5 ppm while there was a small negative interaction between them in the fruit yield. It is, therefore, highly recommended that either 5 ppm of GA3 or 10 ppm of tomatotone be sprayed at the time of full bloom of the third flower.

Integrated cropping systems for year-round intensive vegetable production in the lowland tropics — V. Kleinhenz

This activity aims to study the reduction of seasonal variation in vegetable production in tropical, rice-based lowlands through permanent high beds and introduce the N_{min} method to maintain productivity, but minimize N-fertilizer application and reduce nitrate leaching.

From 1993 to 1995, the feasibility of permanent high beds (50 cm high) and N_{min}-method (reduction of the N-fertilizer rate by the amount of soil-NO_3 before application) was compared to standard practices (20-25-cm-high flat beds and the recommended N-fertilizer rate) in intensive, year-round vegetable production of four species (table 2).

Permanent high beds successfully alleviated the negative impacts of overwet soil conditions in the rainy season. Crops developed profound root systems and absorbed available soil nitrate effectively. Consequently, yields were significantly higher compared to traditional flat beds, and less nitrate leached below the root zone. Rainy season conditions induced water stress and shallow root systems on flat beds. Water stress in the rainy season and accumulation of soil nitrate during the dry season with negligible leaching were responsible for the success of the N_{min}-method on flat beds. About 600 kg or 56% N was saved without significantly affecting yields, but reducing nitrate leaching. The greater biomass and yield potential of vegetables could, however, not be sustained with the N_{min}-method on high beds.

Table 1. Effect of application of tomatotone and/or GA3 on fruit setting

Treatment	Fruit yield (kg/plant)	Fruit setting rate (%)	Fruit length-width ratio	No. of seed/ fruit
Variety	**	ns	**	**
CHT 154	23.6	52.6	1.69	67.2
CHT Santa	16.2	51.7	1.78	53.8
Tomatotone	**	**	**	**
1 (-)	14.7	42.0	1.67	54.7
2 (+)	25.1	62.3	1.79	66.4
GA3	*	**	ns (pr. = 0.065)	*
0 ppm	17.4b	32.0b	1.75ab	65.7a
5 ppm	22.5a	64.2a	1.68b	56.8b
10 ppm	19.8ab	60.3a	1.76a	59.7b

* (0.05 > P)
** (0.01 > P)

Table 2. Marketable yield (kg/m^2) of vegetables as influenced by different bed heights (flat bed, high bed) and fertilizer rate (N_{min}, standard)

	1993				1994				1995
	Chinese cabbage	Chili	Carrot	Veg. soybean	Chinese cabbage	Chili	Carrot	Veg. soybean	Chinese cabbage
Analysis of variance									
Flat bed									
N_{min}	1.49 a	0.20 a	1.40a	1.19a	0.19a	0.07a	3.00a	0.88a	1.80b
Standard	1.37a	0.22a	1.29a	1.26a	0.75a	0.17a	3.06a	0.89a	2.43a
High bed									
N_{min}	2.14a	0.53b	1.16a	1.05b	1.32b	0.29b	2.99b	1.28a	1.32b
Standard	2.10a	0.62a	1.10a	1.10a	1.99a	0.36a	3.24a	1.31a	3.07a
Comparison, probability of no difference									
High bed vs. flat bed	<0.01	<0.01	0.13	<0.01	<0.01	<0.01	0.43	<0.01	<0.01
N_{min} vs. standard	0.31	0.04	0.39	0.06	<0.01	<0.001	<0.001	0.23	<0.01