Aim - To carry out an investigation to determine the optimum rate of gibberellic acid for pasture growth.

Hypothesis - I think the recommended rate which is 0.002g will grow the same height as the 0.004g but want grow the same bulk. The lowest one (0.001g) will grow the same as the one with no Pro Gibb on it. The one with the most Pro Gibb (0.004g) will grow the most bulk and the fastest.

Controlled Variables - The plots are all going to be the same size 1m squared. They are going to be all in the same environment. They are all in the same grass paddock on top of a hill in the open.

Independent variable - The independent variable is the different amounts of Pro Gibb we are applying to the plots. The same amount will go on the 4m squared plots but every 1m squared will be sprayed separately.

Dependant variable - We are going to measure the ratio of dry matter of the grass to the amount of Pro Gibb we sprayed on the grass.

Pro Gibb Rates

0.001 g/L	0.002 g/L	0.003 g/L	0.004 g/L
X4	X4	X4	X4

There will be one plot with no Pro Gibb sprayed on in. That will be the controlled plot.

| 1 meter squared 10ml H2O 0.002g Pro Gibb |
|---|

Advised rate on the bottle.

Recommendations from Bottle.

Apply 1-5 days after grazing
Growth stimulation should be seen after 7 days.

Change rate mixing: We had to change the way we mix the Pro Gibb. We were going to weigh the Pro Gibb out in the rates like above. We had to change it because the scales wouldn't go lower than 0.005g and they only went up in 0.005g

We ended up doing a stock solution which we turned the Pro Gibb pallets into a liquid. We still use the same amount of Pro Gibb to the same area of grass. We made it into a 5L mix in a conical flask. We mix are mixing this at school with the equipment we needed to use.

Plot Design I am going to have 5 plots like this. The plots will have a meter in between the 4 meter squared plots as this diagram shows. There will be 4 different trials for each rate to get a fair test. The 4M² plots will be split in 4 squared 1M².
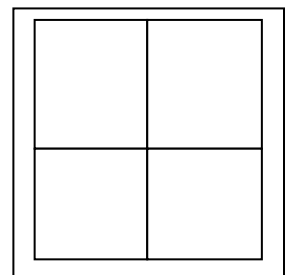
Method:

Step 1: I am going to mow the amount of area I need for my trial. I will mow it on 3 all over. I will collect the grass when I mow it so there is no dead grass on pots. This trial is going to be on flat ground. My trial is in one of the paddocks which are sugar grass and clover. By using the same paddock it will be a fair test because there will be the same environment, it would have the same nitrate levels, moisture and soil structure.

Step 2: I am going to mark out the plots with standards after I have mown it. I will use tape for the lines so I know were my plots are. I will put standards in the center of the box so I can tie the tape to.

Step 3: After I have marked the first one out I will leave a 1m gap between them for spray drift. I will do that for every one of my 5 plots. The first plot want get sprayed with Pro Gibb.

Step 4: When I have marked them all out I am going to mix my first trial plot Pro Gibb up (0.001g).

Step 5: I am going to use a nap sack to spray the Pro Gibb on. Mix 10mls of Pro Gibb with 2L of water; give it a shake up to mix it good.

Step 6: I am going to spray on trial plot (1m2). Keep spraying in tell the nap sack runs out.

Step 7: Repeat the same to all 4 of the 1m² plots.

Step 8: I am going to keep spraying the rest of plots with the different rates (0.002, 0.003, and 0.004).

Step 9: After I have sprayed all the 4 plots I am going to leave it for 20 days to grow. I am not going to water it unless it rains.

Step 10: After 20 days I will cut the grass using hedge trimmers and then I will up all the grass from the plots. Each 1m² will go in a separate bag.

Step 11: After I have collected the grass up I am going to bring back in to the lab at school.

Step 12: We will weigh it on the scales in the bag. We will weigh all the bags and record the results table.

Step 13: Then in microwave heat till the grass is dry. Weigh the dry grass and record results.

The way we got Pro Gibb and had to change it: We were going to weigh out the Pro Gibb. We got it as a solid particle. The scales only go down to 0.005g and they only go up in 0.005g we needed to weigh 0.001g. We had to make it in to a liquid form. We made it in to 5L lots so we had to weigh more Pro Gibb. The amount of Pro Gibb went up in 0.005g and started at 0.5g and the most was 2g.

The way we mixed it: We pored 5L if distilled water in to a conical flask. We filled the flask half fall then put the Pro Gibb in with the pre mix with a bit of distilled water. After we put the Pro Gibb in we fill the flask up to the 5L line. When we got the distilled water to the 5L line we added 10mls of penetrate liquored.

The way we made stock solution:
1. 5L distilled water, 0.5g Pro Gibb, 5mls of country mile organic solution
2. 5L distilled water, 1g Pro Gibb, 5mls of country mile organic solution
3. 5L distilled water, 1.5g Pro Gibb, 5mls of country mile organic solution
4. 5L distilled water, 2g Pro Gibb, 5mls of country mile organic solution

Table for results:

Plot 1	Trail 1	Trail 2	Trail 3	Trail 4	Add up weights	Average weights	
Wet weight	488g	319g	555g	536g	1418g	474.5g	③
Dry weight	106g	64g	208g	104g	482g	120.5g	
% DM weight	21.7%	20.1%	37.5%	19.4%	33.9%	25.3%	
kgDM/ha						105	
Plot 2 0.001 Pro gibb							
Wet weight	630g	490g	476g	481g	2077g	519.2g	
Predicted dry weight	134.4g	104.6g	101.6g	102.6g	443.2g	102.6g	
kgDM/ha						1108	
Plot 3 0.002 pro gibb							
Wet weight	484g	546g	578g	644g	2252g	563g	
Predicted dry weight	103.3g	116.5g	123.3g	137.4g	480.5g	120.1g	
kgDM/ha						1201	
Plot 4 0.003 pro gibb							
Wet weight	349g	559g	383g	400g	1691g	442.7g	
Predicted dry weight	83g	119.3g	81.77g	85.4g	369.4g	92.3g	
kgDM/ha						923	
Plot 5 0.004 pro gibb							
Wet weight	686g	527g	635g	548g	2396g	599g	
Predicted dry weight	146.4g	112.5g	135.5	116.9g	511.3g	127.8g	
kgDM/ha						1278	

The way we worked out %DM: We decided to dry there 4 bags of grass and get an average DM %. We are going to use the <u>average DM</u> and the <u>wet weight</u> of each sample to calculate the predicted DM of each sample.

Calculations: <u>Wet weight</u> times <u>Average DM%</u>= Dry weight (prediction DM)

Working average DM: Trial 1+trial 2+trial 3+trial 4= Average DM

The way worked out KgDM/ha: Dry weight *10000/1000= kgDM/ha

<u>Conclusion</u> My hypothesis was right because the plot with the most pro Gibb on grew the fastest. My observation was that the recommend rate and the most rates grew the same high but not the same bulk. ⑤

<u>**Discussion**</u> We carried out the investigation to find out if putting more Pro Gibb on will affect the growth of the grass. We did 4 different rates of Pro Gibb and made the recommended rate in the middle. We put too rates below it and too above it. I found putting more Pro Gibb on the grass per/m2 made it grow the most and most bulkiness. Plot 5 (0.004) grew the most, it had the most kgDM/ha. The one with the recommended rate (plot 3, 0.002) wasn't far behind pot 5.It grew faster grass but not the same bulkiness as the plot with 0.004 Pro Gibb on. ④

From my finding and other findings I found is to stick to the recommended rate of Pro Gibb and if you wanted to spread urea on with the Pro Gibb. It gives it a higher kgDM/ha by putting both on. The response from Pro Gibb was within the range expected from the Nufarm trials. I found out that the Pasture doesn't respond till after 3, 4 weeks of Pro Gibb being on the pasure. They found out that the yield was similar to or less than the response at 3, 4 weeks.

References: Dairy NZ farm facts sheets, The bottle of pro Gibb, Fact sheet from Pro Gibb