Springer Proceedings in Energy

Marek Wróbel
Marcin Jewiarz
Andrzej Szlęk *Editors*

Renewable Energy Sources: Engineering, Technology, Innovation

ICORES 2018

Springer

Analysis of Technical Solutions of Planting Machines, Which Can Be Used in Planting Energy Willow

Taras Hutsol, Serhii Yermakov, Jurii Firman, Vasyl Duganets and Alla Bodnar

Abstract Energy willow planting process requires the use of highly effiecient and productive machines. The analysis of construction of machines for planting energy crops, forest plantations and seedlings and the processes which take place in the process of planting made it possible to systemize the accumulated experience in the design of planting machines, and highlight the most effective technical solutions. The revealed features of planting machines for different types of planting material are compared with the designs of energy willow planting machines. This study found a number of characteristics and advantages of different machine types, which will ultimately lead to an increase in productivity of planting aggregates and will facilitate the work of a planter.

Keywords Planting machine · Plant setter · Seedling planter · Forest planters · Energy crops · Cutting · Planting material

T. Hutsol (✉) · S. Yermakov · J. Firman · V. Duganets · A. Bodnar
State Agrarian and Engineering University in Podilya, Str. Shevchenko 13, 32300 Kamianets-Podilskyi, Ukraine
e-mail: pro-gp@pdatu.edu.ua

M. Wróbel et al. (eds.), *Renewable Energy Sources: Engineering, Technology, Innovation*, Springer Proceedings in Energy,
https://doi.org/10.1007/978-3-030-13888-2_10

References

1. K. Dziedzic, B. Łapczyńska-Kordon, K. Mudryk, M. Wróbel, M. Jewiarz, B. Dziedzic, S. Yermakov, Decision support systems to establish plantations of energy crops on the example of willow (Salix Viminalis L.). Scientific achievements in agricultural engineering, agronomy and veterinary medicine polish Ukrainian cooperation. vol. 1, no. 1, pp. 150–160 (2017)
2. S.V. Yermakov, Perspektyvy udoskonalennia konstruktsii dlia sadinniazhyvtsiv enerhetychnykh kultur [Perspectives of improvement of constructions for energy crop planting]. Bull. State Agrarian Eng. Univ. Podilya **2**(26), 37–45 (2017)

3. V. Ivanyshyn, U. Nedilska, V. Khomina, R. Klymyshena, V. Hryhoriev, O. Ovcharuk, T. Hutsol, K. Mudryk, M. Jewiarz, Ł. Wróbel, K. Dziedzic, Prospects of growing miscanthus as alternative source of biofuel, in *Renewable Energy Sources: Engineering, Technology, Innovation: ICORES 2017*, (2018), pp. 801–812 https://doi.org/10.1007/978-3-319-72371-6_78
4. M.V. Roik, V.M. Sinchenko, Y.D. Fuchylo, Energetychna verba: texnologiya Vy`roshhuvannya ta vy`kory`stannya [Energy willow: cultivation technology and usage]. 340. LLC "Nilan-LTD", Vinnitsa (2015)
5. M.K. Asmolovskyi, V.N. Loi, A.V. Zhukov, Mekhanizaciya liesnogo i parkovogo hoziaystva [Mechanization of the forest, park and garden management]. 450. BSTU, Minsk (2004)
6. I.M. Zyma, T.T. Maliutin, Mekhanizaciya lisohospodarskyh robit [Mechanization of the forest management work]. 488. "INKOS" firm, Kyiv (2006)
7. S.V. Yermakov, N.M. Borys, Sopostavlieniye resheniy liesoposadochnyh mashyn s tre-bovaniyami dlia energeticheskih drevesnyh kultur [Comparison of plant setter requirements for the energy wood crops (willow, poplar)]. Modern scientific reporter. Sci. Pract. J. **20-1**(267), 67–70 Rusnauchknyga, Belgorod (2016)
8. N.G. Kasimov, V.I. Konstantinov, A.S. Kutiavin, Klassifikaciya rassadoposadochnyx mashyn po osnovnym priznakam funkcyonirovaniya. [Classification of seedlings planters according to the main operating principles]. Vestnik Izhevsk State Agric. Acad. **3**(44), 20–25 (2015)
9. Seedling planters. http://www.agro-sistema.ru/index.php?option=com_content&view=article&id=89&Itemid=76. Accessed 20 Feb 2017
10. S. Yermakov, M. Borys, Analiz efektyvnosti agregativ dlya sadinnya energetychnoyi verby [Analysis of the machines` efficiency for energy willow planting], in *Materialy XI Mezinarodni vedecko-prakticka conference "Veda a vznik – 2015",* vol. 14, pp. 47–49. Publishing House "Edukation and Science" s.r.o., Praha (2015)
11. Manual seedling planter PPM-1. Technical details and operations manual. http://www.rosta.ua/pics/passport/rrm1.rar. Accessed 20 Feb 2017
12. Planting of Short Rotation Plantations. http://www.lignovis.com/en/services/planting-of-short-rotation-plantations-srp.html. Accessed 20 Feb 2017