यो सुधारिएको ड्रिल रिच हो। जसमा हाले विधिवत गरिने कार्यलाई पावर टिलरले प्रतिस्पष्ट गरिन्छ। दक्ष जनशक्तिको हुने हिस्सा उच्च पारिवर्तनिक खोजीमा विभिन्न शहरी क्षेत्र तथा अन्य मुलुकहरू गईरेको अवस्थामा जनशक्तिको अभावको समस्या समाधान गर्नुका साथै ट्युबवेल खत्रे कुल लागत (ड्रिलिंग) पनि घटाउन सकिन्छ।

**सुधारिएको स्थानो ट्युबवेल ड्रिल रिच विकास गर्ने?**

चित्र ४ मा देखाइएको अनुसार पारिवर्तनमा सामो परिमाप्लाई गरिएको हुन। जहाँ एक-दूसरको पाइपराइट एउटै गर्दछ त्यसैले प्राप्त रुपमा काम गर्नु र अको पाइपराइट नुप्तै गर्ने त्यसैले क्षेत्र माफित सञ्चालन गरिन्छ।

**मुख्य परिमाप्लाईरूप:**

**ड्रिल रिच:** चित्र ५ मा देखाइएको अनुसार इजनलाई एउटा रिचहरू एक्स्क्लुसिव राखिएको हुन। जसमा ६३०९-४५ मिलिमिटर आकारको एक्स्क्लुसिव बिरुपिएको स्लूधर गरिएको छ। यसले मुख्यतया: इजनलाई इनलिंक बनाउन र अन्यन्तरी प्रमाण गरिन्छ।

**इजनलाई**: पावर टिलरको इजनलाई बिरुपिएको बेलार धप रुपमा बनाउन इजनलाई अगाउन राखिएको हुन।

**रिचको विकास गर्ने क्रिया खच्चर लागि?**

<table>
<thead>
<tr>
<th>एउटा पावर टिलरको मूल्य</th>
<th>लागत समायोजन</th>
<th>फाउंडेशन खज्रै साधन</th>
<th>जमा लागत</th>
</tr>
</thead>
<tbody>
<tr>
<td>र १८०,०००</td>
<td>र २४,९५०</td>
<td>र १५,९५०</td>
<td>र २१३,९००</td>
</tr>
</tbody>
</table>

**यसले कसरी काम गर्ने?**

चित्र ५ मा उहो बोरिमा नापैलाई बुझायति पाइपलाई बक्रमा छैन। जस्तै इजनलाई एउटा डोरी छ।

**इजनलाई** हथौडा छोटो त्यसैले बोरिमा डोरी बनाउन र पाइपलाई बक्रमा जमने गर्न। यो प्रक्रिया पारिवर्तनको सोहो नभेटा सम्म सञ्चालन गरिन्छ।

**प्रतिधारी:** यो सुधारिएको ड्रिलिंगको लागि सुधारिएको प्रविधि सम्भवी जानकारी अमेरिकी अन्तर्राष्ट्रिय विकास निदेश (पूर्वसहस्राब्द) माफित अमेरिकी जनताहरूको सहयोगका कारण सम्भव बनेको हो। यस जानकारी मिल्का विषयसम्बन्धी र समाजी अन्तर्राष्ट्रिय मात्र तथा गई सूचाला केन्द्र (सिनिटी) जो एक जिम्मेदारी छुने र तिर्ले सुरुवात(ईडी) वा अमेरिकी सरकारी विभागले प्रतिस्पष्ट गरर्नु भएको छ।

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**सहयोग**

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**सिसा पुणेकर कार्य व्यवस्थापनका साहित्यकार**

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**सहकार्य**
**Improved Shallow Tube Well Drill Rig**

Groundwater is the primary source of irrigation in Nepal’s Terai regions. Shallow tube well drilling is the traditional and standard method to pump out the water bore. However, this practice is more expensive, time-consuming, and laborious. Thus, CSISA has designed and developed a mechanical technology to drill the borewell using a power tiller, which reduces the overall costs and completes the task faster than the conventional manual method.

The improved Shallow Tube Well (STW) drill rig utilizes a power tiller and thus replaces a labor-intensive conventional method. This can address the existing labor shortages and reduce the overall cost.

The improved STW drill rig is a power tiller-operated hammering technique where the wheel rim is placed in one shaft and works as a spool. The rope winds over the rim on one side, connected with the hammer on the other. Thus, the hammer is uplifted and released for impact by winding and unwinding the spool using the clutch lever of the power tiller. Therefore, this low-cost technology requires less labor and time compared to the conventional method.

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**Conventional Practice Vs. Improved STW Technology**

- **Cost**: digging cost is expensive with approximately NPR 25,000 required for one bore, excluding other materials.
- **Initial capital cost**: comparatively low, around NPR 18,000.
- **Time and labor requirements**: labor and time-intensive process as it requires 28 persons for 10 minutes interval to drill a 40-foot-deep, 4-inch diameter bore.
- **Difficult for laborers to bore in hardpan formation**

- **Cost**: digging cost is low with approx. NPR 12,000 is required for one bore, excluding bore materials.
- **Initial capital cost**: although the price of the power tiller increases initial costs (NPR 213,900), the payback period is one year or less.
- **Time and labor requirements**: machine operated drilling of the same bore takes an average of three persons and two days on average.
- **Can be used in boring hardpan formation**

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Despite high initial investment, the improved STW technology is:

- Less labor and time requirements
- 1 year payback period
- Suitable in hardpan formation
Wheel stand: As shown in the figure, a wheel stand is placed at the one-wheel axle, where the spool is fitted bearing 6209-45mm bore. It is mainly used to prevent tilting.

As shown in the figure, the engine stands are placed in front of the engine to make the power tiller more stable while in operation.

The main modification is:
- Wheel stand: As shown in the figure, a wheel stand is placed at the one-wheel axle, where the spool is fitted bearing 6209-45mm bore. It is mainly used to prevent tilting.
- As shown in the figure, the engine stands are placed in front of the engine to make the power tiller more stable while in operation.

How does it work?
The bore well pipe is inserted into the ground by the impact of a hammer on the iron block and then into the bore pipe. The wire rope lifts the hammer winded in the spool (rim) and is released manually by engaging and disengaging the wheel. This process is done until the required depth is reached.

How to use a power tiller as an improved STW drill rig?
Minor modification on the power tiller is done, as shown above (figure 4). One of the wheels is replaced by a same-size rim that works as a spool to lift the hammer and operates through the clutch by jamming the remaining wheel.

How much does it cost to develop the rig?

<table>
<thead>
<tr>
<th>Item</th>
<th>Cost (NPR)</th>
</tr>
</thead>
<tbody>
<tr>
<td>One Power Tiller</td>
<td>180,000</td>
</tr>
<tr>
<td>Cost of Modification*</td>
<td>14,950</td>
</tr>
<tr>
<td>Drilling Materials</td>
<td>17,950</td>
</tr>
<tr>
<td>Total Cost</td>
<td>212,900</td>
</tr>
</tbody>
</table>

Disclaimer: This infographic is made possible by the support of the American People through the United States Agency for International Development (USAID). The contents of this infographic are the sole responsibility of the International Maize and Wheat Improvement Center (CIMMYT) and do not necessarily reflect the views of USAID or the United States Government.