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Review and Analysis of Agricultural Natural Disaster Relief System

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INTRODUCTION

The agricultural industry is highly risky. It is risky because the unpredictable weather conditions and recent climate changes cause unstable quality and quantity of agricultural production outputs. It is normal for a farmer to make a living highly dependent on weather conditions. If the weather is good, we live well and so are farmers. On the contrary, however, storms and heavy rains destroy agricultural production putting farmers into bad situations.. Since 1989,the government started to offer bailout loans to farmers who suffered from the loss of natural disaster damages. . Through the aid of loans, those farmers can then reconstruct the land and rehabilitate farming activities as soon as possible in order to remain a normal living standard. In 1990, the government added a 60th clause to the Agricultural Development Act: to authorize the local government to offer cash assistance, grants, or low-interest loans for farmers to resume agricultural productions from natural disaster damages as soon as possible; in the meantime, the central government announced the damage according to the level of impact by natural disasters, including area zones, crops, facilities, and bailout limits. In 1991, Council of Agriculture Executive Yuan (COA) issued Natural Disaster Damage Relief Act to regulate related aids and relief compensations and their finances from the dedicated funds.

Relief content

The main contents according to Natural Disaster Damage Relief Act can be summarized as the following items:

1. Relief aids include cash assistance, compensational grants, and low-interest loans;
2. Natural disasters, by definition, include damages caused by typhoons, heavy rains, frosts, earthquakes, droughts, hails, and/or Foehn winds;

3. Disaster damage owners who are qualified for relief aids include individuals working for productions in the agricultural, forestry, fishery, and animal husbandry sectors. However, those individuals who are not legally registered as land users or who are not consistent with the registered usage of water and facilities are exceptions to claim an aid of relief. The relevant laws should apply without registration or approval, as well as the use of land, water and facilities not inconsistent with the provisions of relevant laws relief;
4. Relief areas are graded into four levels according to regional agricultural output value. The first level areas include Taichung, Changwua, Nantou, Yunlin, Chaiyi County, Tainan, Kaohsiung, and Pingtung. The second level areas include Yilan, Taoyuan, Shinchu, Miaoli, Taitung, and Hualien. The third level area is New Taipei only. The fourth level areas include Lianjiang, Kinmen, Penghu, Keelung, Shinchu, Chiayi City, and Taipei;
5. The entry barrier for qualifying relief aids is different in each level. The barrier of the first level is set at NT$180 million. The second level is NT$100 million. The third level is NT$60 million, and the fourth level is NT$15 million. COA will be able to announce cash grants when the above entry barrier has been met;
6. The entry barrier for qualifying low-interest loans is also different at each level. The barrier of the first level is set at NT$90 million. The second level is NT$50 million. The third level is NT$30 million, and the fourth level is NT$7 million. COA will be able to announce the issuance of low-interest loans when the above entry barrier has been met. However, even if the above entry barrier is not met, when damage level caused by the natural disaster is recognized as serious conditions by the local government, the case can be reported to COA for a special approval of low-interest loans. The limit amount of low-interest loans depends specifically on the crop, with the annual rate of 1.25%;
7. Qualification for special-approved cash assistances: In addition to the above qualifications of claiming relief aids, there are some other contingencies which might be reported to the central related authorities for special approval of case assistances, including the case when single crops suffering from a non-harvest situation is above 30% of the local county or city farming area, or is above 20% of the local township farming area. Moreover, the case of individual farmers who suffer from severe disaster damages can also be reported and investigated by the central and local related authorities to select compensation items with 14 days after the disaster and apply the compensations for special approval from the central related authorities;
8. All applications of disaster relief aids should be proposed to the local township offices within 10 days since COA announces the relief areas. Any application after the deadline of 10 days will not be accepted;
9. For those damages of crops or facilities over 20% of farmland recognized by official investigators, the relief funds will be distributed at the standard amount;

10. The estimated loss of damages is distinguished by the nature of the crop. For short-term crops, if the current rehabilitation or rotation to another harvest crop is still possible, the loss will be calculated at 50% of the total production cost; otherwise, the loss will be calculated by the total production cost by a deduction of the harvest wage. On the other hand, for long-term crops, if the current harvest is entirely unavailable, the loss will be calculated by established expenditure. However, if there is still some harvest in the current period, the loss will be calculated by the total production cost by a deduction of the harvest wage; and
11. According to the production cost of various kinds of crops (*e.g.*, rice, grains, grass, fruit trees, flowers, mushrooms, vegetables, and special crops), the quota of the cash assistance per hectare farmland is different based on the government relief funds. For examples, the cash assistance for rice farmland is NT$18,000 per hectare. However, if the loss damage is less than the entry barrier for the request of cash assistance, farmers can still apply for special approval of a NT$14,000 per hectare compensation if the rice farmland's is loss above 20% of the total production size.

Analysis on disaster caused by damage loss of crops

Natural disasters might cause overall damage losses in the agricultural sector, which might include losses of the three major categories: agricultural outputs (e.g., crops, animal husbandry products, fishery products, and wood products), losses of privately investing facilities (e.g., farmlands, farming facilities, animal husbandry facilities, fishery facilities), and losses of publicly built facilities (woodland equipment, fishery facilities, water preservations, and irrigation and water conservation). The overall damage losses in the agricultural sector during 1991 and 2013 accumulated as much as NT$240.5 billion, while the major losses were agricultural outputs, accounting for 81% of the overall losses. In other words, the average damage loss of agricultural outputs caused by natural disaster was around NT$10.5 billion during the period.

According to disaster caused by damage loss of crops, there were as many as 11,253 crop disaster reports, with 1.4 million hectares of accumulated damage area (the real area was 380,917 hectares) at a total loss of NT$111.4 billion caused by typhoons and heavy rains all over the island during 1989 and 2013. The amount of loss had a wide range, which could be as low as NT$1 billion or as high as NT$18 billion, while the average was NT$7.4 billion per year, as demonstrated in Table 1.

Table 1. Annual loss statistics caused by natural disasters: year 1999~2013

Year	Damage area (Hectare)	Damage degree (%)	Actual damage size (Hectare)	Estimated damage loss (*1000 NTD)
1999	60,671	33	20,258	5,052,526
2000	123,614	26	31,885	9,893,857
2001	77,281	27	21,249	4,709,135
2002	12,252	21	2,589	1,081,348
2003	27,838	33	9,168	3,938,728
2004	79,195	27	21,582	5,134,036
2005	234,208	27	63,999	18,000,771
2006	44,776	20	9,157	3,137,993
2007	153,538	28	43,025	10,637,125
2008	189,871	26	50,006	12,559,055
2009	120,582	29	34,903	10,893,704
2010	78,074	30	23,215	8,069,760
2011	57,301	27	15,679	3,146,149
2012	63,659	21	13,111	5,545,099
2013	78,371	27	21,091	9,481,411
Total	1,401,231	-	380,917	111,450,777
Per Year Averaged	93,415	27	25,394	7,430,052

Source: 2013 Annual Report of Agricultural Statistics, Council of Agriculture, Executive Yuan, Taiwan.

Taiwan is located at the region with frequent influences by typhoons and heavy rains, which often cause agricultural damages. The natural disaster loss includes agricultural farming, forestry, fishery, and livestock husbandry, in addition to damages of farm fields, soil and water conservation, and damage of agricultural and fishery facilities. The major loss has been crop damages, accounting for nearly 90% of all damage categories. Table 2 shows that the total loss caused by natural disaster amounted to NT$112.8 billion during 1999 and 2013, in which the most, 75%, was caused by typhoons, while the next damage caused by heavy rains and frosts were 11% and 7%, respectively.

Table 2. Natural disasters and loss damages: year 1999~2013

Disaster category	Damage area (Hectare)	Damage degree (%)	Actual samage size (Hectare)	Estimated damage loss (*1000 NTD)	Category percentage (%)
Typhoon	1,097,660	27	297,002	84,905,723	75
Heavy rain	204,229	25	51,266	12,065,040	11
Frost	79,935	33	25,987	8,121,180	7
Earthquake	8,267	34	2,846	1,305,683	1
Drought	2,341	42	972	632,267	1
Hail	4,422	6	264	108,165	0
Foehn Wind	15,679	31	4,895	4,579,309	4
Others *	11,360	31	3,526	1,156,963	1
Total	1,423,892	27	386,756	111,450,777	100

*: Others include damages caused by cold fronts, thunderstorms, pears grafting, pests, abnormal climate, tornadoes, weird wind conditions.

Source: 2013 Annual Report of Agricultural Statistics, Council of Agriculture, Executive Yuan, Taiwan

The open-air environment of agricultural production is highly dependent on the weather conditions, while the sudden change of weather is the major source of crop damages. Through the years, natural disasters which caused the most damage in crops, which might be correlated with the most commonly farming crop in Taiwan is rice. The next damage in plants includes pear, banana, papaya, and vegetables, and so on (Table 3).

Table 3. Damage of crops by natural disasters: year 1999~2013

Crops	Damage area (Hectare)	Damage degree (%)	Actual damage size (Hectare)	Estimated damage loss (*1000 NTD)	Crops percentage (%)
Rice	441,067	25	109,072	11,671,944	10.34
Pear	40,654	34	13,672	8,532,635	7.56
Banana	73,174	29	20,864	7,387,086	6.54
Papaya	22,981	27	6,174	6,317,956	5.60
Vegetable	74,980	29	21,735	6,058,584	5.37
Annona squamosal	40,982	22	9,114	4,831,257	4.28
Watermelon	47,100	38	17,817	4,302,283	3.81
Diospyros	21,991	27	5,975	4,112,834	3.64

Grape	15,630	29	4,462	3,191,459	2.83
Wax apple	23,343	34	7,989	3,169,798	2.81
Bamboo shoot	50,773	21	10,520	2,839,792	2.52
Guava	27,807	21	5,787	2,639,950	2.34
Scallion	13,389	26	3,490	2,584,625	2.29
Mango	26,137	33	8,672	2,444,121	2.17
Chinese honey orange	20,658	23	4,764	2,020,105	1.79
Tea	15,600	23	3,517	1,975,230	1.75
Muskmelon	19,385	32	6,294	1,967,611	1.74
Other flowers	4,891	28	1,372	1,858,129	1.65
Jujube	9,853	26	2,572	1,635,655	1.45
Strawberry	2,417	35	853	1,619,541	1.43
Pomelo	14,111	31	4,444	1,617,509	1.43
Agricultural facilities	12,893	28	3,621	1,610,449	1.43
Tomato	6,409	33	2,113	1,489,650	1.32
Peach	4,606	33	1,513	1,433,153	1.27
Peanut	67,505	22	14,760	1,405,903	1.25
Corn	29,589	30	8,870	1,074,032	0.95
Orange	7,817	35	2,740	1,070,764	0.95
Cabbage	5,286	33	1,763	1,029,260	0.91
Other varieties of orange	9,711	25	2,438	1,028,205	0.91
Longan	20,258	29	5,836	1,026,454	0.91
Taro	8,568	27	2,353	1,000,291	0.89
Pineapple	6,006	24	1,465	985,398	0.87
Tankan	6,696	23	1,565	922,614	0.82
Shaddock	8,381	43	3,597	889,594	0.79
Cauliflower	4,085	35	1,439	792,594	0.70
Bitter melon	5,671	30	1,710	747,329	0.66
Litchi	12,521	29	3,576	725,317	0.64
Sweet potato	11,359	25	2,801	641,510	0.57
Sugarcane	2,473	27	671	587,328	0.52
Other special crops	7,280	25	1,790	545,996	0.48
Taiwanese orange	12,959	20	2,646	541,083	0.48
Onion	2,606	39	1,008	528,768	0.47
Other fruits	5,998	25	1,502	510,021	0.45
Cucumbers	5,882	74	4,336	482,925	0.43
Areca	13,703	15	2,115	460,277	0.41
Apple	1,014	40	402	422,956	0.37
Ginger	1,674	29	481	410,529	0.36
Radish	3,913	34	1,340	359,960	0.32
Carambole	3,735	24	901	358,467	0.32

Leek	3,584	24	843	357,155	0.32
Forage grass	5,859	29	1,688	345,014	0.31
Small beans	9,539	46	4,399	340,767	0.30
Rag gourds	4,885	22	1,096	339,232	0.30
Feed (hard) corn	21,549	26	5,598	301,858	0.27
Chinese cabbage	2,535	29	723	295,867	0.26
Muskmelons	3,335	32	1,069	265,164	0.23
Vacuum-packed Mushrooms	163	34	55	264,826	0.23
Sweet pepper	1,348	38	511	261,051	0.23
Rose	421	23	97	235,677	0.21
Edamame	6,964	27	1,866	234,279	0.21
Plum	2,646	30	805	229,349	0.20
Carrot	3,431	36	1,223	226,332	0.20
Garlic	3,772	22	820	224,723	0.20
Water bamboo	808	40	320	217,771	0.19
Chrysan-themum	1,025	33	337	216,011	0.19
Loquat	1,465	27	390	210,440	0.19
Chinese mustard	2,967	29	868	203,758	0.18
Sugar cane	7,081	32	2,283	197,436	0.17
Passion fruit	1,952	19	375	194,108	0.17
Other grains	6,191	36	2,235	172,320	0.15
Eggplant	2,228	23	505	156,997	0.14
Lemon	2,896	22	626	138,553	0.12
White gourds	1,276	37	467	137,523	0.12
Milo (sorghum)	2,182	42	924	128,361	0.11
Day lily	2,129	37	781	121,758	0.11
Oriental sesame	4,260	44	1,876	106,974	0.09
Yam	338	33	110	102,671	0.09
Yard-long beans	1,539	25	388	97,210	0.09
Potato	914	34	308	96,636	0.09
Asparagus	1,823	26	472	87,674	0.08
Gladiolus	307	28	86	86,087	0.08
Peas (peas)	628	45	285	85,454	0.08
Plum	1,876	38	719	77,675	0.07
Nursery	932	22	210	73,842	0.07
Coconut	2,137	30	643	67,147	0.06
Seedling	152	37	56	58,359	0.05
Tobacco	308	29	89	51,080	0.05
Lisianthus	16	31	5	9,143	0.01
Shiitake Mushrooms	15	53	8	7,200	0.01
Olives	13	31	4	875	0.00

Green beans	34	9	3	322	0.00
Mushrooms	0	20	0	38	0.00

Source: 2013 Annual Report of Agricultural Statistics, Council of Agriculture, Executive Yuan, Taiwan

The geographic distribution of natural disaster damage is varied because of the different weather conditions across areas. As Table 4 shows, Taichung was the area with the most damages during 1999 and 2013, probably because of the high value pears. The second most damaged area was Yunlin, probably because of the rice and vegetables. The top five major areas suffering from natural disasters were Taichung, Yunlin, Kaohsiung, Pingtung, and Changhua, accounting for more than half loss across all areas. On the one hand, the south and central regions are the major agricultural production areas. On the other hand, these regions might have the most probability in terms of typhoon routes.

Nevertheless, the amount of loss was generally not equal to the amount of relief aid because the damage loss should achieve a certain barrier of aid application. Moreover, the amount of relief aid was not distributed by the damage intensity but followed by the cash relief standard operation barrier. Therefore, the top five areas which received the most relief aid amount included Yunlin, Tainan, Pingtung, Taichung, and Chiayu. On the contrary, Kaohsiung and Changhua were among the top five areas with natural disaster loss while they were not among the top five areas which received relief aids. As a consequence, it is necessary to modify the standard procedure of natural disaster reviews regarding the natural disaster loss areas, application barrier of the relief aids, and the amount to compensate the losses.

Table 4. Natural disaster damage area and relief amount by: year 1999~2013

City/ county	Damage area (Hectare)	Damage Degree (%)	Real Damage area (Hectare)	Estimated Damage losses (*1000 NTD)	Loss Percentage (%)	Amount of Aids (*1000 NTD)	Aid Percentage (%)
Taiwan	1,423,892	27	386,756	112,874,329	100.00	26,748,833	100.00
Taichung	107,942	28	30,283	15,598,477	13.82	2,776,764	10.38
Yunlin	240,327	23	54,740	11,850,220	10.50	4,254,374	15.90
Kaohsiung	93,566	30	28,004	11,598,538	10.28	1,691,007	6.32
Pingtung	116,039	30	35,342	11,413,908	10.11	2,978,985	11.14
Changhua	160,067	28	44,627	8,921,330	7.90	2,008,529	7.51
Miaoli	61,625	27	16,389	8,810,066	7.81	1,559,072	5.83
Tainan	154,928	27	41,709	8,228,850	7.29	3,154,248	11.79
Chiayi	188,656	23	43,424	8,219,929	7.28	2,672,482	9.99
Nantou	76,403	24	18,332	7,841,508	6.95	1,148,764	4.29
Taitung	77,889	26	20,386	7,595,534	6.73	2,148,757	8.03
Hualien	65,294	39	25,578	4,881,174	4.32	1,278,821	4.78

Yilan	28,321	27	7,717	2,846,294	2.52	606,827	2.27
Hsinchu	18,080	39	7,084	2,629,559	2.33	316,724	1.18
Taoyuan	13,679	27	3,639	909,342	0.81	78,206	0.29
New Taipei City	8,204	29	2,404	751,396	0.67	16,035	0.06
Kinmen	3,786	52	1,955	282,039	0.25	18,364	0.07
Chiayi City	4,993	21	1,055	180,870	0.16	25,005	0.09
Taipei	2,249	34	768	170,816	0.15	205	0.00
Penghu	898	348	3,122	101,605	0.09	14,937	0.06
Keelung	254	18	46	21,745	0.02	186	0.00
Hsinchu	694	22	154	21,130	0.02	541	0.00

Source: 2013 Annual Report of Agricultural Statistics, Council of Agriculture, Executive Yuan, Taiwan

Relief analysis

The government aids to natural disaster damage losses mainly include cash relief and low-interest loans. The accumulated amount of cash relief was NT$32.3 billion during 1999 and 2013 period, averaging NT$2.156 billion per year. The low-interest loans achieved NT$7.1 billion in total in the same period years, and averaged NT$0.54 billion per year. Based on the basic interest rate of banks, the government in fact spent NT$0.145 billion for interest subsidization, or NT$11 million per year.

Table 5. Cash relief and low-interest loans for natural disaster damage loss: 1999-2013

Year	Damage loss (*1000 NTD)	Cash relief (*1000 NTD)	Percentage of aid (%)	Low-interest loans (*1000 NTD)	Basic Loan rate (%)	Low-Interest rate (%)	Interest Subsidy (*1000 NTD)
1999	5,052,526	752,147	14.89	-			
2000	9,893,857	983,877	9.94	-			
2001	4,709,135	829,900	17.62	369,030	7.38	1.25	22,622
2002	1,081,348	137,978	12.76	32,010	7.10	1.25	1,873
2003	3,938,728	1,039,412	26.39	355,680	3.43	1.25	7,754
2004	5,134,036	1,689,738	32.91	917,880	3.52	1.25	20,836
2005	18,000,771	5,653,908	31.41	612,790	3.85	1.25	15,933
2006	3,137,993	336,883	10.74	52,810	4.12	1.25	1,516
2007	10,637,125	4,123,321	38.76	358,000	4.31	1.25	10,955
2008	12,559,055	3,792,712	30.20	292,000	4.21	1.25	8,643
2009	10,893,704	5,627,035	51.65	2,700,000	2.56	1.25	35,370
2010	8,069,760	2,574,462	31.90	1,220,000	2.56	1.25	15,982
2011	3,146,149	1,407,378	44.73	120,000	2.8	1.25	1,860
2012	5,545,099	1,358,033	24.49	82,600	2.88	1.25	1,346
2013	9,481,411	2,041,077	21.53	23,360	2.88	1.25	381

Total	111,280,697	32,347,861		7,136,160			145,069
Annual Average	7,418,713	2,156,524	26.66	548,935			11,159

Source: 2013 Annual Report of Agricultural Statistics, Council of Agriculture, Executive Yuan, Taiwan; 2013 Financial Statistics, Central Bank, Taiwan.

Because of unstable and unpredictable weather changes, the cash relief to agricultural damage losses caused by natural disasters are also varied. As Figure 1 shows, there seems to be no trend at all. However, the variations still go at the same direction between the natural disaster damage loss and cash relief. The amount of cash relief is averaged at 26% of the natural disaster damage loss, while the percentages changed often because of the areas and the damaged crops.

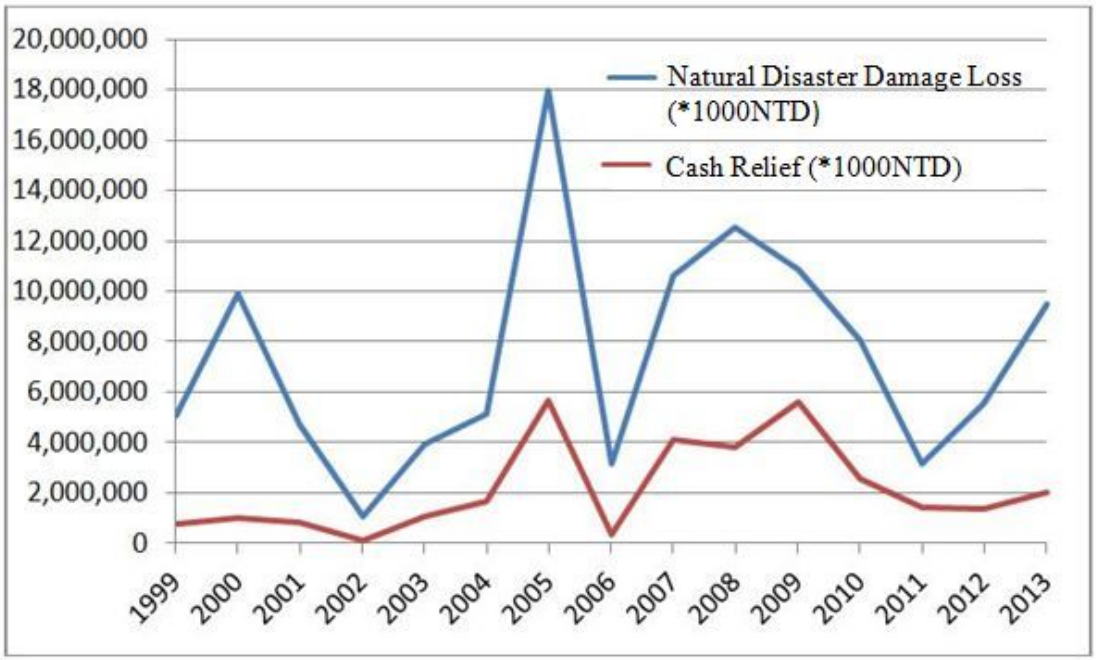

Fig. 1. Damage caused by agricultural natural disaster and cash relief: 1999~2013

Source: 2013 Annual Report of Agricultural Statistics, Council of Agriculture, Executive Yuan, Taiwan.

As Table 6 shows, among all agricultural disasters, the most severe damage has been caused by typhoons, which also claimed the most government aid funds, whereas damages caused by heavy rains and frosts ranked next to typhoons.

Table 6. Natural disaster damages and cash reliefs

Disaster type	Damage loss (*1000 NTD)	Percent (%)	Amount of aid (*1000 NTD)	Percent (%)
Typhoon	84,905,723	75	20,745,450	78
Heavy Rain	12,065,040	11	3,593,636	13
Frost / Cold Damage/ Low Temperature	8,121,180	7	1,567,476	6
Earthquake	1,305,683	1	233,896	1
Other*	1,156,963	1	214,076	1
Drought	632,267	1	40,426	0
Hail	108,165	0	0	0
Foehn Wind	4,579,309	4	353,872	1
Total	112,874,329	100	26,748,833	100

*: Others include damages caused by cold fronts, thunderstorms, pears grafting, pests, abnormal climate, tornadoes, weird conditions of the wind.

Source: 2013 Annual Report of Agricultural Statistics, Council of Agriculture, Executive Yuan, Taiwan.

Reviews and suggestions for natural disaster relief system

According to the above statistic data and practice, the current Natural Disaster Damage Relief Act still raised some problems regarding relief mechanisms, which demands a further review as follows.

1. The recognition of disaster Losses

a). The damage extent

The current Act regulates that the total damage loss caused by natural disasters should be qualified to the relief aid when it passes the required barrier of applications to cash relief or low-interest loans. Meanwhile, the damage loss of crops or agricultural facilities owned by an individual farmer should be over 20% to be qualified for the aid. The recognition of the damage loss is obviously a key issue. However, because neither crop productions nor agricultural facilities are registered, the government cannot access the post-disaster data by comparing this with the regular situation, which usually causes a lot of debates on the damage extent. If the damage loss does not pass the 20% barrier, it is possible to over-estimate the small scale of damage loss. On the other hand, the damage extent is irrelevant to the relief amount under the 20% barrier of damage recognition, so that it is also possible to under-estimate the big scale damage loss. In addition to the individual farmer, the damage extent is also correlated with the overall damage loss of the

entire city/ county. Thus, the recognition of damage loss might adopt a loose standard in order to pass the barrier of relief aid.

b). Recognition of timing

The on-site survey of disaster damage loss should be done as soon as possible in order not to postpone rehabilitation. Within a short time period, the recognition process should go through the first-line officers to do the on-site survey and then report a confirmation to the local government, and further report a consolidated report to Agriculture and Food Agency (AFA). If the disaster relief barrier is met, the local Agricultural Research and Extension Center and the local branch of AFA will re-confirm the disaster extent by a further randomly selected sites of survey. These sequential processes will cost a lot of time and efforts, which might postpone the timing of re-covering or even cause a further damage loss.

2. The aid delivery

a) Inconsistent identification

As the city and county passed the relief barrier, the local natural disaster damage will get aids no matter the extent of loss. The extreme case might happen when some high-value crops in an area suffer from severe damages, while all other crops suffer from low extent of damages can also get the relief aid. The unfair issue might also occur when only individual farmers can get the relief aid, while agribusinesses cannot. The government also does not check the farmers' identifications as tenants and landlords, which might be a hidden problem if the relief aid goes into the landlords' pockets.

b) Amount of aid

The amount of cash relief aid is also a big issue. Because the cash relief aid only captures a partial loss caused by natural disaster, the income of farmers is not able to be secured, not mentioning whether the production cost can be covered. Ideally, the cash relief should be correlated to the extent of damage loss. However, the current relief barrier checks solely on whether 20% is met. It would be better to further classify the damage extent, such as 0~20%, 20%~50%, and 50% and above, which is more practical to deliver the purpose of government policy.

CONCLUSION

Since the beginning of natural disaster relief in 1991 in Taiwan, the government has approved and delivered the relief aid as much as NT$37.3 billion for damage losses of agricultural production, equal to NT$1.6 billion per year. Compared with the real damage loss total amount of NT$240.5 billion, or averaged NT$10.5 billion per year, caused by natural disasters in the same period, the relief aid was absolutely too short to aid farmers' income losses. Under the current obvious trend of climate change, the agriculture sector has been more vulnerable and prone to production risks. Given that the government implements the

natural disaster relief system, the relief aid has been able to offer assistance to rehabilitation rather than compensate to their income losses. Thus, the natural disaster relief is not an effective system to secure or support farmers' incomes under potential disaster exposures.

The resolution to secure farmers' incomes from disaster losses, therefore as should be delivered by agricultural insurances as proposed. This is not just for disaster damage loss coverage. Agricultural insurances, in fact, can be used as effective tool for risk management in the agricultural production sector. Compared with many other developing and developed countries which are already in agricultural insurances for crops, the trail of the crop insurance in Taiwan is right on its way in 2015. The late start of a more complete agricultural safety net, however, is still expected to stabilize farmers' incomes and agricultural production in aligning with the existing natural disaster relief system operating in the recent decade.

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