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?????? ??????????? ?????? ??????????? ???????? ? ????? ????? ?? ???????????????? ? ???????? ???????????? ????????? ? ???????? ????????????. ?????????? ???????? ???????? ???????, ????????????? ? ????????? ???????? ???????? ? ??????????? ??????????? ???????, ???????? ? ??????????? ???????????? ??????? ? ???????? ???????????? ??????????? ???????? [4,5].

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??????????? ?????? ???????? ???????? ??? ???????? ????? ???????? ?????? ????????? [8-10]. ????????-????????????? ???? ???????????????? ?????????? ???????????????? ?????? ? ??????????? ?????? ??????????? ???????????, ??? ??????? ??????????? ????? ???????? ?????? ??????????? ????????? ???????? [9]. ???????????? ???? ?????? ? ???????? ?????? ??????????? ????????????? ?? ?????? ??????? ?????-??????? [11], ?????? ??? ?????? ???????? ??????????? ???????? ??? ???????? ???????? ??????-????????? ???????? ????. ??????????? ??????????? ???? ???????????? ????????? ?????? ??????? ????????? [12,13] ? ???????? ???????????? ????????????, ?????? ???? ??? ??????? ?? ???????? ???????? ??????? ??????? ????????? ?? ???? ??? ???????.

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Table 1

Results of determination of optimal soil compaction parameters / ????????? ??????????? ??????????? ????????? ????????? ???????

??? ?????? / Soil type	**??????????? ?????????, % / Optimal moisture content, %**	**??????????? ?????????, ?/??³ / Maximum density, g/cm³**	**???????? ????????? ????????? / Density variation range**
???????? / Sandy	7-11	1,60-1,95 / 1.60-1.95	±0,18 ?/??³ / ±0.18 g/cm³
????????? / Sandy loam	9-14	1,65-1,95 / 1.65-1.95	±0,15 ?/??³ / ±0.15 g/cm³
??????????? / Loam	13-19	1,60-1,85 / 1.60-1.85	±0,13 ?/??³ / ±0.13 g/cm³
??????? ??????????? ? ????????? / Heavy loam and clay	18-24	1,55-1,70 / 1.55-1.70	±0,08 ?/??³ / ±0.08 g/cm³

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Figure 1. Dependence of the rate of change of the stressed state of the soil and the dimensions in terms of the contact surface of the working bodies of the machines with the compacted soil

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Figure 2. Voltage distribution scheme under the wheel

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Figure 3. Normal contact pressure distribution scheme according to Ya.A. Kaluzhsky

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