History of High Efficient Irrigation Development
Outside China
Year: 1896
Manufacturer: Patent
Type: Garden Hose Nozzle
Typical use: Agriculture, Commercial, Residential

This patent by John J. Ledden of Baltimore, Maryland, USA, was issued on November 10, 1896. It is not known if it went into production.
This patent from Joseph H. Smith, shows a new type of lawn sprinkler. The patent date is May 4, 1897.

Year: 1897
Manufacturer: Joseph H. Smith
Washington D.C.
Type: Sprinkler
Typical use: Agriculture, Commercial, Residential
USA

Sprinkler Patent

Joseph H. Smith

Year: 1898
Manufacturer: Joseph H. Smith
Washington D.C.
Type: Sprinkler
Typical use: Agriculture, Commercial, Residential
Here's another Joseph H. Smith sprinkler patent and this one is dated, March 22, 1898.
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- **Year:** 1898
- **Manufacturer:** Joseph H. Smith
- **Location:** Washington D.C.
- **Type:** Sprinkler
- **Typical use:** Agriculture, Commercial, Residential
Year: 1935
Manufacturer: White Showers
Model: ?
Type: Oscillating Sprinkler
Typical use: Agriculture, Commercial, Residential
The White Shower sprinklers are an oscillating type of sprinkler. They are attached to the water source by a hose.
Year: 1938
Manufacturer: Skinner Irrigation
Troy, Ohio
Model: SAU
Type: Impact sprinkler
Typical use: Agriculture, Commercial
This impact sprinkler would be used on a stand or portable irrigation pipe.
Year: 1948
Manufacturer: Buckner Irrigation
Fresno, California
Type: Impact Sprinkler
Typical use: Agriculture, Commercial, Residential
This photo shows how impact sprinklers were made at Buckner Irrigation in Fresno, California, USA in 1948.
Modern drip irrigation

When researchers began experimenting with subsurface irrigation using clay pipe to create combination irrigation and drainage systems.

Hannis Thill

Year: in 1860, 1920s
Manufacturer: Drip Irrigation
Type:
Typical use: Agriculture
Research was later expanded in the 1920s to include the application of perforated pipe systems. The usage of plastic to hold and distribute water in drip irrigation was later developed in Australia by Hannis Thill.
Instead of releasing water through tiny holes easily clogging by tiny particles, water was released through larger and longer passageways by using velocity to slow water inside a plastic emitter.

Simcha Blass and his son Yeshayahu

Year: 1959
Manufacturer: Israel with Kibbutz Hatzerim
Type: Drip Irrigation
Typical use: Agriculture, The first experimental system of this type was established in 1959 by Blass who partnered later (1964).
Year: 1964
Manufacturer: Chapin Watermatics
Water Town, New York
Model: Unknown
Type: Drip Irrigation
Typical use: Agriculture
This photo shows Professor Norman Smith, Nassau County Agriculture Agent in Old West Bury Gardens, New York, USA. He is inspecting a crop of cantalope grown with drip irrigation developed by Dick Chapin in August 1964.
in China
In the early 1950s, the sprinkler irrigation was introduced into China, and the high income crops and vegetables were applied in the suburbs of the big cities. Sprinkler irrigation technology has been initially applied to agricultural cultivation, such as vegetables, field crops, nursery and so on. Now it is widely used in landscaping, such as lawn, football field, golf course, courtyard, park and so on.
Since 1974, the micro irrigation technology, it has experienced three stages:
1. introduction, digestion and trial production (1974 to 1980),
2. depth research and stable development (1980 to 1990)
3. rapid development (1990 later).
At present, China has developed and improved drip irrigation equipment, micro sprinkler irrigation equipment, drip pipe (tube), emitter, compensating emitter and the rotary micro nozzles, the establishment of a number of new experimental demonstration base, and the development of a number of micro-irrigation equipment enterprises.
In 1974, three sets of drip irrigation equipment were given to China as a present by the government of Mexico to introduce drip irrigation technology.
In May 1975, the national sprinkler science and technology information network was approved by the Ministry of Water Resources.
In 1975 by the China Academy of Sciences, Ministry of Science and Technology and a number of relevant ministries involved, in Tongliao, Qixian and Luoyang, during the year held irrigation technology conference, for three times within one year, cross sectoral and cross discipline under the promotion of water-saving irrigation, industry ushered in the golden period of development.
National Sprinkler Information Network

September 1976, the internal exchange Journal of the national sprinkler technology and information network -- the first publish of the "Sprinkler Technology" magazine

Wuhan University

Year: 1976
Management of sprinkler irrigation group of water conservancy teaching and research team of Wuhan University
In June 1, 1990, the Ministry of Water Resources of Institute of Irrigation in Xinxiang, Henan, held a meeting of micro irrigation.

Year: June 1, 1990
At the meeting of Agricultural Water Conservancy Specialized Committee officially announce to establishment Micro Irrigation Group
High Efficiency Irrigation Area

China’s HEIA Irrigation Area (100*Million mu)

<table>
<thead>
<tr>
<th>Year</th>
<th>Irrigation Area (亿亩)</th>
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<tr>
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China

HEIS in China

Water saving and reducing water pumping in North China

Water saving and increasing efficiency in Northwest China

Water saving and reducing draining in the South

Water saving and increasing grain in Northeast China
After more than 40 years of development, great achievements have been made. According to the statistics of the International Commission on Irrigation and Drainage (ICID) in 2016, the latest China, with 65 million 870 thousand hectares of irrigated area ranked first in the world, according to statistics China in micro irrigation area, as 5 million 270 thousand hectares ranked first, while Chinese irrigation area of 3 million 730 thousand hectares, ranked third in the world.
In 2020 and 2030, the amount of agricultural irrigation water was kept at 372 billion cubic meters and 373 billion cubic meters (basically no increase).

The control of water efficiency, in 2020 and 2030 the effective utilization coefficient of irrigation water reached 0.55 and 0.6, promotion of water-saving irrigation technology, channel seepage, pipe transfer of water, sprinkler irrigation, micro irrigation, improve irrigation water metering facilities.

To 2020, the development of efficient water-saving irrigation area of 288 million mu (48 million acres).
Thank You!

HEIS is going for ever!