Calibration of an automated grass measurement tool to enhance the precision of grass utilization and allocation in pasture based farming systems

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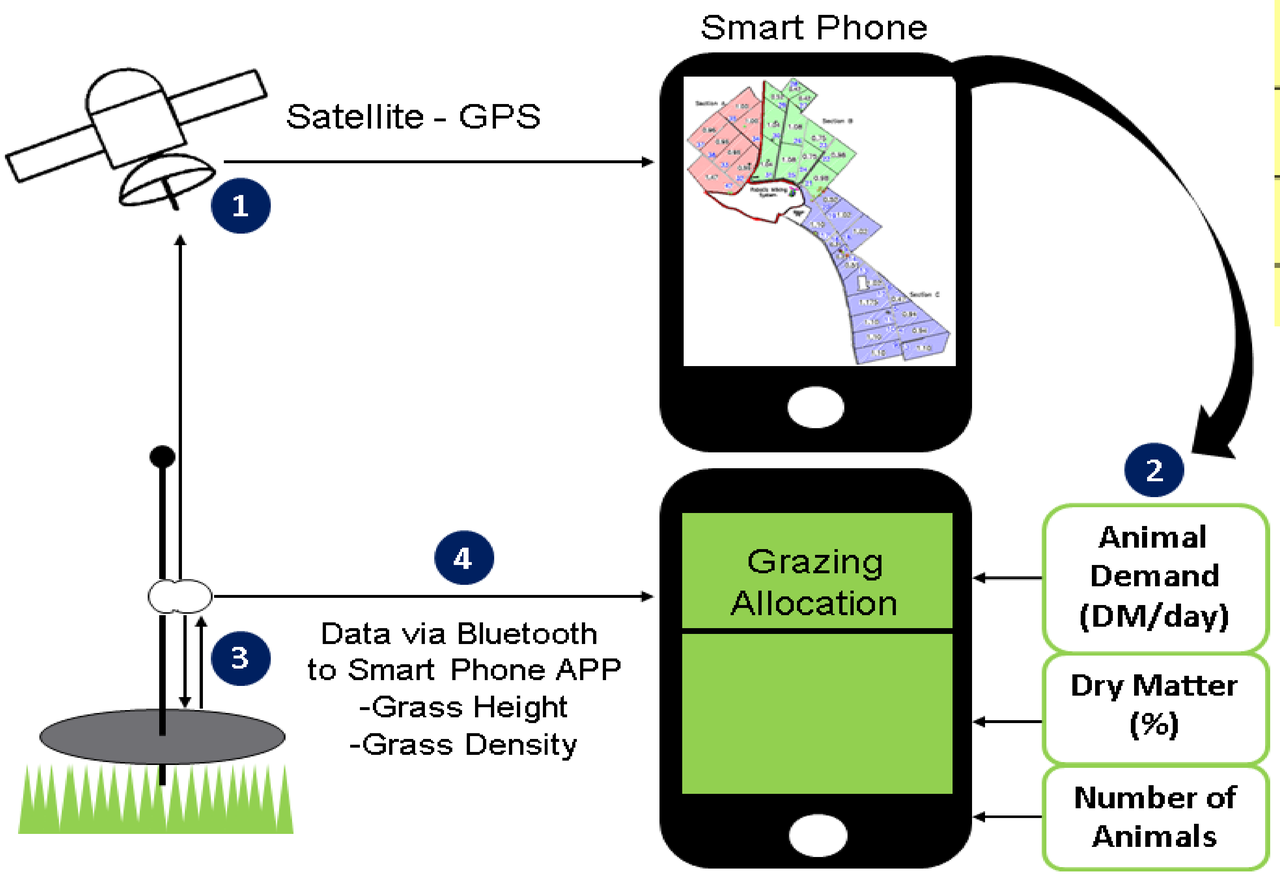
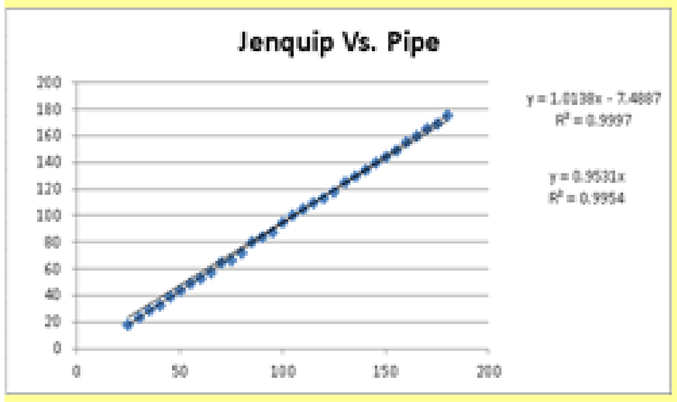
Focus: optimize the competitive grass based milk production system in Ireland



Experimental design:

- 32 pipes of heights ranging between 2.5 cm and 18 cm
- Increments of 0.5 cm
- 150 measures were taken at each height
- With GrassHopper/Jenquip hybrid

Results:



	Difference from actual pipe height (cm)	Standard Deviation (cm)	Coefficient of Variation
Grasshopper	0.37	0.16	0.02
Jenquip	-0.61	0.18	0.03

- The 150 measures recorded by both the Grasshopper and the Jenquip at each pipe height were averaged.
- Grasshopper vs. actual pipe heights
  - Pearson correlation coefficient (R) 0.999
  - $R^2 = 0.9995$
- Jenquip vs. actual pipe heights
  - Pearson correlation coefficient (R) 0.998
  - $R^2 = 0.9954$

Conclusion:

- An automated grass height measurement tool has been developed
- Similar accuracy and precision to that of the gold standard Jenquip rising plate meter in pipe height measurement
- Now that its capability to measure height has been established, regressions will be developed to estimate Dry Matter Yield from compressed grass height

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