**Experimental Data Sets**

The following data sets are useful when exploring the use of pectinase, an enzyme used to maximise the volume of juice extracted from various fruits.

In this document, we look at the following independent variables:

* Type of fruit
* Temperature
* pH
* concentration of enzyme

**Enzyme – pectinase – effect of type of fruit**

***Brief overview of the method***

In this experiment, 20 g of each type of fruit was added to a beaker with 5 cm3 pectinase OR 5 cm3 water. The mixture was incubated at 60 ᴼC for 10 minutes and then the contents of the beaker passed through a filter funnel into a measuring cylinder. The volume of juice extracted from each type of fruit was measured using the measuring cylinder.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Type of fruit** | **Volume of juice extracted (cm3)** | | | |
| **1** | **2** | **3** | **Average** |
| Apple | 16.5 | 17 | 17 | 17 |
| Orange | 30 | 37 | 33 | 33 |
| Pineapple | 41 | 44 | 45 | 43 |
| Grapes | 17 | 15 | 11 | 14 |

**Enzyme – pectinase – effect of enzyme concentration**

***Brief overview of the method***

In this experiment, 20 g apple was added to a beaker with 5 cm3 pectinase of varying concentrations OR 5 cm3 water. The mixture was incubated at 60 ᴼC for 10 minutes and then the contents of the beaker passed through a filter funnel into a measuring cylinder. The volume of juice extracted from each type of fruit was measured using the measuring cylinder.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Concentration of pectinase (%)** | **Volume of juice extracted (cm3)** | | | |
| **1** | **2** | **3** | **Average** |
| 0 | 4 | 3.5 | 3.5 | 4 |
| 25 | 4.5 | 6 | 5.5 | 5 |
| 50 | 8 | 8 | 7 | 8 |
| 100 | 16.5 | 17 | 17 | 17 |

**Enzyme – pectinase – effect of temperature**

***Brief overview of the method***

In this experiment, 20 g apple was added to a beaker with 5 cm3 pectinase at varying temperatures for 10 minutes. The contents of the beaker passed through a filter funnel into a measuring cylinder. The volume of juice extracted from each type of fruit was measured using the measuring cylinder.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Temperature (ᴼC)** | **Volume of juice extracted (cm3)** | | | |
| **1** | **2** | **3** | **Average** |
| 20 | 4 | 5 | 5 | 5 |
| 40 | 8 | 8 | 8 | 8 |
| 60 | 16.5 | 17 | 17 | 17 |
| 80 | 10 | 11 | 9 | 10 |

**Enzyme – pectinase – Effect of pH**

In this experiment, 20 g apple was added to a beaker with 5 cm3 pectinase and 5 cm3 buffer of various pH. The mixtures were incubated at 60 ᴼC for 10 minutes. The contents of the beaker passed through a filter funnel into a measuring cylinder. The volume of juice extracted from each type of fruit was measured using the measuring cylinder.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **pH** | **Volume of juice extracted (cm3)** | | | |
| **1** | **2** | **3** | **Average** |
| 2 | 11 | 11 | 12 | 11 |
| 4 | 17 | 18 | 18 | 18 |
| 7 | 10 | 9 | 12 | 10 |
| 10 | 5 | 6 | 3 | 5 |