biomass. As practice shows, this generates high costs.