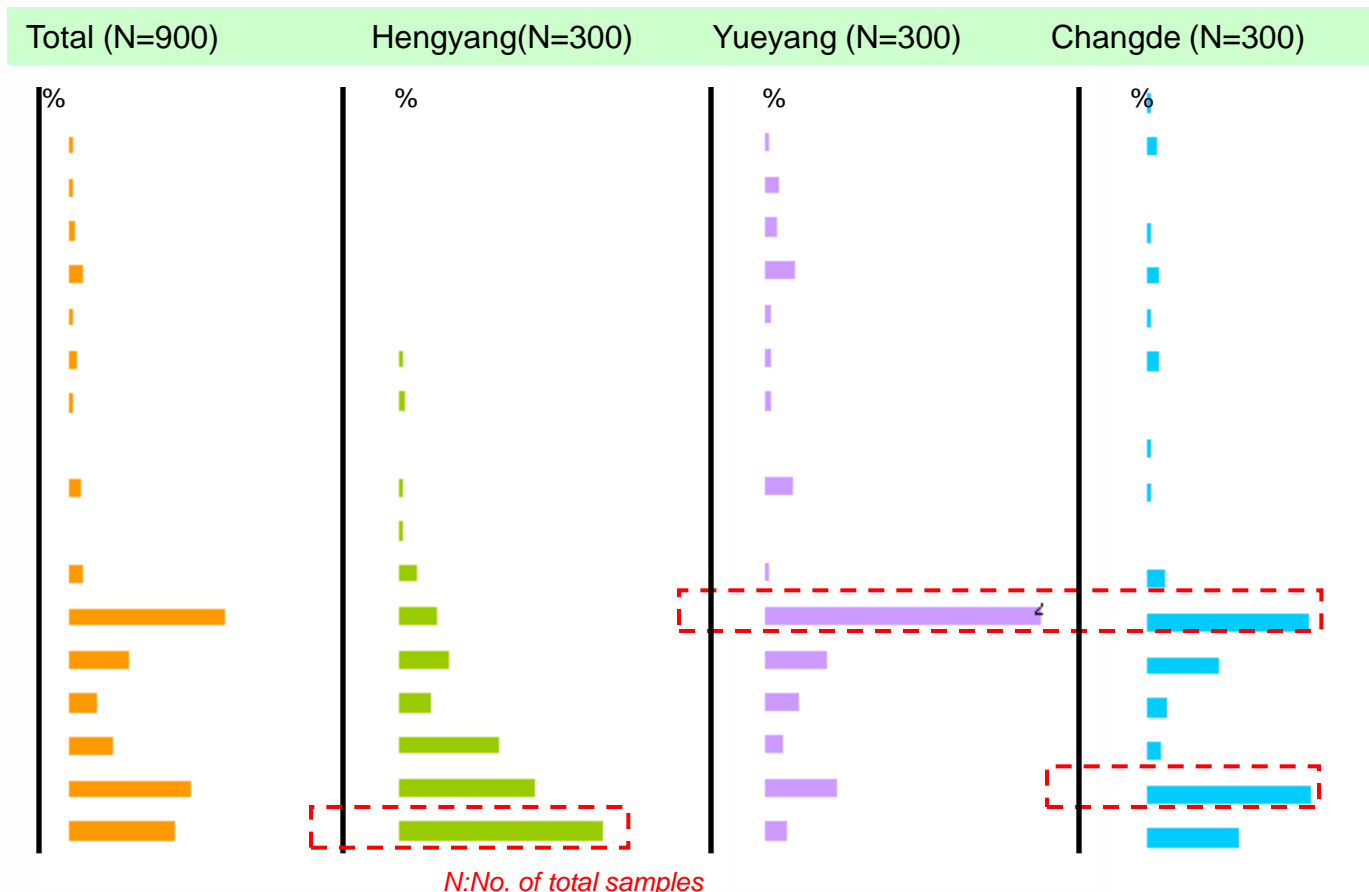


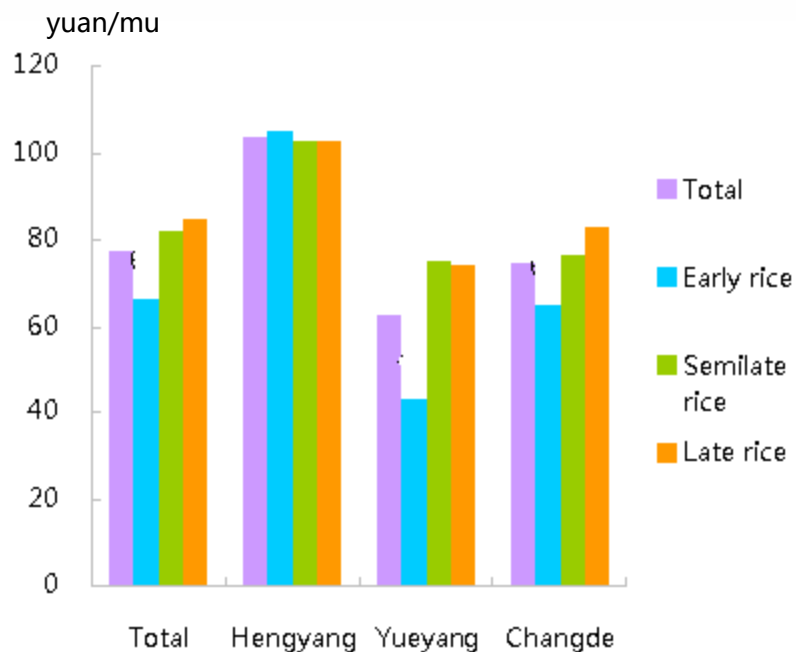
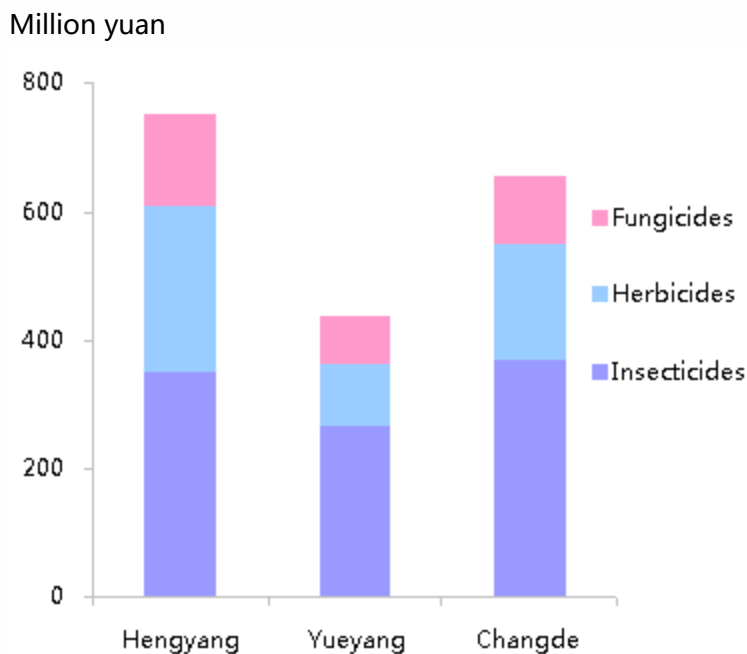
Top priority factor in choosing pesticides given by farmers in Hengyang, Yueyang and Changde

- The factors that farmers in the three cities are most concerned with on pesticides are not totally the same.
- Farmers in Hengyang give top priority to the high content of effective ingredients, second priority to the multi-efficacy and pesticide residue. About 50% of interviewees in Yueyang are most concerned about the prevention effect, while interviewees in Changde are most concerned with both the prevention effect and the multi-efficacy.



Costs spent on pesticides on rice in Hengyang, Yueyang and Changde in 2012

- Total costs on pesticides on rice planting in Hengyang, Yueyang and Changde were RMB750 million, RMB440 million and RMB650 million or so respectively in 2012. (The figures are calculated based on this survey results and the rice planting area in Hunan Annual Statistic Almanac).
- Average pesticide cost on rice planting in Hengyang, Yueyang and Changde in 2012 were RMB103/Mu, RMB62/Mu and RMB75/Mu respectively.



Use of pesticides on early rice planting in Hengyang, Yueyang and Changde in 2012

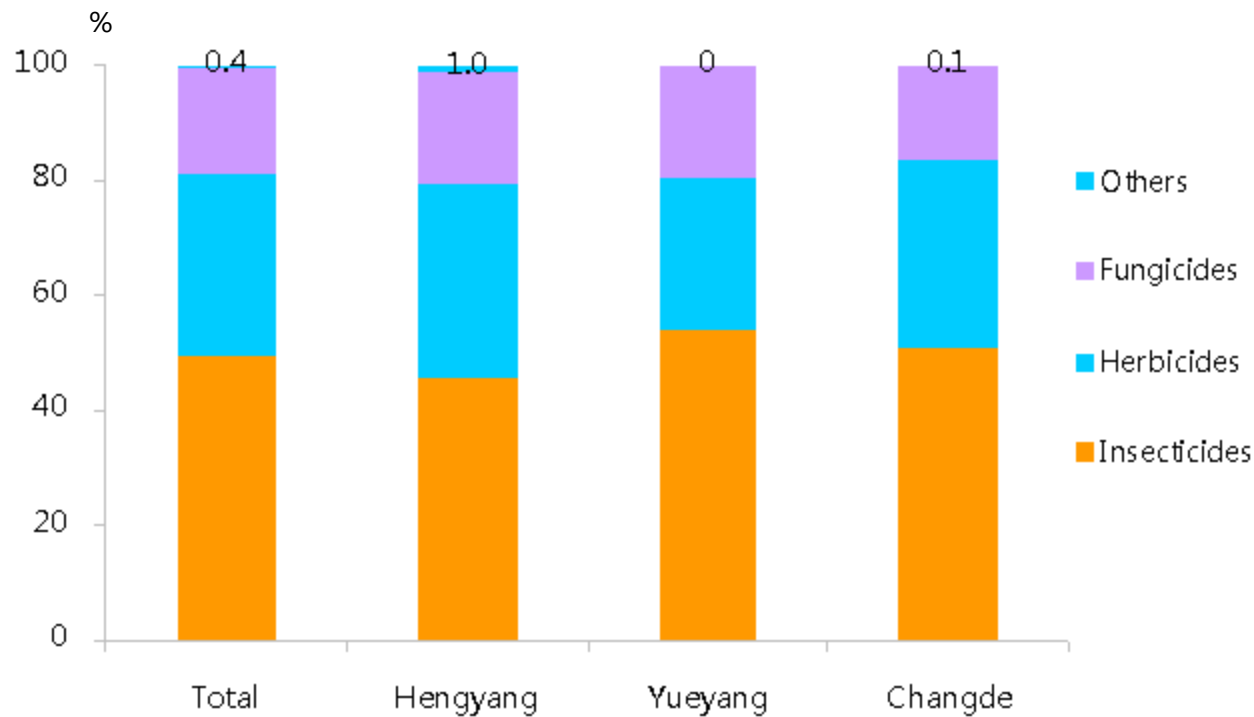
- Number of constantly used pesticide categories mentioned by farmers is ranked from high to low as follows: insecticides, herbicides, fungicides and others. Among all the 900 farmers interviewed, 510 farmers that have planted early rice mentioned 34 insecticides with 1224 times, 19 herbicides with 813 times, 14 fungicides with 715 times, 1 rodenticide with 12 times and 1 molluscicide with 7 times (calculated by the common name/active ingredient).
- Some banned pesticides such as methamidophos are still being used by some farmers..

<i>Insecticides</i>	<i>Total</i>	<i>Heng yang</i>	<i>Yueyang</i>	<i>Changde</i>	<i>Herbicides</i>	<i>Total</i>	<i>Hengyang</i>	<i>Yueyang</i>	<i>Changde</i>	<i>Fungicides</i>	<i>Total</i>	<i>Hengyang</i>	<i>Yueyang</i>	<i>Changde</i>
	1224	425	413	386		813	365	217	231		715	308	191	216
Imidacloprid	XX	XX	XX	XX	Glyphosate	XX	XX	XX	XX	Jingangmycin	XX	XX	XX	XX
Buprofezin	XX	XX	XX	XX	Paraquat	XX	XX	XX	XX	Isoprothiolane	XX	XX	XX	XX
Pymetrozine	XX	XX	XX	XX	Penoxsulam	XX	XX	XX	XX	Difenoconazole-Propiconazole	XX	XX	XX	XX
Methamidophos	XX	XX	XX	XX	Acetochlor	XX	XX	XX	XX	Tricyclazole	XX	XX	XX	XX
Dichlorvos	XX	XX	XX	XX	Cyhalofop-butyl	XX	XX	XX	XX	Mancozeb	XX	XX	XX	XX
Abamectin	XX	XX	XX	XX	Butachlor	XX	XX	XX	XX	Carbendazim	XX	XX	XX	XX
Chlorantraniliprole	XX	XX	XX	XX	Bensulfuron-methyl	XX	XX	XX	XX	Kasugamycin	XX	XX	XX	XX
Abamectin-Flubendiamide	XX	XX	XX	XX	Fluroxypyr-Metsulfuron-methyl	XX	XX	XX	XX	Iprobenfos	XX	XX	XX	XX
Chlorpyrifos	XX	XX	XX	XX	Quinclorac	XX	XX	XX	XX	Trifloxystrobin-Tebuconazole	XX	XX	XX	XX
Bisultap	XX	XX	XX	XX	Pyrazosulfuron-ethyl	XX	XX	XX	XX	Tebuconazole	XX	XX	XX	XX
Monosultap	XX	XX	XX	XX	Penoxsulam-Cyhalofop-butyl	XX	XX	XX	XX	Bismerthiazol	XX	XX	XX	XX
Chlorantraniliprole-Thiamethoxam	XX	XX	XX	XX	Other 8 products	XX	XX	XX	XX	Other 3 products	XX	XX	XX	XX
Triazophos	XX	XX	XX	XX	Not remember /not sure	XX	XX	XX	XX	Not remember /not sure	XX	XX	XX	XX
Other 21 products	XX	XX	XX	XX										
Not remember/not sure	XX	XX	XX	XX										

Costs spent on pesticides against early rice planting in Hengyang, Yueyang and Changde in 2012

- Demand of different types of pesticides in these three cities are basically the same, with costs ranked from high to low to be insecticides, herbicides, fungicides and others.

Ratio of different types of pesticides used on early rice

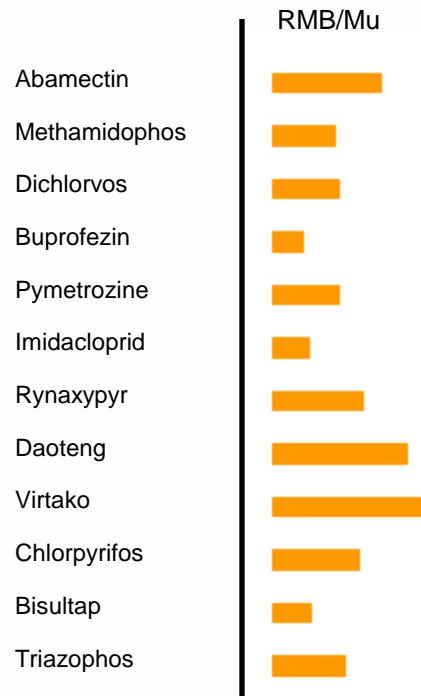


Based on total costs of pesticides used on early season rice

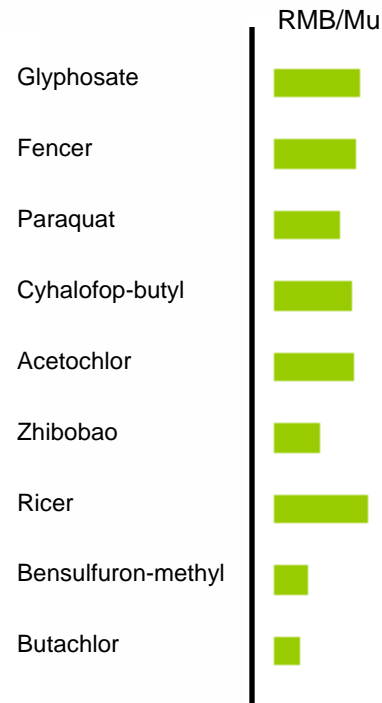
Unit cost of pesticides on early rice planting in Hengyang, Yueyang and Changde in 2012

- Among all insecticides, Virtako, Daoteng and Abamectin have relatively higher unit costs
- Among all fungicides, Mancozeb has much higher unit cost than other fungicides

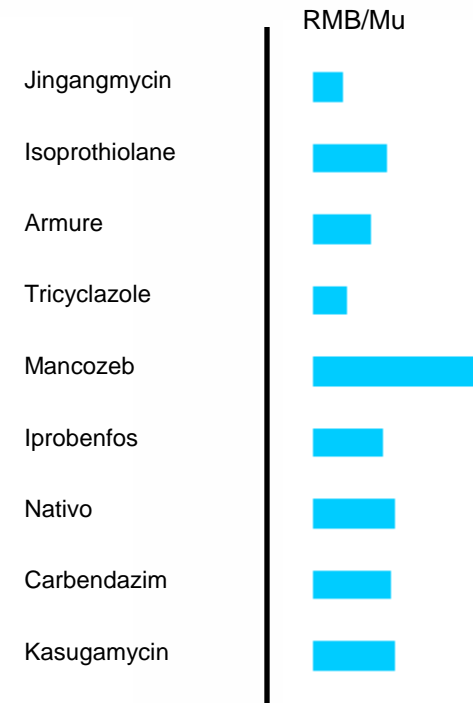
Unit use cost of major insecticides in these three cities



Unit use cost of major herbicides in these three cities



Unit use cost of major fungicides in these three cities

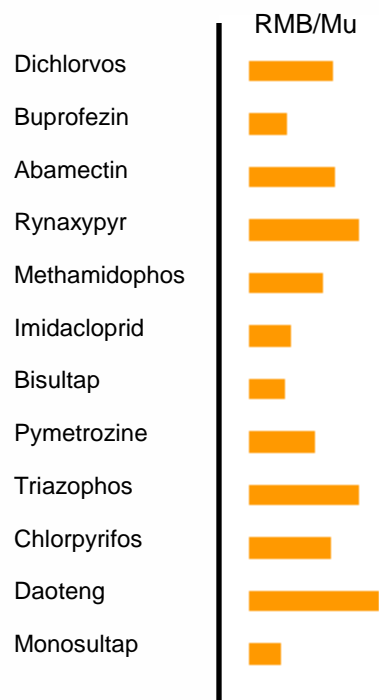


Figures based on the total early rice planting area where insecticides, herbicides and fungicides are used. They are ranked by total cost spent on each pesticide from high to low.

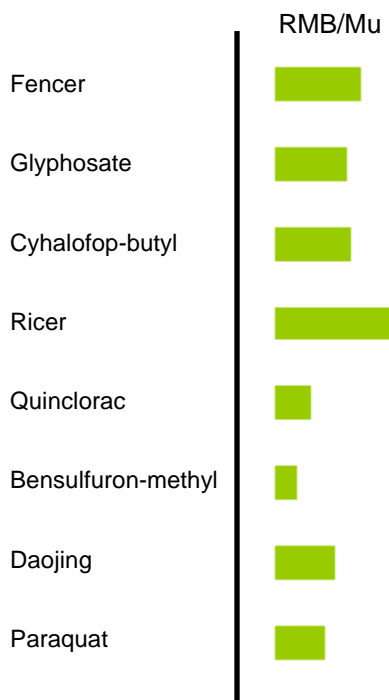
Unit cost of major pesticides on early rice planting in Changde in 2012

- Among all insecticides, Daoteng has the highest unit cost;
- Among all herbicides, Ricer has the highest unit cost, much higher than other herbicides
- Among all fungicides, Nativo has the highest unit cost, much higher than other fungicides

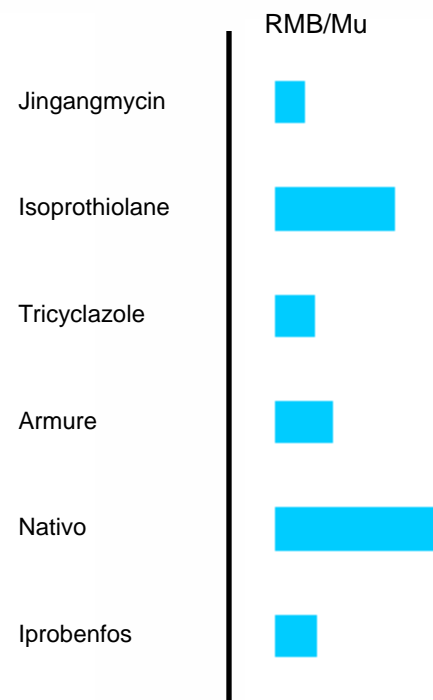
Unit use cost of major insecticides in Changde



Unit use cost of major herbicides in these Changde



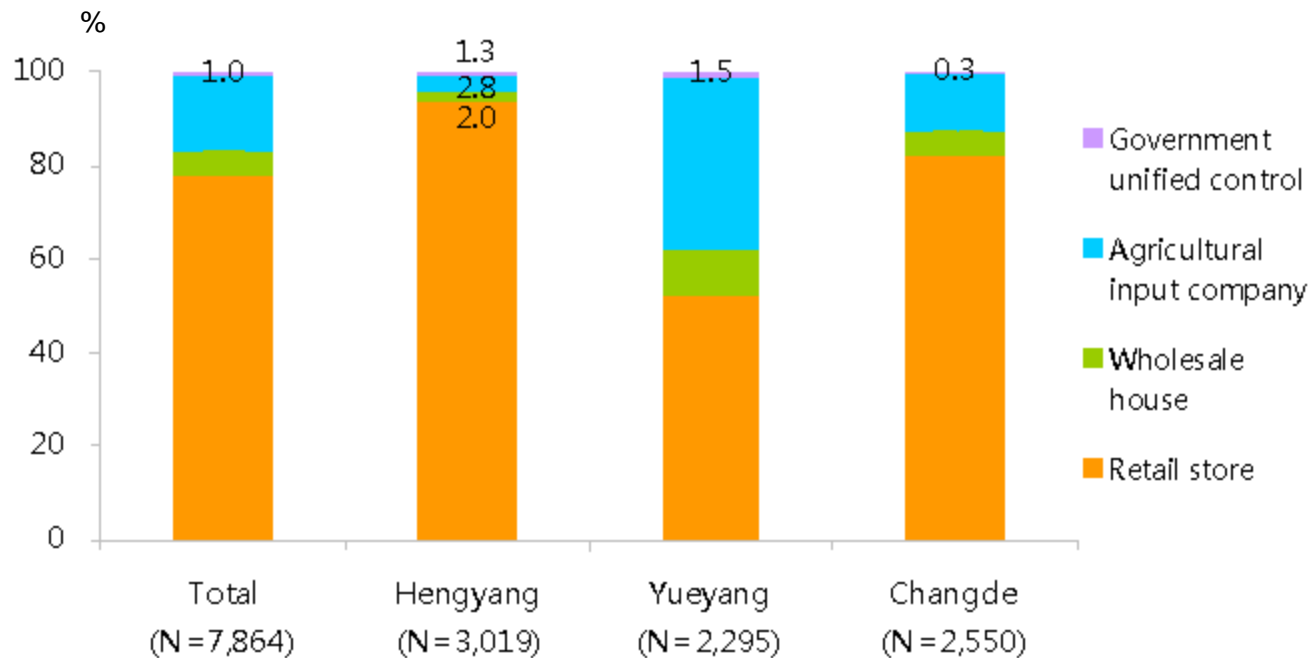
Unit use cost of major fungicides in Changde



Figures based on the total early rice planting area where insecticides, herbicides and fungicides are used in Changde. They are ranked by total cost spent on each pesticide from high to low.

Purchasing channel of pesticides on rice planting in Hengyang, Yueyang and Changde in 2012

- Most farmers purchase pesticides from retail stores and a large proportion of them also purchase from agricultural resources companies
- There's great difference in pesticide purchasing channel among these three cities: over 90% of farmers in Hengyang and more than 80% in Changde purchase from retail stores, while in Yueyang only more than 50% choose retail store, while more than 40% go to agricultural resources companies directory.



N: Times of rice pesticide purchasing channels in 2012 mentioned by interviewees

Summary of pesticides use on rice planting in Hunan

- Market size of pesticides on rice planting in Hunan is estimated at RMBXX billion in 2012. (Figure is calculated based on figures from this survey and the rice planting area listed in Hunan Annual Statistic Almanac.)
- Farmers in Hunan are all quite concerned with pesticides' control effects, such as capability in controlling many types of pests/weeds, quick effect, good prevention effect, lasting efficacy, etc.; few farmers have brand loyalty; they don't care much about the toxicity and eco-friendliness of pesticides and are not quite sensitive to price.
- The costs spent on pesticides categories used on rice ranked from high to low and the number of pesticide products ranked from big to small are both as follows: insecticides, herbicides and fungicides. No matter in number of product types or in cost spent on, insecticides rank No. 1, much bigger or higher than that of herbicides and fungicides.
- Insecticides use on rice is more frequent than that of herbicides and fungicides and there are more types of insecticides used than that of herbicides and fungicides also. For example, on middle season rice, insecticides are used XX times/household with XX products used in average, while herbicides only XX times/household with XX products and fungicides XX times/household with XX products.
- Constantly used insecticides in rice planting in Hunan are Imidacloprid, Buprofezin, Pymetrozine, Dichlorvos and Abamectin; major herbicides used Glyphosate and Paraquat; major fungicides used are Jingangmycin and Isoprothiolane.
- Among constantly used herbicides and fungicides, some brands have distinctive advantages over others, such as glyphosate/roundup, Jingangmycin, Isoprothiolane, Armure etc. while competition for insecticides is quite intense, no brand has obvious advantage over others so far.
- Farmers have higher evaluation on the effect of herbicides than on insecticides or fungicides; some insecticides and fungicides have poor control effects because some diseases or pests have produced resistance to pesticides because of farmers' repeated or over spraying, excess dosage, etc.
- Leading brands of pesticides for rice planting are mainly held by MNCs, such as Roundup and Fencer among herbicides, Rynaxypyr, Daoteng, Virtako and Takumi among insecticides, and Armure and Nativo among fungicides.

Suggestions on pesticide sales and promotion

- Control effect should be highly prioritized in pesticide research or promotion, because control effect, including prevention and control effect, capability to control many types of pests/weeds, quick effect, lasting efficacy, is the most important factor to interviewees when choosing pesticides.
- Opportunities exist for the following products following products: acephate and acetamiprid, the substitutes of Methamidophos, Dichlorvos and Tricyclazole, because though these products have old, banned or restricted, they are still used on rice planting in Hunan, according to results from the interviewees.
- We suggest retail store should be the largely promoted for pesticides sales in Hengyang, retail stores as the major channel and supplemented by agricultural resource companies in Changde, while in Yueyang, both channels can be strongly promoted, according to survey results on farmers' pesticide purchasing channels: retail store and agricultural resource companies are the major channels, though situation differ among these three cities in Hunan: Hengyang, Yueyang and Changde.