# Article information:

Agronomy | Free Full-Text | Developing a Subsurface Drip Irrigation Scheduling Mode Based on Water Evaporation: Impacts Studies on Cucumbers Planted in a Greenhouse in the North China Plain  
<https://www.mdpi.com/2073-4395/13/8/1957>

# Article summary:

1. China's water scarcity and the need for advanced water-saving irrigation technology: China faces a shortage of water resources, particularly in Northern China, where per capita water resources are even lower than the world average. As agricultural water accounts for a significant portion of China's total annual water consumption, improving the efficiency of agricultural water use is crucial for sustainable agriculture development. The application of advanced water-saving irrigation technology, such as subsurface drip irrigation (SDI), is considered a primary method to achieve this objective.

2. Benefits and factors affecting SDI: SDI has been proven to be a high-performance irrigation method with various benefits, including increased yields, reduced evaporative losses and greenhouse gas emissions, and improved control of soil salinity. However, two factors that affect the normal use of the SDI system are the appropriate burial depth of the drip belt and irrigation water amount. The depth at which the drip belt is buried should be determined based on crop type and soil texture to ensure optimal root water uptake. Additionally, finding the right balance between too much and too little irrigation water is essential to avoid waterlogging or insufficient watering.

3. Irrigation scheduling methods: Various methods can be used to schedule irrigation regimes. While some experts rely on soil moisture sensors or tension meters, these methods can be costly due to the need for multiple sensors and may only indicate whether the soil lacks water without providing information on the required amount of irrigation. Alternatively, using a 20 cm water evaporation pan has been found to be an effective method for determining precision irrigation amounts based on pan evaporation (Ep). By adjusting a coefficient (Kp) to adapt to different evaporative conditions or crop growth stages, precision irrigation regimes can be calculated based on Ep, Kp, and irrigation area.

Overall, this article highlights the importance of advanced water-saving irrigation technology in addressing China's water scarcity issues in agriculture. It also emphasizes the benefits of SDI and the factors to consider for its successful implementation, as well as different methods for scheduling irrigation regimes.

# Article rating:

Appears strongly imbalanced: The article is written in a biased or one-sided way, and the information it provides is not trustworthy enough to be considered a reliable source. You should consult other sources to find reliable information on the presented issues.

# Article analysis:

对于上述文章的批判性分析如下：

1. 偏见及其来源：文章中存在一些潜在的偏见。首先，文章强调中国水资源短缺的问题，并将农业用水占比作为解决可持续发展问题的关键。然而，这种观点忽略了其他行业对水资源的需求以及政府在水资源管理方面的责任。此外，文章没有提到可能存在的政策和治理问题导致水资源分配不均衡。

2. 片面报道：文章只关注了地下滴灌技术在提高农业用水效率方面的优势，并未提及该技术可能存在的局限性和风险。例如，地下滴灌系统需要大量投资和维护成本，并且对土壤质量和根系生长有一定要求。此外，地下滴灌系统可能会导致土壤盐渍化问题。

3. 无根据的主张：文章声称地下滴灌系统是最高效的灌溉方法，但并未提供充分的证据来支持这一观点。虽然有一些研究表明地下滴灌系统可以提高作物产量和减少水分蒸发损失，但并非所有研究都得出了相同的结论。文章应该提供更多的研究结果和数据来支持其主张。

4. 缺失的考虑点：文章未对地下滴灌系统可能对土壤生态系统和水资源管理产生的影响进行充分讨论。例如，地下滴灌系统可能导致土壤水分过度集中，从而影响土壤微生物活动和植物根系的健康。此外，地下滴灌系统需要大量的水源供应，这可能会对当地水资源造成压力。

5. 所提出主张的缺失证据：文章声称基于蒸发量制定灌溉方案是一种有效的方法，但并未提供足够的证据来支持这一观点。文章应该引用相关研究或实验结果来证明这种方法的可行性和效果。

6. 未探索的反驳：文章没有探讨其他学者或研究人员对地下滴灌系统和基于蒸发量制定灌溉方案的不同观点或批评意见。一个全面客观的分析应该包括不同观点之间的辩论和争议。

7. 宣传内容：文章在描述地下滴灌技术时使用了积极宣传性语言，并未提及任何潜在的问题或风险。一个更客观的分析应该包括对技术的优点和缺点的平衡考虑。

总体而言，上述文章存在一些偏见和片面报道，并未提供充分的证据来支持其主张。一个更全面客观的分析应该考虑到不同观点和研究结果，并提供对可能存在的问题和风险的评估。

# Topics for further research:

* 水资源管理政策和治理问题
* 地下滴灌系统的局限性和风险
* 地下滴灌系统的效果和效率
* 地下滴灌系统对土壤生态系统的影响
* 基于蒸发量制定灌溉方案的可行性和效果
* 地下滴灌系统和基于蒸发量制定灌溉方案的争议和批评意见

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