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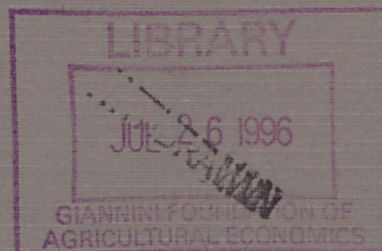
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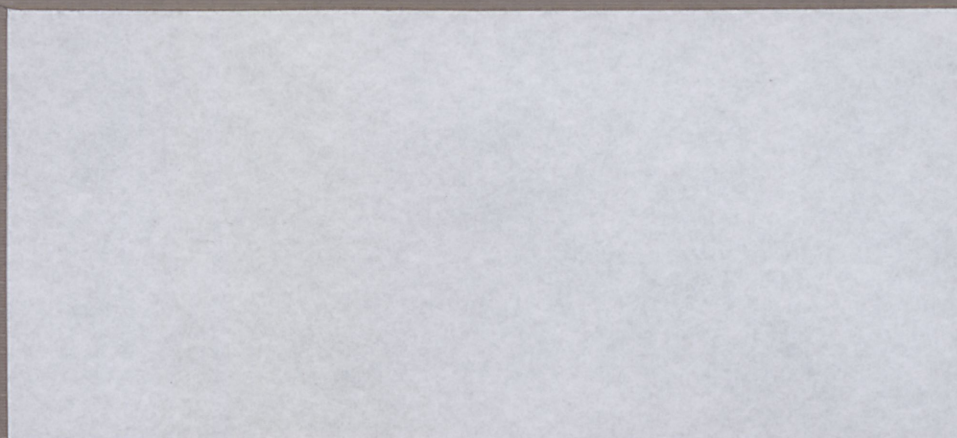
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Fats and oils - Marketing



**Organization  
and Performance  
of World Food  
Systems: NC-194**



**OCCASIONAL PAPER SERIES**

The work reported herewithin contributes to the objectives of <sup>1</sup>North Central Regional Project NC-194 a joint research project of state agricultural experiment stations and the U.S. Department of Agriculture





**BENEFITS TO U.S. AGRICULTURE FROM  
TERMINATING EUROPEAN OILSEED SUBSIDIES**

**JAMES GLECKLER AND LUTHER TWEETEN\***

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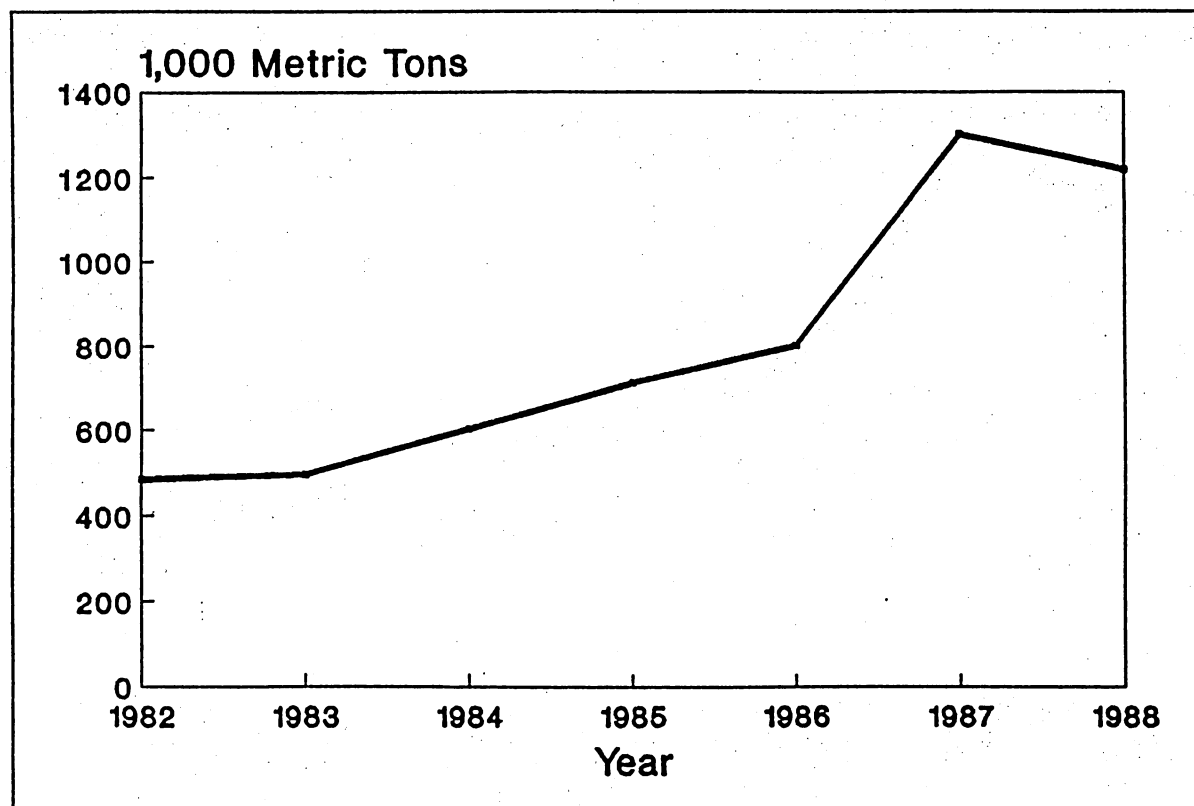
JULY 1990

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## Benefits to U.S. Agriculture from Terminating European Oilseed Subsidies

During the 1962 Dillon Round of multilateral trade negotiations, the European Community committed itself to no import restrictions on soybeans and soybean meal. But during the 1980s, subsidies paid to crushers for processing domestic oilseed rose dramatically. By 1986 the subsidy had increased European producer prices \$216 per metric ton. The oilseed subsidies more than doubled the world price of \$208 per metric ton and European producers responded by doubling their production over the period (Figure 1.)



**Figure 1. European Community Oilseed Production.**

Source: Marcia Zarley Taylor, *Farm Journal*, Washington, DC.

In December, 1987 the American Soybean Association (ASA) filed a section 301 Unfair Trade Petition against the European Community (EC). The petition alleged that the EC oilseed subsidies constituted unfair discrimination against imports. The Dispute Settlement Panel of the General Agreement on Tariffs and Trade (GATT) ruled in December, 1989 that the European oilseed subsidies violate GATT trading rules and discriminate against oilseed imports. European Community officials agreed to abide by the ruling and will reportedly bring their programs into compliance. The objective of this paper is to estimate the economic impacts on the United States and the European Community if the EC eliminates its oilseed subsidies.

## Conceptual Framework

A conceptual model in Figure 2 depicts the effect of eliminating EC oilseed subsidy  $P_s - P'_w$  where  $P_s$  is the EC supported price and  $P'_w$  is the world price distorted by the EC subsidy. Without the oilseed subsidy, supply in the EC is  $s_s$  and demand is  $d$ ; supply in the rest of the world (ROW) is  $S$  and demand is  $D$ . Without subsidies, the world price of soybeans is  $P_w$ . EC supply quantity (production) is  $q_s$  and demand quantity is  $q_d$ . European imports of soybeans are  $q_d - q_s = Q_e$  from ROW.

With the oilseed subsidy, the EC soybean supply function is  $s's$ . European oilseed excess demand in world markets shifts from  $ED$  to  $ED'$ , excess supply remains at  $ES$ , and world price falls to  $P'_w$ . European oilseed imports fall from  $Q_e$  to a lower quantity  $q'_d - q'_s = Q'_s - Q'_d = Q'_e$ .

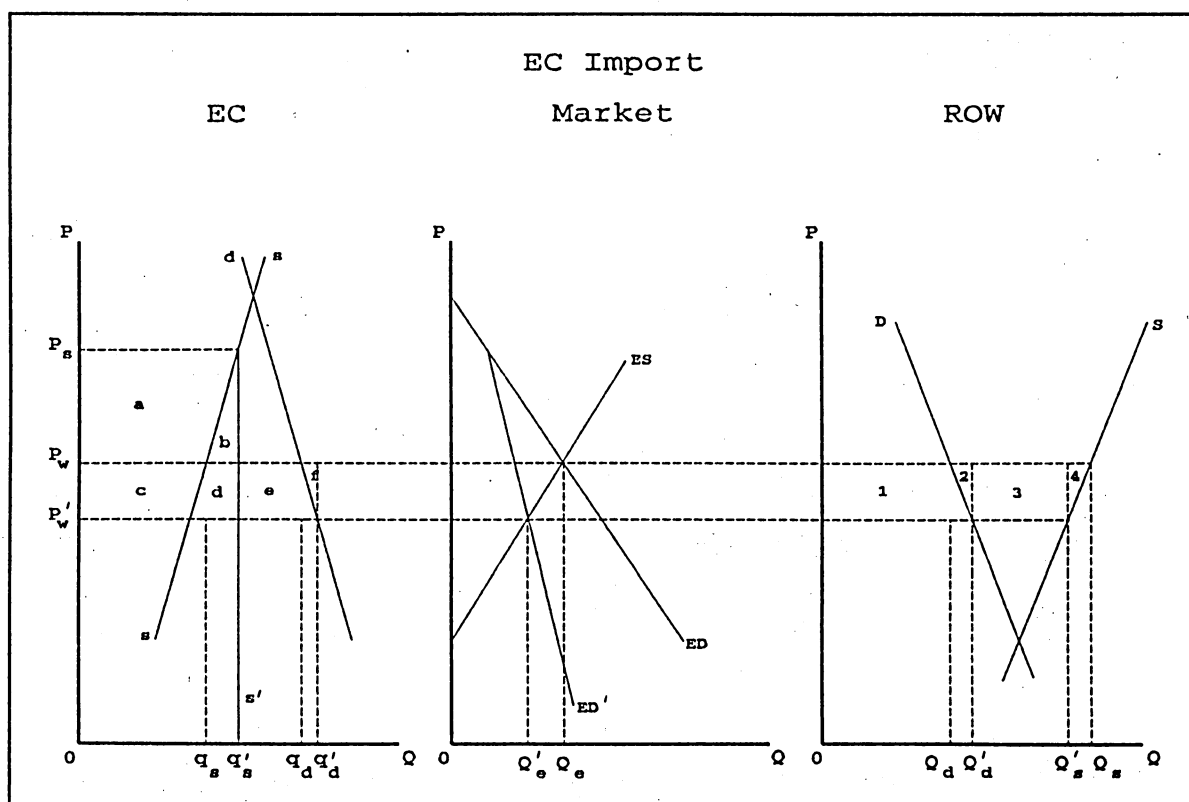


Figure 2. Effect of EC Oilseed Subsidy Elimination on Oilseed Markets.

Welfare impacts of elimination of the EC oilseed subsidy are approximated as follows:

| Gain to:      | EC       | ROW     |
|---------------|----------|---------|
| Producers     | -a       | 1+2+3+4 |
| Consumers     | -c-d-e   | -1      |
| Taxpayers     | a+b+c+d  | ---     |
| Society       | b-e      | 2+3+4   |
| World (e+f=3) | b+f+2+4. |         |

With termination of the subsidy, European Community producers are worse off by area a. EC consumers lose area c+d+e. European taxpayers are better off by area a+b+c+d. Net gain to the EC, b-e, is positive if b exceeds e. ROW producers are better off by area 1+2+3+4 in the right panel. Consumers in ROW lose 1 so net gain to ROW is area 2+3+4. Net gain to the world is area b+f+2+4 from terminating the EC oilseed subsidy.

Area b in Figure 2 is gained because the EC no longer is producing oilseeds at costs above the border price ( $P_w$ ), areas f and 2 are gained because consumers in the EC and ROW no longer are deriving less value than the border price from consuming oilseeds, and area 4 is gained because ROW no longer is foregoing production forthcoming at less than the border price. The border price, the equilibrium world price, is an opportunity return (cost) equal to the marginal value (cost) of oilseeds in production and consumption. The conceptual results for ROW apply to the U.S. because the U.S. also is an exporter of oilseeds.

The simplified partial equilibrium conceptual model does not account for individual country impacts or interactions among commodities. These are best analyzed with a mathematical international trade model. Impacts from oilseed subsidy elimination are quantified for the EC and the U.S. in the next section.

## Empirical Analysis

Impacts of removing EC oilseed subsidies were quantified using a world trade model incorporating the assumptions of neoclassical trade theory (see Roningen, *et al.*; Sullivan,



*et al.*; Gleckler and Tweeten for description of model). Data for 1989 were used to initialize the model. Results reflect changes from 1989 conditions and are in 1989 prices but the coefficients apply to an intermediate-run period of 4 to 5 years, other things equal. The model simultaneously estimates changes in markets for eight commodities: beef, pork, poultry meat, wheat, corn, coarse grains (excluding corn), oilseeds (principally soybeans, rapeseed, and sunflower seed), and oilmeal. Substitutability and complementarity among commodities are accounted for in behavioral equations.

Empirically estimated percentage changes in world prices following elimination of EC oilseed subsidies are presented in Table 1. Interestingly, proportional impacts on the price of wheat are as great as those on oilseeds. World coarse grain price is substantially lower as well. The origin of these price changes is production decisions by European farmers. Grains and oilseeds are substitutes in production. Oilseed subsidy elimination reduces oilseed acres and increases imports, resulting in higher world prices. Grains are substituted onto former oilseed acres. Increased EC grain exports and lower world prices result.

Table 2 presents changes in EC production, consumption, and trade with the elimination of oilseed subsidies. The 33 percent drop in production and 1 percent rise in consumption combine for a 3,228,000 metric ton increase in oilseed (mostly soybean) imports. In the past, subsidized production of oilseeds supplied low-cost feed ingredients for livestock producers. Elimination of the subsidies increases feed costs, drops beef, pork, and poultry production, and decreases European exports of these products an estimated 19,000 metric tons (3,000 + 10,000 + 6,000 metric tons).

**Table 1. Change in World Prices from Eliminating the European Oilseed Subsidy.**

| Commodity    | % Change |
|--------------|----------|
| Beef         | 0.02     |
| Pork         | 0.03     |
| Poultry Meat | 0.02     |
| Wheat        | - 2.40   |
| Corn         | - 0.26   |
| Coarse Grain | - 1.48   |
| Oilseed      | 2.39     |
| Oilmeal      | 1.15     |

**Table 2. Impacts on European Community from Eliminating Oilseed Subsidy.**

| Commodity    | Production | Consumption | Trade (net exports) |            |        |
|--------------|------------|-------------|---------------------|------------|--------|
|              |            |             | 1989 Quantity       | Change     |        |
|              | (% change) | (% change)  | (1,000 MT)          | (1,000 MT) | (%)    |
| Beef         | -0.04      | 0.00        | 269                 | -3         | -1.01  |
| Pork         | -0.08      | 0.00        | 403                 | -10        | -2.51  |
| Poultry Meat | -0.09      | 0.00        | 314                 | -6         | -1.75  |
| Wheat        | 6.12       | 0.00        | 20,164              | 4,864      | 24.12  |
| Corn         | 0.12       | -0.02       | -1,830              | 4          | 0.23   |
| Coarse Grain | 3.63       | -0.02       | 5,728               | 2,019      | 35.24  |
| Oilseed      | -33.24     | -1.10       | -14,162             | -3,228     | -22.80 |
| Oilmeal      | -0.43      | -0.50       | -12,978             | 75         | 0.58   |

Because EC demand remains strong for oilseeds and is quite inelastic, and because world oilseed import supply is quite elastic, the reduction in EC subsidies shows up more in increased imports than in reduced consumption (Table 2). Wheat and coarse grain

production, on the other hand, rise substantially in the European Community (Figure 3). Oil crops grow side-by-side with grain crops in Europe and at the same time of year. Lowering the effective EC producer price by 45 percent (the 1989 subsidy amount) while continuing high grain price supports shifts production into grains. This is conceptualized by the shift from  $s$  to  $s'$  in Figure 3. Grain yields in metric tons per hectare are more than double oilseed yields and the shift brings substantial increases in grain exports. Less livestock production helps reduce demand for grains from  $d$  to  $d'$ . In Figure 3, EC grain exports increase from  $q_s - q_d$  to  $q'_s - q'_d$  when the support price is held at  $P_s$ .

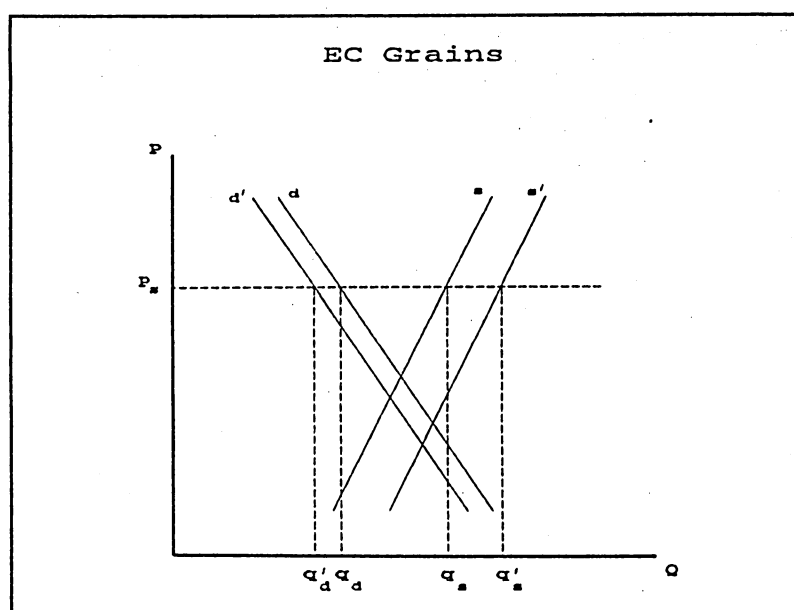


Figure 3. Impact of Oilseed Subsidy Elimination on EC Grain Sector.

Table 3 presents estimates of impacts on U.S. production and trade. Higher oilseed prices cause some soybean acreage expansion at the expense of corn and coarse grain acres. Lower world prices also contribute to grain production declines. Increased feeding costs

cause a slight decrease in meat production. The U.S. trade position worsens in most commodities outside the oilseed sector. The 1,297,000 metric ton increase in U.S. oilseed exports amounts to 40 percent of the increase in EC imports (3,228,000 MT).

**Table 3. Impacts on U.S. Markets of Eliminating European Oilseed Subsidy.**

| Commodity    | Production | Consumption | Trade (net exports) |            |       |
|--------------|------------|-------------|---------------------|------------|-------|
|              |            |             | 1989 Quantity       | Change     |       |
|              | (% change) | (% change)  | (1,000 MT)          | (1,000 MT) | (%)   |
| Beef         | -0.03      | 0.00        | -579                | -3         | -0.52 |
| Pork         | -0.01      | -0.01       | -363                | 1          | 0.01  |
| Poultry Meat | -0.07      | 0.00        | 426                 | -7         | -1.67 |
| Wheat        | -0.81      | 0.51        | 34,128              | -559       | -1.64 |
| Corn         | -0.06      | -0.03       | 54,537              | -79        | -0.14 |
| Coarse Grain | -0.58      | 0.41        | 7,125               | -274       | -3.84 |
| Oilseed      | 1.40       | -1.06       | 15,897              | 1,297      | 8.16  |
| Oilmeal      | -0.43      | -0.59       | 4,545               | 13         | 0.29  |

Welfare effects are presented in Table 4. As expected, EC producers lose substantial income from the elimination of oilseed processing payments. Some of this is recaptured in grain production. Oilseed consumers (processors) lose some from higher world price. Taxpayers in the Community gain \$339 million more than producers and consumers lose. World price changes result in substantial U.S. producer losses especially in grains, but those losses are more than offset by U.S. producer gains in oilseeds. U.S. consumers show a net loss primarily because of higher world oilseed prices. Grain producer and oilseed consumer losses combine to fully offset oilseed producer gains in the U.S.



Table 4. Welfare Impacts of European Oilseed Subsidy Elimination.

| Commodity                 | Producers | Consumers | Taxpayers | Welfare |
|---------------------------|-----------|-----------|-----------|---------|
| (\$ million)              |           |           |           |         |
| <i>European Community</i> |           |           |           |         |
| Beef                      | -5        | 0         | 1         |         |
| Pork                      | -8        | 0         | 4         |         |
| Poultry Meat              | -4        | 0         | 2         |         |
| Wheat                     | 534       | 0         | -458      |         |
| Corn                      | 3         | 0         | 1         |         |
| Coarse Grains             | 187       | 0         | -75       |         |
| Oilseed                   | -1,662    | -167      | 2,052     |         |
| Oilmeal                   | 17        | -83       | 0         |         |
| Total                     | -938      | -250      | 1,527     | 339     |
| <i>United States</i>      |           |           |           |         |
| Beef                      | -3        | -3        | 0         |         |
| Pork                      | 1         | -4        | 0         |         |
| Poultry Meat              | -4        | -1        | 0         |         |
| Wheat                     | -110      | 44        | 0         |         |
| Corn                      | -26       | 20        | 0         |         |
| Coarse Grains             | -27       | 22        | 0         |         |
| Oilseed                   | 250       | -178      | 0         |         |
| Oilmeal                   | 29        | -22       | 0         |         |
| Total                     | 110       | -122      | 0         | -12     |
| <i>Rest of World</i>      |           |           |           |         |
| Beef                      | 15        | -10       | 0         |         |
| Pork                      | 20        | -17       | 0         |         |
| Poultry Meat              | 10        | -2        | 0         |         |
| Wheat                     | -986      | 1159      | 0         |         |
| Corn                      | -34       | 57        | 0         |         |
| Coarse Grains             | -244      | 272       | 0         |         |
| Oilseed                   | 633       | -669      | 0         |         |
| Oilmeal                   | 49        | -119      | 0         |         |
| Total                     | -537      | 671       | 0         | 134     |

Oilseed producers and wheat producers outside the U.S. and the EC (rest of world) especially benefit from terminating EC oilseed subsidies (Table 4). Deadweight welfare gains of \$134 million more than offset any losses in the U.S. so that ROW welfare gains are positive as predicted by the conceptual model in Figure 2.

## Conclusions

The GATT ruling on European Community oilseed programs is a victory for the American Soybean Association. Estimates indicate the possibility for substantial income gains to U.S. soybean producers and European taxpayers if the EC eliminates oilseed subsidies. The biggest gainer from removing the market distortion is the EC which imposed it.

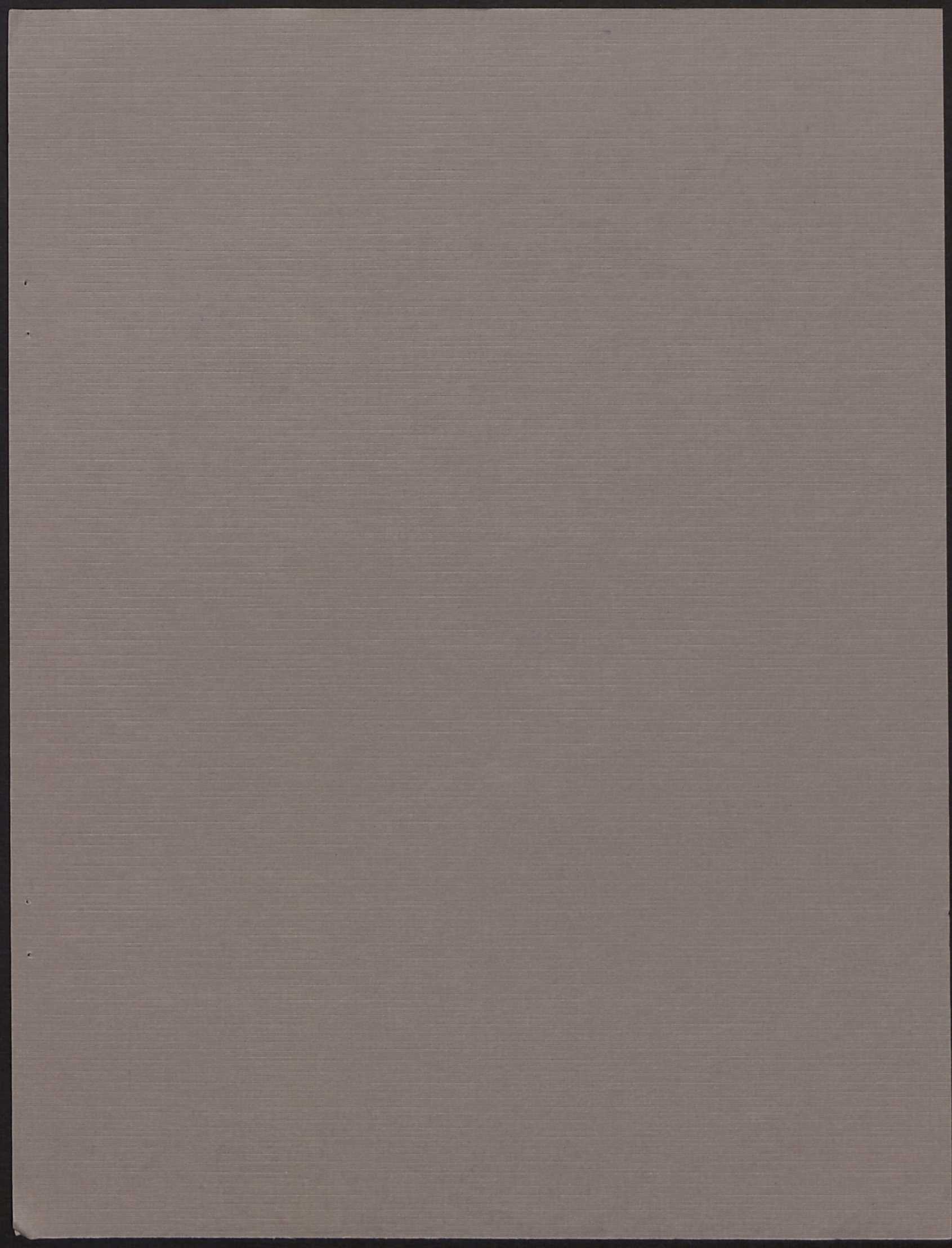
Almost 60 percent of the gains to U.S. oilseed producers from eliminating EC oilseed subsidies is offset by losses to U.S. grain producers (Table 4). EC production shifts from oilseeds into grains which retain their high levels of support, significantly moderating potential benefits to U.S. farmers.

The GATT ruling comes at a time when the European Community is attempting to increase border protection and support of soybeans and oilseeds under the Common Agricultural Policy (CAP). Other crops in the EC (primarily cereal grains) are protected and supported to such an extent that "balancing" support to oilseeds is a central issue in current CAP policy formulation as well as in trade policy negotiations. ("Balancing" is a euphemism for moving toward equal levels of self-sufficiency among commodities through

market intervention.) Although European welfare impacts are estimated to be positive with the elimination of subsidies, the ruling by the GATT is a serious setback to balancing producer support among oilseeds and other crops. This will probably increase the importance of soybeans in the ongoing trade negotiations. It may result in even more innovative methods of "balancing" the Common Agricultural Policy.

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