

Dutch Greenhouse Production of Vanilla, A realistic idea?

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Plants (MAP's)

From agro forestry-/‘small holder’ towards ‘agro-industrial’ Vanilla production

- Vanilla production in a plantation system is not a new idea
- Many projects, many failures
- Intensifying Vanilla production seems to cause technical difficulties
- Industry still heavily depending on Madagascan Vanilla production!

Reasons to consider controlled agricultural Vanilla production

- Increasing uncertainty of production quantity, quality, and pricing of Vanilla produced in the traditional countries of origin
- Secure part of the production needed and set a certain Vanilla bean price level
- Introduction of optimized ways of production and new 'short-term' controlled curing systems

Risks and opportunities of Vanilla greenhouse production

- Ultimate high-tech agricultural approach (does it fit Vanilla?)
- Technical possibilities of extremely controlled production
- Production level to be achieved
- Production costs → Final pricing of beans!
- General feasibility,

Main technical incentives

- Using the right cuttings of the right Vanilla specie
- Finding the right substrate, plant support and plant shape
- Determining the optimal plant density
- Optimizing temperature, light and humidity conditions and -regime
- Shortening time towards first flowering
- Inducing sufficient flowering
- Finding a natural pollinator

Approach of Dutch project 'NederVanille'

- Production system analogous to tomato greenhouse production
- Similar temperature range, but less artificial lighting and with additional moisturising
- Support along lines, no 'looping' (...for now)

Year round- Tomato production



Year round- Tomato production



(Home grown) Cuttings



Main stem lead horizontally.....



.....and upright



Six months old beans



Plants in a 'Looping' set-up



Greenhouse Vanilla, University of North Texas



Financial result tomato greenhouse crop

- 'Turn-over'/m²
Production of 65,5 kg /m² , € 0,89 /kg = € 58,30
- Heating/Lighting costs / m² € 12,50
- Different production costs / m² € 15,00
- Labor costs / m² € 16,00
- Investment costs / m² € 14,00
- Total costs / m² € 57,50
- Profit / m² = € 0,80 → € 8.000,-/Ha

Estimated costs of Vanilla Greenhouse crop /year

- Heating/Lighting costs /m² € 14,00
- Different production costs / m² € 10,00
- Labor costs / m² € 25,00
- Investment costs / m² € 14,00
- Total costs / m² € 63,00

Estimated production and possible financial result

- If 2 plants/m² and 2 kg of green beans /plant/year = 4 kg/m² (from third year on!)
- Then → 8 years x 4 kg = 32 kg/10 years = 3,2 kg/m²/year
- Cost price € 63,00 / 3,2 = € 19,70 / kg of green beans
- Raw material costs /kg of cured beans → € 19,70 x 5 = € 98,50 /kg
- Costs of advanced/accelerated curing (€10,-/kg?) has to be added!
- If a realistic price of green beans is € 15,-/kg → Financial yield = € 48,-/m² → Loss will be € 15,- / m² → **Not feasible!!**

Price variability at different yields considering similar production costs

# plants/m ²	Production kg/plant	Kg/m2/yr. green beans	Cost/kg green beans	Material costs /kg cured beans (5:1)	Result/m2 (if sales price = € 15,-/kg, green)
2	1	2,0	€ 31,50	€ 157,50	- €33,00
2	1,5	2,4	€ 26,25	€ 131,25	- €27,00
2	2	3,2	€ 19,70	€ 98,50	- €15,00
2	2,5	4,0	€ 15,75	€ 78,75	- € 3,00
2	3	4,8	€ 13,12	€ 65,60	+ € 9,00
3	1,5	3,6	€ 17,50	€ 87,50	- € 9,00
3	2	4,8	€ 13,12	€ 65,60	+ € 9,00
3	2,5	6,0	€ 10,50	€ 52,50	+ €27,00
4	1	3,2	€ 19,70	€ 98,50	- €15,00

Conclusions (1)

Dutch Green house production of Vanilla may be feasible (and can be realistic!)

But;

Greenhouse production costs are high ($\pm \text{€}63,-/\text{m}^2$)

First two years (of no production) increases costs

**For a cost-price of $\text{€}15,-$ /kg of green beans
bean production has to be $\pm 4,2 \text{ kg}/\text{m}^2$**

Conclusions (2)

There are serious uncertainties with respect to:

- Production system (Plants/m², Plantsupport and shape, Looping/non-looping, Heating and lighting, Flower induction and Pollination)
- Bean production /plant

All effecting final price / kg of green beans!