

# AGROBIOLOGICAL PECULIARITIES AND PROSPECTS FOR VALORIFICATION OF WOAD, *ISATIS TINCTORIA* L., IN MOLDOVA

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## Abstract

We studied agro biological peculiarities, chemical composition and nutritional value and evaluated the capacity to produce biogas from aerial biomass of the woad, *Isatis tinctoria* L., family *Brassicaceae* Burnett, which was cultivated on the experimental land of the Botanical Garden (Institute) of Academy of Sciences of Moldova. It was established that the species *Isatis tinctoria*, in the first growing season, was characterised by slow growth and development, produced a basal rosette of leaves and a strong taproot, but in the second growing season, it had an accelerated growth and development rate. This species started flowering 10-15 days earlier than oilseed rape, so, it was valuable for bees as a pollen source. In the flowering period (the second half of April), woad branched stalks reached up to 105-110 cm high, the natural forage yield reached 23.0 t/ha of natural forage with a high degree of foliage (50%), in the seed development period (the end of May) – 35.0 t/ha of natural forage. The chemical composition of solids of green mass of *Isatis tinctoria* in the flowering period is represented as follows: 20.18% raw protein, 4.46% raw fats, 32.40% raw cellulose, 12.25% minerals, 30.76% nitrogen free extracts, but in the seed development period – 12.00%, 3.08%, 38.83%, 8.56% and 37.53%, respectively. The nutritional value in the flowering period was 0.11 nutritive units/kg, 1.14 Mj/kg metabolizable energy and 165.6 g/ nutritive units digestible protein, but, in the seed development period – 0.14 nutritive units /kg, 1.43 Mj/kg and 100 g/ nutritive units gestible protein, respectively. The *Isatis tinctoria* silage prepared from wilted green mass harvested in seed development period, was distinguished by homogeneous dark-brown colour, pleasant smell of pickled cabbage, 0.23 nutritive units./kg and 2.30 Mj/kg metabolizable energy, 110 g/ nutritive units digestible protein, but corn silage – 0.30 nutritive units/kg, 2.64 Mj/kg and 40g/ nutritive units digestible, respectively.

The calculated biogas capacity of woad can reach values of 438-464 l/kg organic substance with 54-56% methane.

Taking into consideration the presented scientific results, the species *Isatis tinctoria* is promising as a crop with multiple utility for founding fodder-melliferous and melliferous-energy plantations, besides; it can be used for green manure.

**Key words:** agro biological peculiarities, biochemical composition, biogas yield, fodder value, *Isatis tinctoria*, woad

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