

Green oil field

Sweet sorghum-Bioethanol industrialization in china

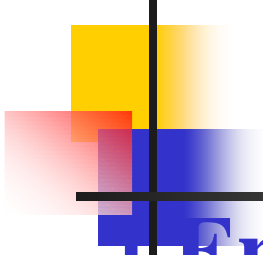
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Sweet sorghum-Bioethanol industrialization in china

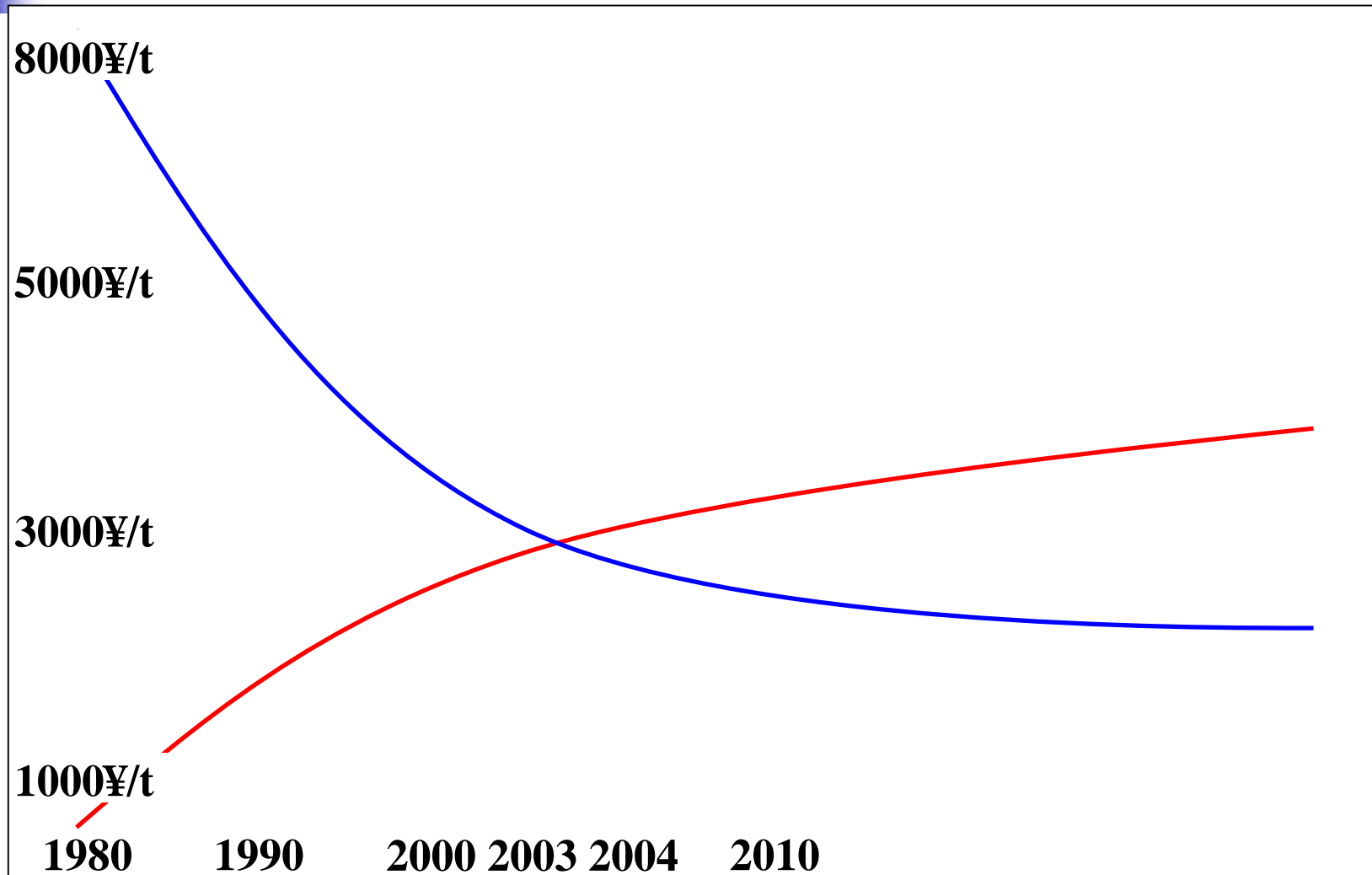
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- 1. Energy shortage in the world**
 - 2. The chance had come for the Bioethanol energy**
 - 3. Development Stratagem of the Sweet sorghum-Bioethanol Utilization**
 - 4. Sweet sorghum is the best energy crop**
 - 5. Bioethanol Production of the technics**
 - 6. Sweet sorghum-Bioethanol industrialization**
 - 7. compositive benefit**



1. Energy shortage in the world

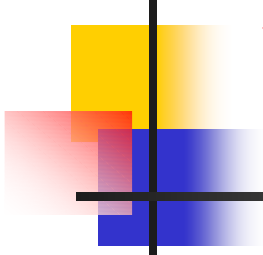
- Everyday 1000000t of coal, oil and natural gas will be consumed in the world
- Oil yield was increased 6 times during the 1950-2000
- 80000000t oil must be import every year in China

2. The chance had come for the Bioethanol energy



■ Oil move up direction

■ Bioanthanol move up direction



3. Development Stratagem of the Sweet sorghum-Bioethanol Utilization

- Every year it will be consumed 40000000t of Bioethanol , is one great market in China.
- Utilization of Bioethanol it can be good for environment
- Sweet sorghum possessed continuable Development and steady-going supply
- accord with agriculture framework regulative



4. Sweet sorghum is the best energy crop

- Photo-power biotransformation is 18-28%
- With high Biomass yield 60-75t/ha
- High sacchariferous 16-22 BX
- 48L can be produced by one hectare yield

Sweet sorghum growing in Huhehaote





**Sweet
sorghum
Planted by
the
farmer**

Sweet sorghum can also grow in Northwestern China -Yanan



Sweet sorghum plantation in shandong Anqiu-2001



Sweet
sorghum
Harvest
1999 in
uhehaohe

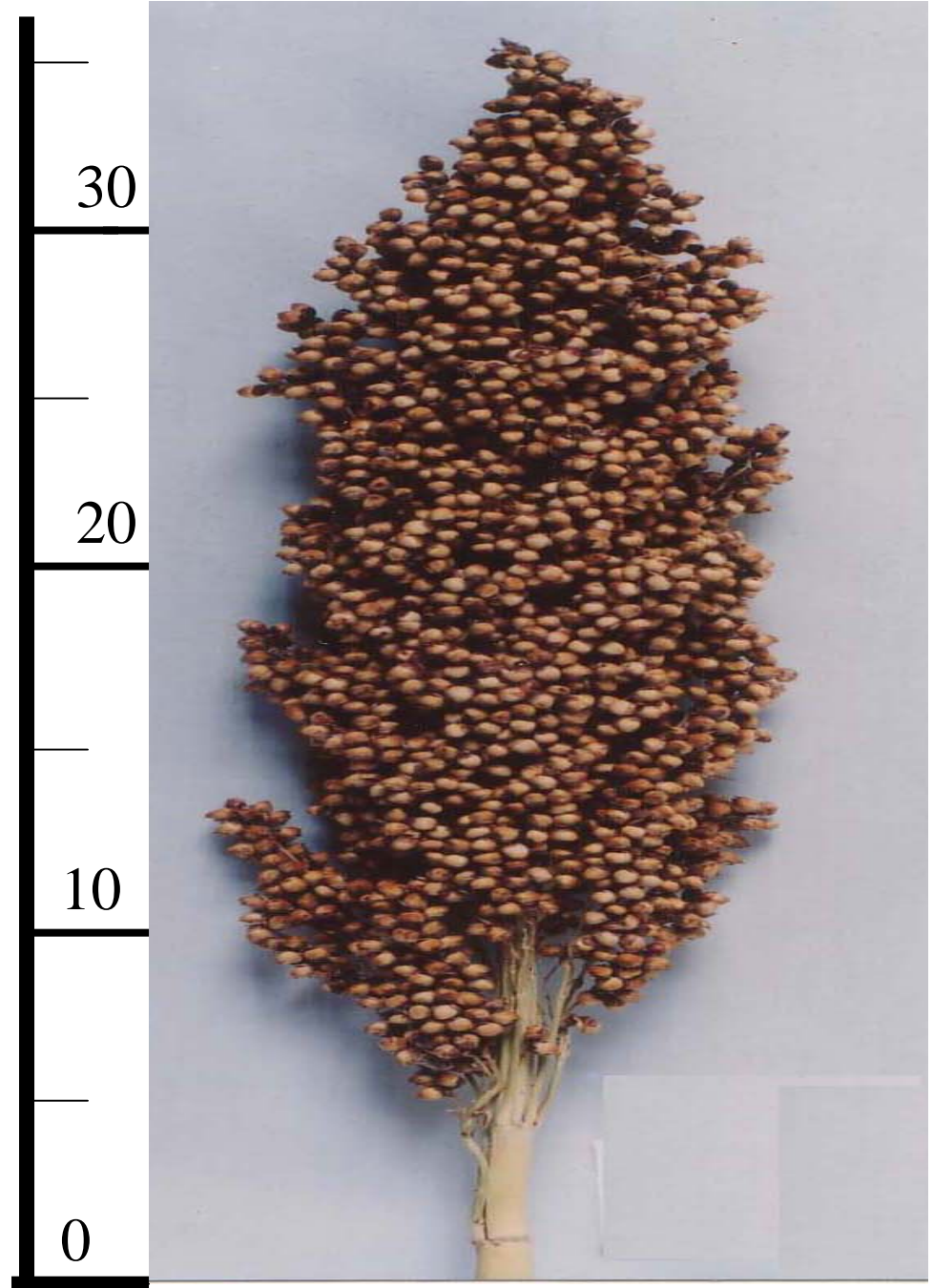


Harvest season



" Chuntian2#" Character
Sweet sorghum
Seeds
(863 Project)

cm



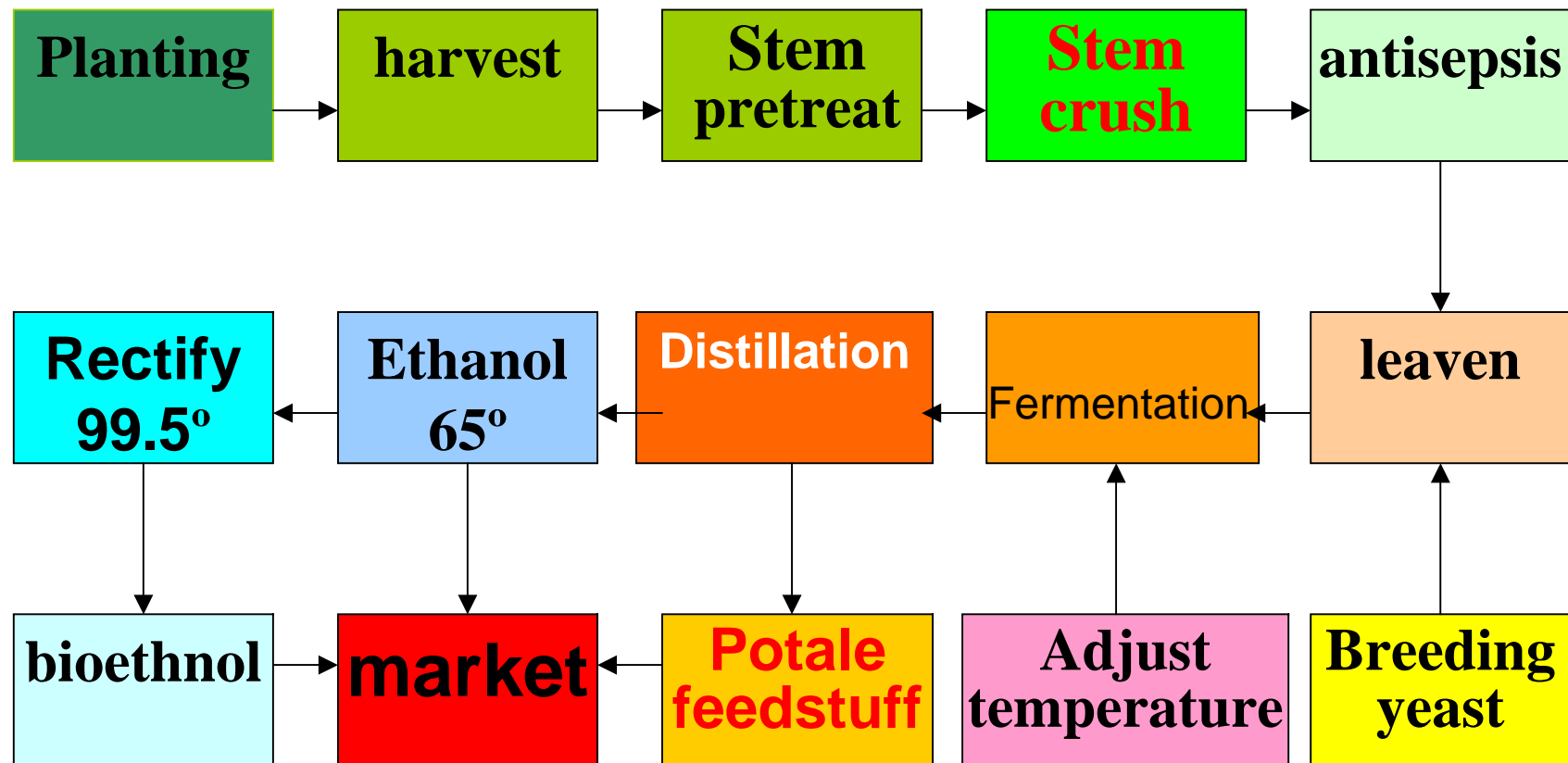


5. Bioethanol Production of the technics (Technics Flow chart)

A. Solid Fermentation

B. Liquid Fermentation

A. Solid Fermentation





**The way
Sweet -
Sorghum
is growing
in
Huhehaote**

Sweet sorghum stem



Stem crush





Stem
dregs
feedstuff



Fermentation 4-5 days





Distillation



Feeding for cattle

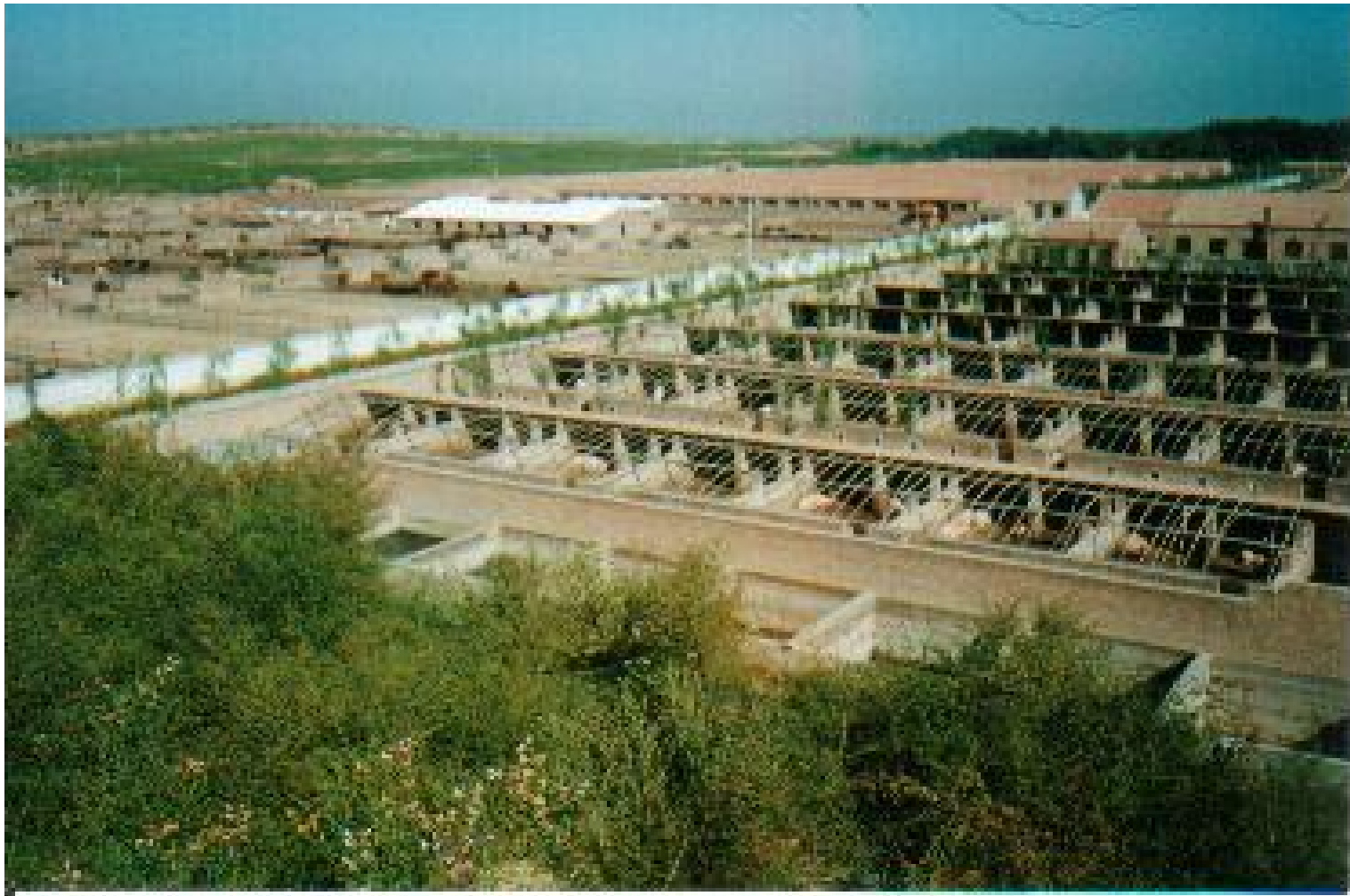




Potale for Feeding pigs



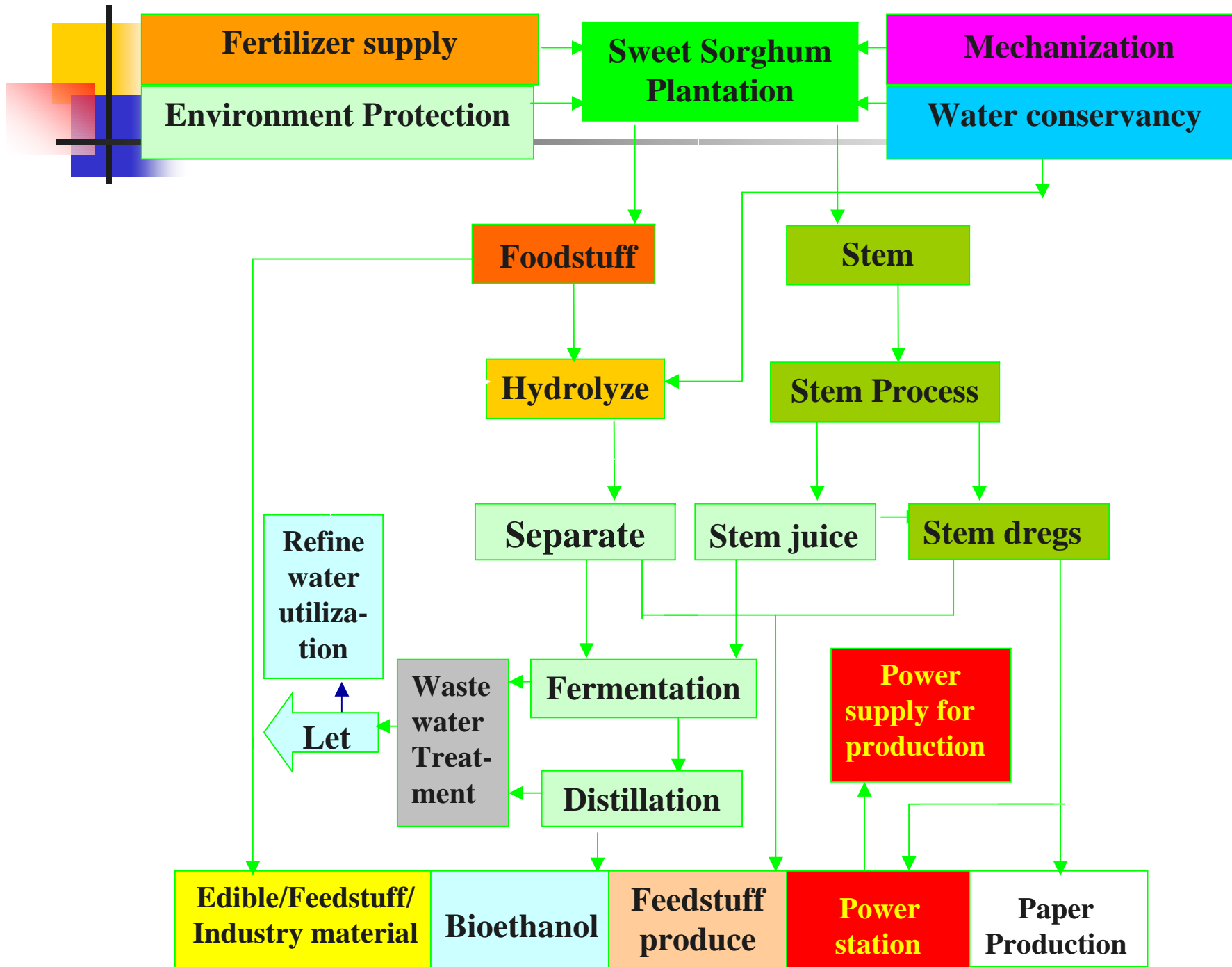
Bioethanol manufactory with breeding



Ethanol/sirup/paper



B. Liquid Fermentation (863 project)



Fast fermentation equipment in Sandong Anqiu(863Project)



fermentation equipment set



Squeezing Stem



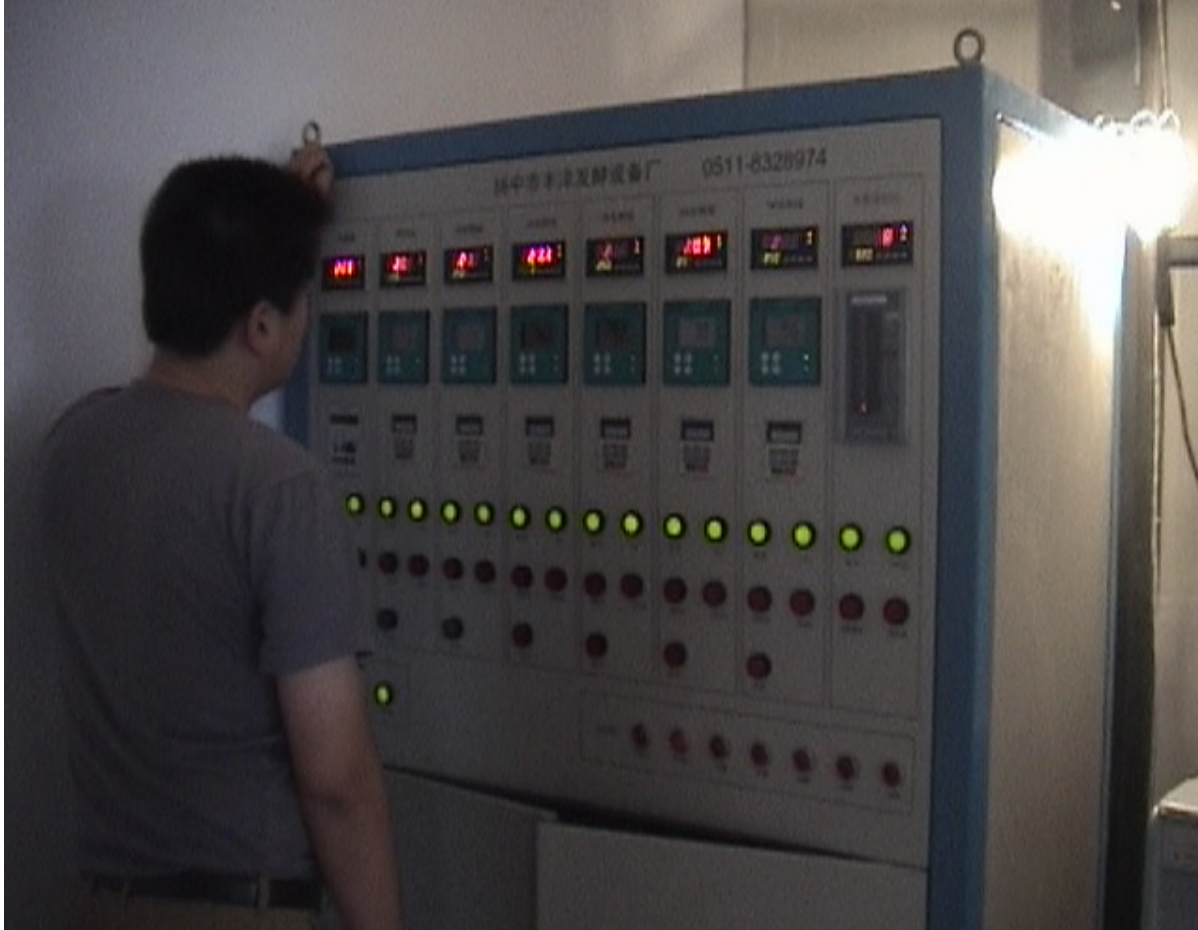
Research fixed microzyme





Making fixed microzyme





Date
collect
and
control
system



Testing and measure





6. Sweet sorghum-Bioethanol industrialization in china

- Heilongjiang province huachuan county
- Inner Mongolia toketo county and tumutezhuoqi
- Liaoning province Chaoyang city
- Xinjiang municipality Sihezi
- Shandong province anqiu city

The favorable condition for Ethanol 20,000T/y:

Huhehaote /

Heilongjiang / Jilin / Liaoning / Xinjiang

The production of each plant will be 5000T Ethanol

7. compositive benefit



Output of Sweet sorghum:

Sweet Sorghum Stem 60-100 T/ha (Brix 16-22%)

Sweet Sorghum corn 4.5-6 T/ha

Conversion:

Sweet sorghum stem (Brix18) 16 T Ethanol 1T

Residues of Sweet sorghum stem Feed 4T

Or for electricity 4000 kwh; Or for paper products 5T

Benefits:

Cost of Ethanol by Sweet sorghum stem 375\$ / T

Investment of plant (100,000T/y) 30 million\$

100,000T Ethanol can reduce CO₂ for 300,000T



Thanks

for your attention