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## 水力采收睡莲块茎工艺参数优化

### Process parameters optimization of *Nymphaea*'s hydraulic-gathering

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英文关键词: [optimization](#) [parameter estimation](#) [hydraulic equipment](#) [orthogonal test](#) [hydraulic-gathering](#) [nymphaea](#) [analysis of variance](#)

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中文摘要:

为研究睡莲水力采收工艺参数对采收的影响,根据高压水射流冲刷原理,研究高压水射流各个参数对水力采收睡莲块茎的影响。利用L9(34)正交表设计睡莲块茎水力采收工艺参数:水射流压力、喷嘴直径、前进速度、射流冲刷角度的试验,分析各相关因素对水力采收效果影响。结果表明4个参数都是影响水力采收的显著因素,其中射流的压力和射流流量是影响水力采收的主要因素。通过方差分析得出较优的参数组合:喷嘴直径D为15 mm、前进速度V为0.71 m/min、冲刷角度为0、射流压力为0.20 MPa。射流压力和射流流量增加都能显著提高采收效果,其中提高流量比提高压力所消耗的功率显著,因此在功率一定的情况下应优先保证较高的射流压力。

英文摘要:

In order to study the parameters of hydraulic-gathering technology in tuber of *Nymphaea*, the influences of experimental parameters of hydraulic-gathering effect of *Nymphaea* were investigated according to the wash principle of high pressure water jet. The L9(34) orthogonal table of the hydraulic-gathering of *Nymphaea* was designed to cover process parameters such as water jet pressure, jet flow, speed, angle of jet scouring. The results showed that the four parameters significantly affected the hydraulic-gathering efficiency, the jet flow and jet pressure were the main factors for the hydraulic-gathering effect. The optimum parameter technology was as follow: 0.2 MPa of the water jet pressure, 15 mm of nozzle diameter, 0.71 m/min of speed and 0 of angle of jet scouring. The hydraulic-gathering efficiency was increased with the increasing of the jet pressure and jet flow. The increasing of the jet pressure consumed more power than that of the jet flow. So the higher water jet pressure was taken priority at the condition of constant power.

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