**Biogas practical 1 :**

**How to select size for your own biogas plant.**

**Aim:** To estimate the biogas output depending on the dung availability.

**Objective:** To estimate the size of the biogas plant.

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I will explain step by step how to make your own Gobar gas plant. There are also lots of useful websites on the internet which can help you. I will put a list at the end, so if you get stuck you can refer to these for help. Now let’s get started!

**Step 1:** Select the size of biogas plant you want.

Before deciding you should collect dung and record the quantities collected for several weeks to determine what the average daily dung production is. Once you know this you can use the table below to help you select an appropriate size plant.

|  |  |  |  |
| --- | --- | --- | --- |
| **size of plant**  **(m3)** | **Amount if daily dung required**  **(Kg)** | **Daily litres of water required**  **(l)** | **Approximate number of cows requires** |
| 4 | 24 | 24 | 2 – 3 |
| 6 | 36 | 36 | 3 – 4 |
| 8 | 48 | 48 | 4 – 6 |
| 10 | 60 | 60 | 6 – 9 |
| 15 | 90 | 90 | 9 – 14 |
| 20 | 120 | 120 | 14 and more |

The Size of plant is the sum of the gas storage and digester volume.

**Gas storage (m3) + digester volume (m3) = Plant size (m3)**

**Step 2:** Select the site for your plant.

Here is a list of things that you should consider:

* Your site must be in the sun as the right temperature has to be maintained in the digester.
* It must be easy to transport water and dung to the plant. So possibly put it close to a cattle shed.
* The edge of the foundation of the plant should be at least two meters away from any other building to avoid risk of damages.
* Your site must be at least 10 metres away from a well or any other underground water sources to protect water from pollution.

**Step 3: Size of the** digester.

Here is a table that tells you all the measurements of typical biogas plant. So for example if we decided to make a biogas plant that is 10m3 we would need to dig pit 168 cm deep.

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **Components** | **Plant size (m3)** | | | | | |
| **4** | **6** | **8** | **10** | **15** | **20** |
| **A** | 140 | 150 | 170 | 180 | 248 | 264 |
| **B** | 120 | 120 | 130 | 125 | 125 | 176 |
| **Radius (cm)** | 135 | 151 | 170 | 183 | 205 | 233 |
| **D** | 50 | 60 | 65 | 68 | 84 | 86 |
| **Pit depth (cm)** | 154 | 155 | 172 | 168 | 180 | 203 |
| **F** | 102 | 122 | 135 | 154 | 175 | 199 |
| **G** | 195 | 211 | 230 | 243 | 265 | 293 |
| **Height of the round walls** | 86 | 92 | 105 | 94 | 115 | 115 |
| **I** | 112 | 116 | 127 | 124 | 132 | 137 |
| **J** | 151 | 160 | 175 | 171 | 193 | 203 |