



STUDY ON *Nicotiana tabacum* L. cv *Solaris* AS A SOURCE OF BIOMASS FOR ANIMAL FEEDING

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INTRODUCTION

- The non GMO *Nicotiana tabacum* L. cv. *Solaris* has been developed as "energy crop" (biofuel from seeds)
- After the harvest of the inflorescences, a second harvest of biomass may be possible

OBJECTIVE

- Study cv. *Solaris* biomass (2nd harvest) as an innovative forage based on its chemical composition

MATERIALS AND METHODS

Samples -- In the triennium 2016-2018, cv. *Solaris* biomass samples (N=15) were collected (2nd harvest) from experimental sites located in Italy, Vicenza, Chieti and Perugia provinces. After whole plant biomass harvesting, samples have been dried and chopped at 4 cm.

Analyses -- Samples have been analyzed for chemical constituents (crude protein, crude oil and fat, crude ash, Neutral Detergent Fiber, Acid Detergent Fiber and Acid Detergent Lignin), sugars and starch, total alkaloids (expressed as nicotine), minerals (Ca, P, Mg, K, Na and chlorides), according to official analytical methods. Descriptive statistical analysis of data was performed. Results are reported on a dry matter basis (per 100 g DM).

RESULTS

Mineral content of cv. *Solaris* biomass samples

		g/100 g dry matter
Ca	Mean	2.48
	s.d.	0.57
	Min	1.64
	Max	3.24
P	Mean	0.27
	s.d.	0.04
	Min	0.24
	Max	0.32
Mg	Mean	0.62
	s.d.	0.16
	Min	0.43
	Max	0.88
K	Mean	4.33
	s.d.	1.28
	Min	3.36
	Max	6.29
Na	Mean	0.0439
	s.d.	0.0288
	Min	0.0086
	Max	0.0818
Cl	Mean	1.52
	s.d.	0.28
	Min	1.15
	Max	1.90

Analytical constituents of *Nicotiana tabacum* cv. *Solaris* biomass samples (g/100 g dry matter)

	Mean	s.d.	Min	Max
Organic matter	82.80	2.36	78.09	85.74
Crude protein	18.98	2.36	14.79	23.21
Crude oil and fats	7.92	4.06	1.93	15.55
Neutral Detergent Fiber	46.64	4.07	39.36	52.53
Acid Detergent Fiber	37.49	4.99	28.61	45.68
Acid Detergent Lignin	12.87	3.87	5.69	20.69
Hemicellulose	9.14	2.07	6.44	12.89
Cellulose	24.62	4.31	18.97	33.17
Available fiber	33.77	4.14	25.97	40.02
Starch	1.75	0.73	0.95	3.61
Sugar	0.56	0.88	0.03	3.05
Crude ash	17.20	2.36	14.26	21.91
Total alkaloids	0.35	0.18	0	0.70

CONCLUSIONS

- The content of non-structural carbohydrates (sugars and starch) allows the use of *Solaris* biomass as silage
- The results confirm cv. *Solaris* from the second harvest biomass as a good quality forage
- The results add value to the cv. *Solaris* multitasking attitude as a source of renewable energy (oil from seeds and biomethane from biomass) and animal feed protein (oil seed cake)