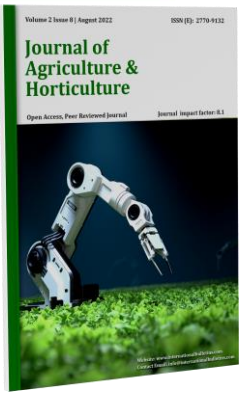

POSSIBILITIES OF GROWING CAMELINA SATIVA IN UZBEKISTAN CONDITION

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It is essential to grow cruciferous crops in ecological crop rotation since cruciferous crops stop the development period of cereals pathogens and restrain the spread of diseases by soil. Comparing the growing of oilseed rape, *Camelina* has some preferences. *Camelina* is a good supporting crop of pea. In case of the sowing density of pea 60 germinating seeds per m^2 and *Camelina* the yield of mixture was 1768 kg ha^{-1}.

The plant is native to southeast Europe and southwest Asia. It occurs mostly as the weed accompanying flax. As a cultivated plant it is known for about 4000 years. In Europe it was spread as an oil plant in the time of the ancient Greeks and Romans and in the Middle Ages. It was sown purely or in mixtures with other crops. The main growth area was from East Europe to Central Asia. Its growing spread during and after the wars. In the 20th century the biggest producer was the Soviet Union where in 1950 the growth area of *Camelina sativa* reached up to 300 thousand hectares.

Camelina sativa is an oil plant of cruciferous family. *Camelina* is suitable for growing on less fertilized relatively drier soils with light texture, clay soils are not suitable. The sowing can be carried out rather early, the seeds are capable of germinating at +1...+2°C and young plants resistance to night frosts is good (they stand -2...-10°C). After coming up the plant forms quickly a thick rosette, the main stems start growing in about one month after seeding. The plant is about 50.100 cm high, with a smooth stem which becomes lignified at the time of ripening. It has arrow-shaped leaves of 5.8 cm long, the stem branches in the upper third of the plant. On the top of the branches, there is clustery inflorescence with pale yellow flowers. The plant is self-fertilizing, the flowering period lasts for about two weeks. The fruit is about 7.10 mm long, a pear-like pod with 8.10 seeds. The seeds are yellow or brownish yellow, very small; the 1000-seeds-weight is about 1 g. The seed is not dribbling. The plant grows fast, in 80.100 days from seeding to harvesting. Its yield level can be compared to spring rape, predominantly 1100.1300 kg ha^{-1}.

Camelina is suitable for growing in ecological production. The impact of cruciferous crops is considered to be especially important for decreasing the contamination level of cereals root rot. In addition to that the cruciferous crops bring by the long taproot the nutrients from the lower soil layers to the upper ones which are well assimilated by the crops being followed. *Camelina* suits compared to other cruciferous crops better for growing in ecological crop rotation since the occurrence of pests typical of rape is unimportant (no appearance of *Phyllotreta spp., Meligethes spp.* appears to a very small extent). Therefore in ecological production comparing the growing of rape and *Camelina* the essentially higher yields have been received by growing *Camelina* (Makowski, 2003). The same rape diseases

endanger *Camelina.* The bigger danger can be caused by - *Sclerotinia sclerotiorum, Verticillium longisporum* and *Plasmodiophora brassicae.* In ecological crop rotation it is possible to avoid these diseases especially by long crop rotation. *Camelina* gets contaminated with *Peronospora parasitica /camelinae/, Botrytis cinerea* and *Alternaria brassicae* to some extent. Contamination by *Phoma lingam, Cylindrosporium concentricum* and *Mycosphaerella brassicicola* is unimportant. Engaging *Camelina* in crop rotation and in case of frequent growing the danger of diseases and pests increases.

Camelina oil is being used mostly for industrial purpose: by good energetic characteristics it is well suitable for making biodiesel fuel. For making paints and linoleum it is being used together with other plant oils. It is also used for making green soap. Some parts of oil and oil- free meal composition (eicosenoic and erucic acid, glucosinolates) restrict its use for human food and animal feed. In late years its development work has achieved good results in eliminating eicosenoic acid content. The use of *Camelina* oil is limited by high content of unsaturated fatting acids although the oil contains several natural protection means against oxidising - antioxidants- e.g. tocoferol. The fatty acid consistence of *Camelina* oil is shown in table 1. The high consistence of linolenic and eicosenoic acid makes the taste unsatisfactory.

Camelina growing is generally carried out according to the same principles as growing rape. Perfect soil tillage together with ploughing has to guarantee weed control. Pre-sowing soil tillage favours germination of weed seeds and the shoots are damaged in the last pre-sowing tillage. Since the seed is small, it is especially essential to form the good seed basis guaranteeing low sowing and soil moisture. Pre-sowing rolling tightens the soil loosened by cultivating-harrowing. The soil being rolled must not be wet. For early sowing the soil tillage has to be started possibly early. Clover should be used in ecological crop rotation which enriches the soil with biologically fixed air-nitrogen guaranteeing *Camelina* the needed amount of N in soil. Clover is an essential crop in the control of perennial weeds. The recommended sowing time is together with cereals sowing or immediately after that. *Camelina* comes up fast, earlier than essential weeds. Relatively high density of plant per m^2 and narrow-rowed sowing are important primarily for fighting with annual weeds. Due to rapid primary development *Camelina* suppresses annual weeds. Individually grown *Camelina* plants are not competitive with weeds; *Camelina* cannot compete with perennial weeds, either. In ecological production trial the harrowing of pea and *Camelina* mixture damaged *Camelina* plants and the mixed sowing remained sparse.

In the growing density of pea 80 germinating seeds per mand of gold-of- pleasure 300 germinating seeds per m^2, there was a competition between plants which also reflected in the yield (figure 1). The total yield of pea and *Camelina* 'Ligena' was 1307 kg ha^{-} \ In case of the sowing density of pea 60 germinating seeds per m^2 and of *Camelina* 300 germinating seeds per m^2 the yield was 1768 kg ha^{-1} (LSD $_{95}$%...161.7). Comparing the protein yields the mixture of pea (60 g.s.) and *Camelina* overcame the protein yield of pea pure stand by 83.5 kg ha^{-1}. In the mixed sowings of pea the protein content of pea was somewhat lower than in the pure stand (in mixtures 21.5%, in a pure stand 22.5%). The protein content of *Camelina* in the trial was 24.4% and the oil content 37.1...38.3 %.

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