



Regional Training on Protected Agricultural Technology in Asian Countries

Huawei
smart
irrigation

History of High Efficient Irrigation Development

上海华维节水灌溉股份有限公司



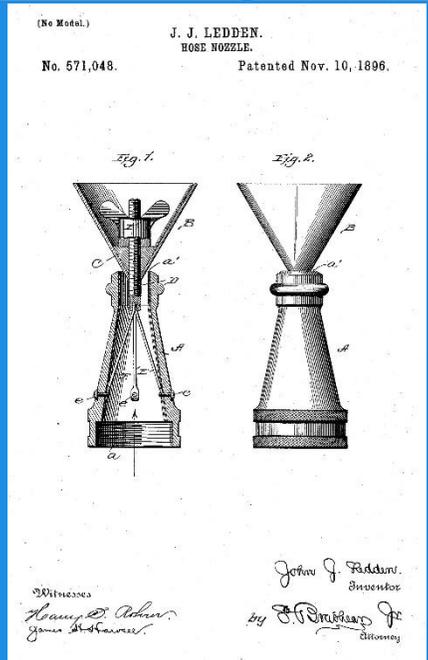
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Outside China

Garden Hose Nozzle



John J. Ledden



Year: 1896

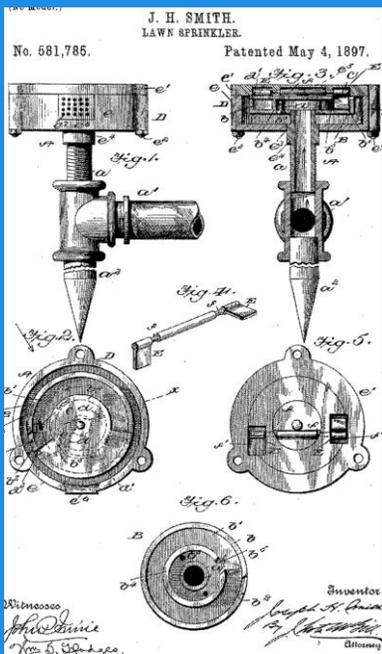
Manufacturer: Patent

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.

Sprinkler Patent



Joseph H. Smith



Year: 1897

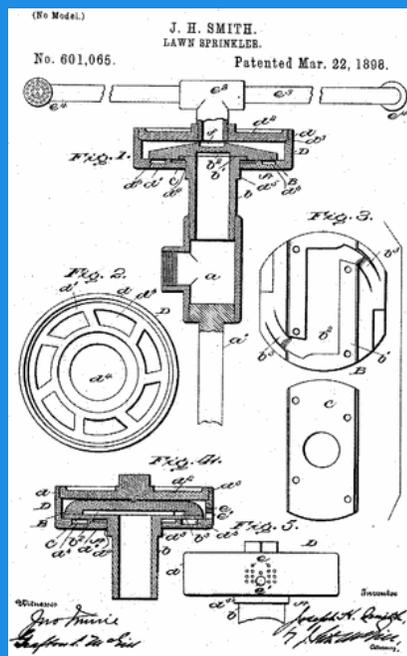
Manufacturer: Joseph H. Smith
Washington D.C.

Type: Sprinkler

Typical use: Agriculture, Commercial,
Residential

This patent from Joseph H. Smith,
shows a new type of lawn sprinkler.
The patent date is May 4, 1897.

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.

Canvas Irrigation Hose



Agriculture

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.



Sprinkler



Oscillating Sprinkler

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.



Impact Sprinkler



Skinner Irrigation

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.



Impact Sprinkler Factory



Buckner



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.

Plastic emitter in drip irrigation

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



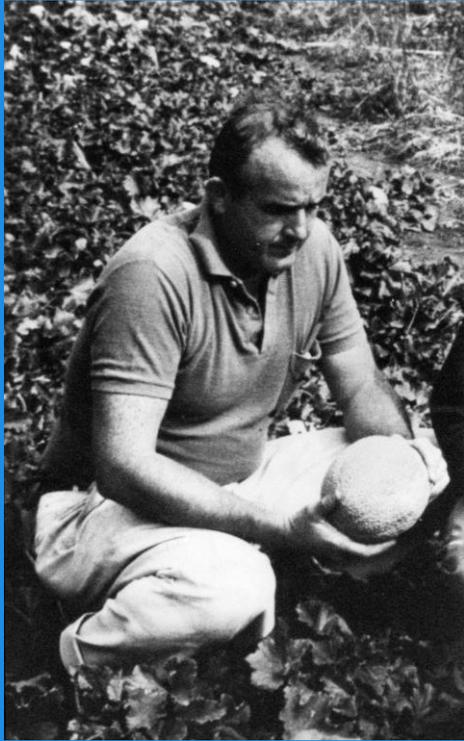
Year: 1959

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).

Drip Irrigation Agriculture



Chapin Irrigation



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 cantaloupe grown with drip irrigation

developed by Dick Chapin in August 1964.

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in China

Primitive drip irrigation

汜勝之書以三斗瓦甕埋著科中央，令甕口上與地平。盛水甕中，令滿。



Bainbridge, David A (June 2001). "Buried clay pot irrigation: a little known but very efficient traditional method of irrigation". *Agricultural Water Management*. 48 (2): 79–88. doi:10.1016/S0378-3774(00)00119-0. Retrieved 23 October 2013.

Fan Sheng-Chih Shu



Year: First century BC

Manufacturer:

Model:

Type: Clay pots

Typical use: Agriculture, the use of buried, unglazed clay pots filled with water as a means of irrigation.

Sprinkler Irrigation



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.

Micro Irrigation



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

Drip irrigation equipment



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

Mexico



Year: 1974

Drip irrigation equipment as a present give China by the government of Mexico

National Sprinkler Information Network



In May 1975, the national sprinkler science and technology information network was approved by the Ministry of Water Resources.

Wuhan University



Year: 1975

Managed by the sprinkler irrigation group of the water conservancy teaching and research team of Wuhan University

National Sprinkler Information Network

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.

Ministries Commissions



Year: 1975
the China Academy of Sciences, Ministry of Science and Technology and a number of ministries and commissions

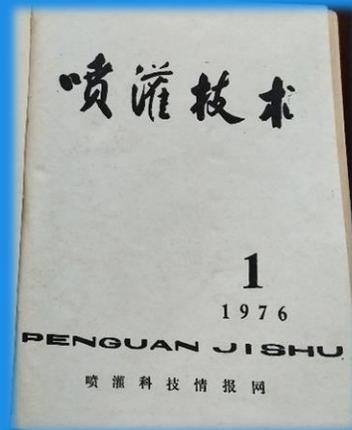


中华人民共和国
科学技术部



中华人民共和国
水利部

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

Micro Irrigation Group



In June 1, 1990, the Ministry of Water Resources of Institute of Irrigation in Xinxiang, Henan, held a meeting of micro irrigation.

Wuhan University



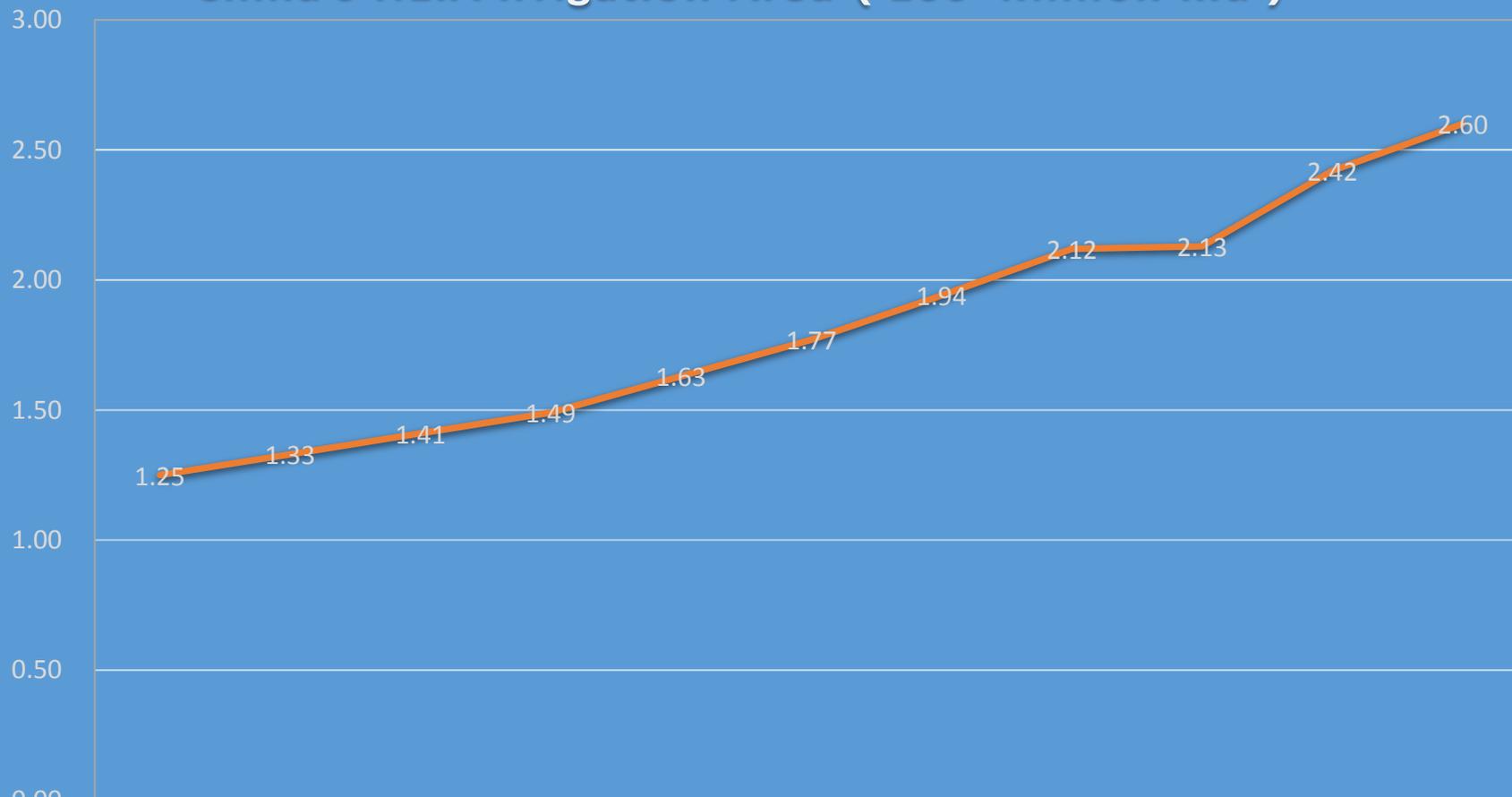
Year: June 1, 1990

At the meeting of Agricultural Water Conservancy Specialized Committee officially announce to establishment Micro Irrigation Group

High Efficiency Irrigation Area

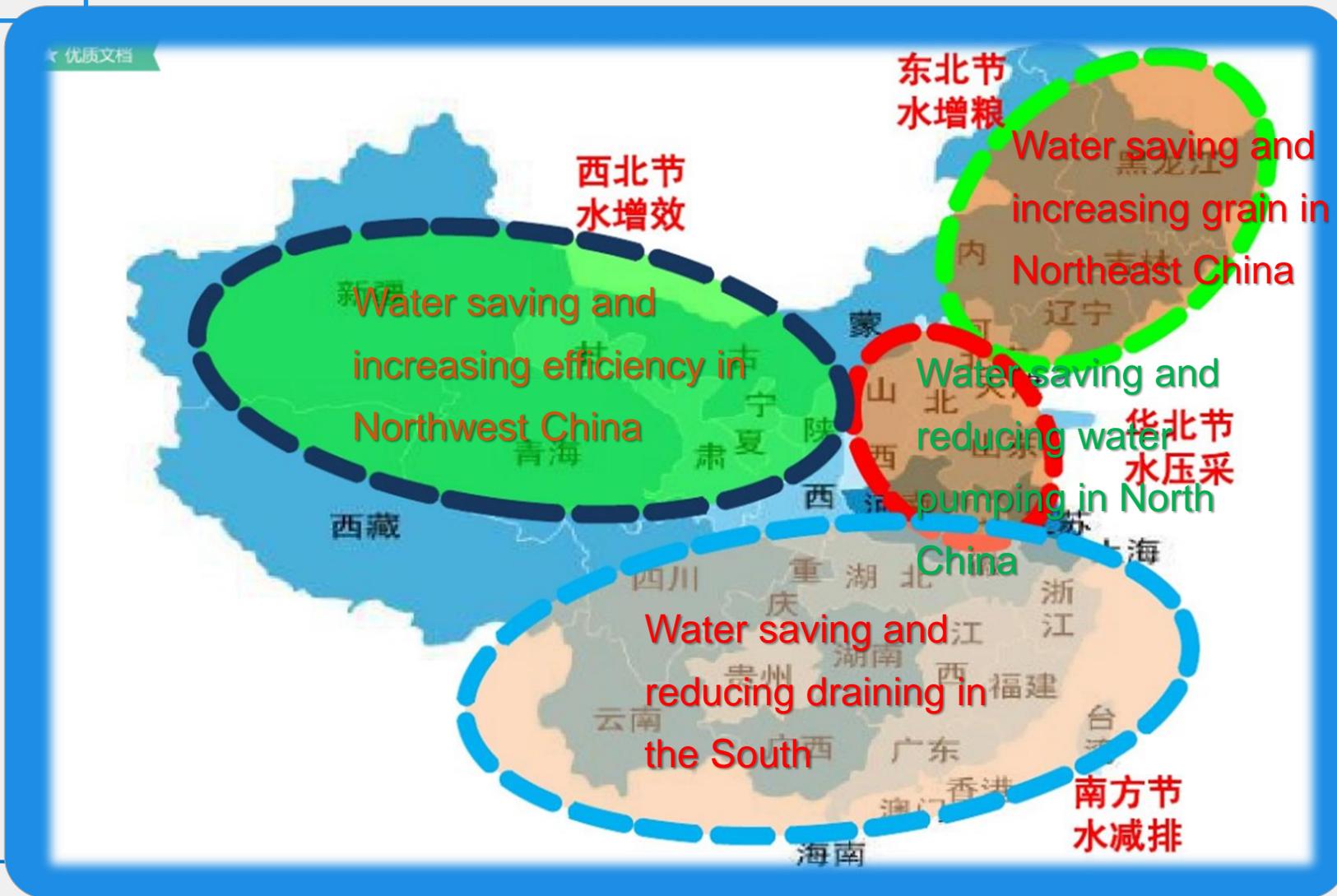


China's HEIA Irrigation Area (100*Million mu)



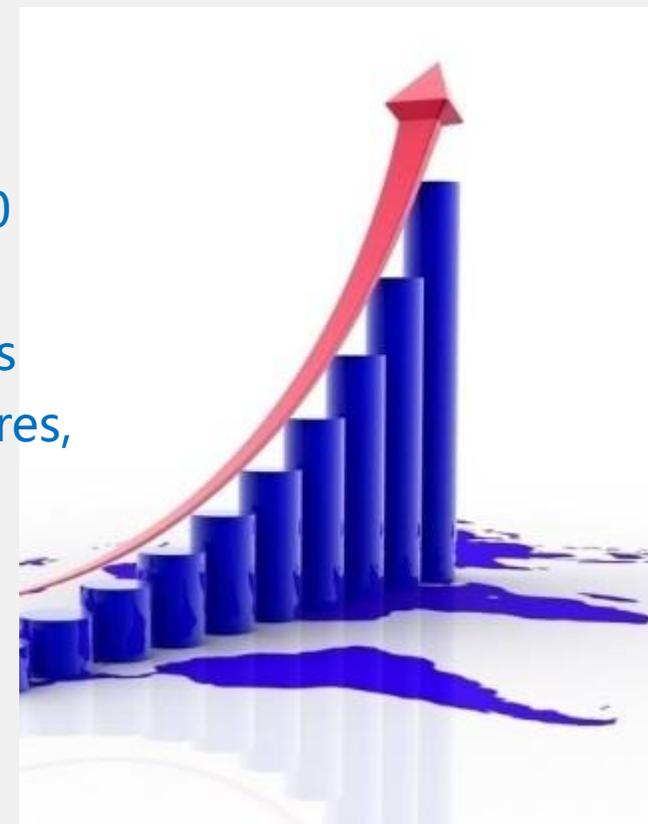
Irrigation Area (亿亩)

HEIS in China



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.



Red line restriction

- 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!

中国华维 智慧农装
China Huawei Intelligent Agriculture



HEIS is going for ever!