and it is important to use this resource carefully. During 1999, an experiment of drip irrigation in asparagus was conducted. Three treatments were applied: 50%, 75%, and 100% of the evaporation from a pan evaporation type A. The results of the statistical analysis indicated that the best treatment was 100% with a yield of 517 boxes/ha and 183 cm of water applied. The lowest yield (290 boxes/ha) was with 50% and 91 cm of water applied. 

### 298

**Biosolids and Soil Solarization Effects on Bell Pepper (Capsicum annuum) Production and Soil Fertility in a Sustainable Production System**

Monica Cearas-Hampton*, Phillip A. Stansly, and Thomas A. Obreza University of Florida/IFAS, Southwest Florida Research and Education Center, 2688 State Road 29 North, Immokalee, FL 34142-9515

Methyl bromide will be unavailable to conventional vegetable growers in the year 2005, and it cannot be used by organic growers. Chemical alternatives are more expensive and may also be subject to future restrictions. Non-chemical alternatives like solarization and organic amendments are as yet largely unproven but do offer promise of sustainable solutions free of government regulation. The objective of this study was to evaluate the effects of soil-incorporated biosolids and soil solarization on plant growth, yield, and soil fertility. Main plots were a biosolids soil amendment (37 Mg/ha–1 and a non-amended control. Treated main plots had received some study was to evaluate the effects of soil-incorporated biosolids and soil solarization in marketable pepper yields between biosolids and non-biosolids plots. Plants grown in a sandy Florida soil can increase plant growth and produce higher rates. Results indicate that the yields of ‘Jira’ eggplants could be enhanced by the treatments with either folystate, NAA, or gibberellic acid hereby described.

### 301

**Gibberellic Acid (GA₃) and Light Affect Germination of Echinacea angustifolia Seeds**

Keun Ho Cho¹, Chiwon W. Lee², and Kyu-Min Lee²*; ¹Dep. of Plant Sciences, North Dakota State Univ., Fargo, ND 58105; ²Dep. of Horticultural Science, Sang Myung Univ., Chonan, Chungnam, 330-180, South Korea

The narrow-leaved purple coneflower (Echinacea angustifolia) produces echinacin and related compounds in the root, which are known to have immune and curative properties against viral, fungal, and bacterial infections. In recent years, cultivation of this species has increased in response to growing market demand for natural medicinal remedies. The objective of this study was to determine the influence of gibberellic acid and light on the germination of E. angustifolia seeds. Seeds soaked for 24 h in 0, 1, 5, 10, 50, 100, 250, 500 or 1000 mg/L GA₃ solution were germinated on Whatman #1 filter paper inside petri dishes at 22 °C with or without light (80 µmol m⁻² s⁻¹) for 21 days. The seeds germinated poorly in dark with the final percent germination range from 5% (GA₃ 0 mg/L) to 36% (GA₃ 250 mg/L). Under light, seed germination showed a quadratic response (r = 0.84) to GA₃ concentration. Percent germination exceeded 90% at 10, 50, and 100 mg/L GA₃, with the mean time (T₅₀) to germinate varying at 10.5, 11.7, and 13.3 days, respectively, under light. Seed germination under light was <10% when treated with 500 and 1000 mg/L GA₃. In general, seed germination was best when treated with 10 or 50 mg/L GA₃ under light. Results of this research may well be used in enhancing seed germination during field establishment of E. angustifolia.

### 302

**Comparative Effectiveness of Cytokinins on Quality of Soybean Sprouts**

Hae-Jeen Bang, Soo-Jung Hwang, Hee Chung, and Jung-Myung Lee*; Dept. of Horticulture, Kyung Hee University, Yongin 449-711, Republic of Korea

Soybean sprouts are one of the most favored traditional vegetables around the world. The sprouts are usually consumed 7 to 10 days after sowing depending upon the growing conditions. High-quality sprouts should have less secondary roots, short and well-swollen hypocotyls in pure white color, and small cotyledons in hooked position. Cytokinins were reported to be effective in producing such sprouts by promoting sprout growth while inhibiting the excessive hypocotyl elongation and secondary root growth. Seeds of four soybean cultivars with different characteristics were soaked in water for 4 h and, 2 to 3 h after the imbibition, the seeds were soaked again in solutions of different cytokinins such as benzyladenine (BA), RA-riboside (BAR), BPA, 2IP, 2P-riboside, 4-CPDU, and kinetin-riboside (KR) for 10 min. After the treatment, the sprouts were grown in a plastic tube (25 cm height x 10.5 cm diameter) a dark culture room with ample watering every 4 h. After 7 days of growth, uniform samples were taken from each treatment and the sprout characteristics were examined. Some cytokinins such as BA, BAR, 4-CPDU were highly effective in promoting the sprout growth (fresh weight) even though the hypocotyl length was markedly reduced. Other cytokinins such as 2IP, 2P, and KR had no effect on sprout growth. Hypocotyl diameter was markedly increased by BA and 4-CPDU treatment, thus resulting in short,