Socioeconomic Impact and Farmers' Assessment of Nile Tilapia (*Oreochromis niloticus*) Culture in Bangladesh

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ICLARM
INTERNATIONAL CENTER FOR LIVING AQUATIC RESOURCES MANAGEMENT
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Cover: A happy rural household member with tilapia catch from a roadside ditch. Photo by Modadugu V. Gupta.

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Socioeconomic Impact and Farmers' Assessment of Nile Tilapia (*Oreochromis niloticus*) Culture in Bangladesh

ABSTRACT

A socioeconomic study of tilapia culture in seasonal ponds in Mymensingh, Bangladesh, indicated that these unused or under-used seasonal waterbodies, most of which are actually ditches, can be beneficially used for farming tilapia. The tilapia culture technology is simple, requiring very low labor input and hence can also be undertaken by women and children. Ponds of 169 m^2 yielded an average 23.6 kg of fish, which is almost equivalent to the national annual consumption of low-income rural households with six family members.

The study further indicated that 70% of fish produced is consumed on-farm, improving the nutrition of farming families. Revenue from 28% of fish and fingerlings sold was enough to meet the operational costs and this makes the operation sustainable. Return on investment was 343%, indicating economic viability of the operation. Ninety per cent of the farmers surveyed indicated that they are happy with the technology and of these 80% indicated that they will expand their operations.

In addition to economic returns, the implementation of the technology resulted in social benefits to farmers, in that they were able to present fish to their neighbors, resulting in better relationships. Also, some farmers could pay for the education of their children through income generated from the operation.

Further research needs to be undertaken to address some of the problems reported by the farmers, such as overpopulation of fish due to breeding and easy ways to catch fish so that the technology could become more profitable.

INTRODUCTION

The 114 million people of Bangladesh depend mainly on fish for their animal protein requirements. Per caput consumption of fish over the years has declined and is presently estimated at 7.9 kg·year^{-1}. Even then, fish contributes 50-60% of per capita caloric intake and 60-70% of per capita protein intake from animal sources. According to household expenditure surveys, fish consumption provides some 8 g·day^{-1} or 12% of per caput protein intake (63.5 g) and 71% of animal protein intake (11.03 g) (BBS 1988). These average per caput fish consumption figures are sometimes misleading, as fish consumption among rural poor and urban elite are widely different, being 4.4 kg·year^{-1} among low-income rural people and 22.1 kg·year^{-1} among higher-income urban population (World Bank 1991).

Rural households obtain their fish requirements mostly by hunting from open waters such as ox-bow lakes, beels, rivers and floodlands. According to an estimate, about 8% of the population depend on fisheries for livelihood (Planning Commission 1978). Over 73% of homesteads are involved in subsistence fishing (DOF 1990). Decline in area and production of fish from floodlands in recent years due to environmental degradation and increasing fishing pressure has resulted in decline in availability of fish in rural areas leading to malnutrition, especially among children. In addition, most fish produced in rural areas flow to urban markets where fish prices are higher. Because of this, the gap in per caput consumption between urban and rural population has been increasing over the

years. Consumption in rural areas declined from 97% of that in urban areas in 1975-76 to 75% in 1985-86, indicating the deteriorating nutritional status of the rural populace (BBS 1980, 1986, 1988).

Against this backdrop of declining fish availability, Bangladesh, with 34% of its area under water for at least six months a year, has potential for increasing fish production through aquaculture. There are probably over 1.3 million ponds covering an area of 147,000 ha, most of which are in rural areas (BBS 1984). In addition to these, there are a large number of seasonal waterbodies such as ponds, ditches, roadside canals and borrow pits. These are presently either unused or under-used. Farmers think that seasonal waters are not suitable for aquaculture because culture of traditional Indian and Chinese carps proved unsuccessful in such waters.

BACKGROUND

The Fisheries Research Institute (FRI), with technical assistance from the International Center for Living Aquatic Resources Management (ICLARM) and financial assistance from the Bangladesh Agricultural Research Council (BARC) and the United States Agency for International Development (USAID), has been conducting research to develop low-input aquaculture technologies to use these waterbodies.

Tilapias, which can breed easily and are hardy, are cultured in over 30 countries. They are considered as "wonder fish" by some and as "aquatic chicken" by others. One species, *Oreochromis mossambicus*, was introduced in 1954, from Thailand. This species matures early, breeds frequently, and has a slow growth rate. Because of this, the fish became unpopular with the farmers. In 1974, Nile tilapia (*O. niloticus*) was introduced from Thailand, but was not established as a culture species since neither management practices were developed nor its biology understood.

Since Nile tilapia is a hardy fish, good converter of organic wastes into quality protein and resistant to diseases (Stickney et al. 1979; Balarin and Haller 1982; Pullin and Lowe-McConnell 1982), studies were initiated by FRI to develop a viable technology for its culture in seasonal ponds and ditches.

On-station and on-farm, farmer participatory studies have resulted in the development of a simple technology which could be easily implemented by rural households without much strain on their financial resources or time. This technology was transferred by an NGO, the Bangladesh Rural Advancement Committee (BRAC), to 309 farmers in Trishal, Fulbaria and Mymensingh sadar upazilas (administrative units) of Mymensingh district; Narsingdi sadar, Shibpur and Manohardi upazilas of Narsingdi district; and Mirzapur upazila of Tangail district, during 1989-90 (Figs. 1 and 2). Since it is a new technology transferred to farmers, the need was felt for undertaking a survey to assess its impact on farm households in terms of income and nutrition and farmers' reaction to the technology. The results of the survey are also expected to provide feedback to researchers for making improvements in the technology.

The Mymensingh Agroecosystem

An agroecosystem transect of the Mymensingh floodland area is presented in Fig. 3. The transect shows eight land types or resource systems, six of which are potential sources of fish. Of these six, the roadside ditch, homestead pond, medium land, lowland areas and the floodland can be used for fish culture. This study focuses on the use of the seasonal roadside

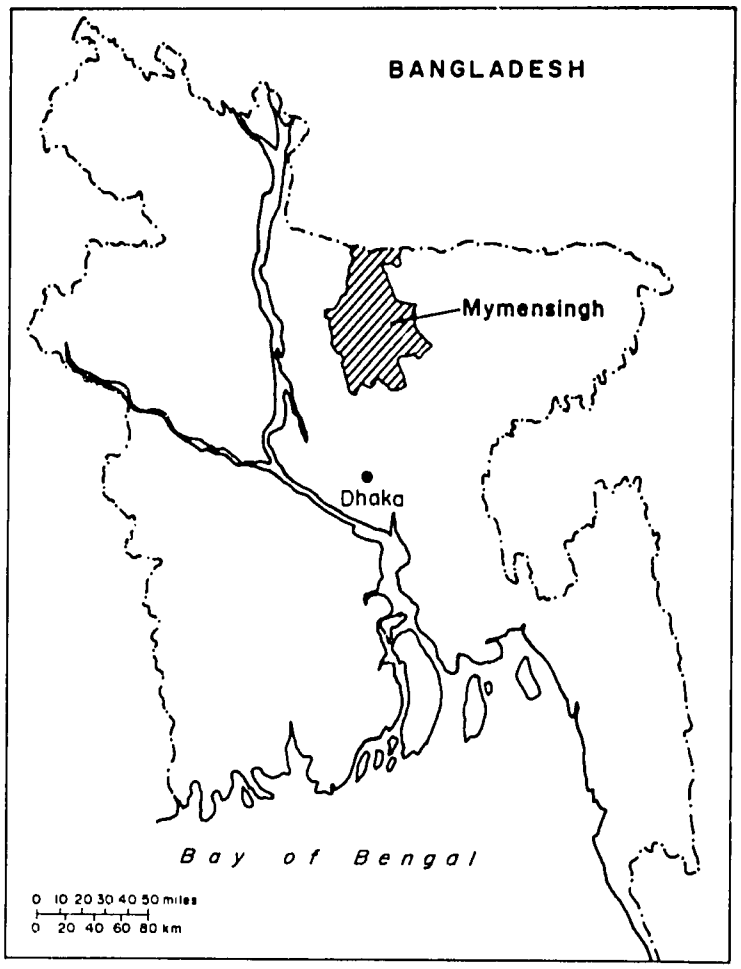


Fig. 1. Map of Bangladesh indicating the area where tilapia technology was disseminated.

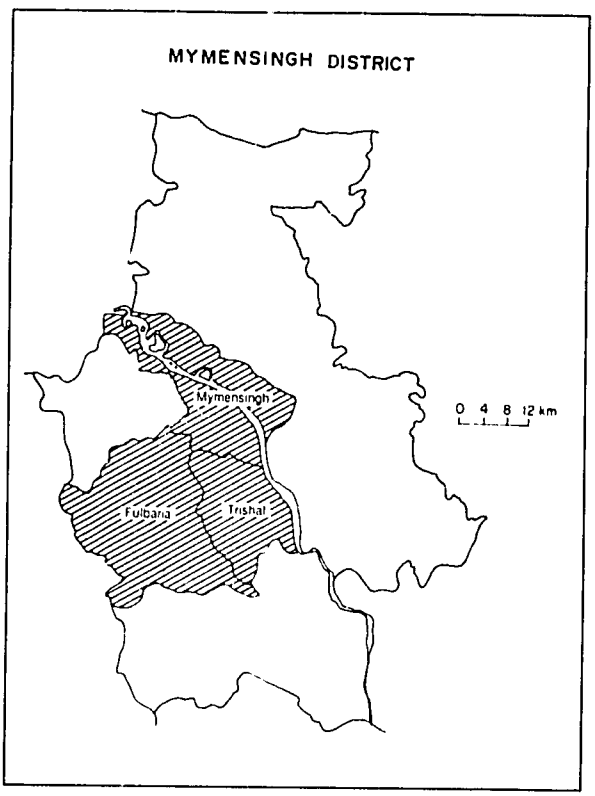


Fig. 2. Map of Mymensingh district indicating upazilas where tilapia technology was disseminated.

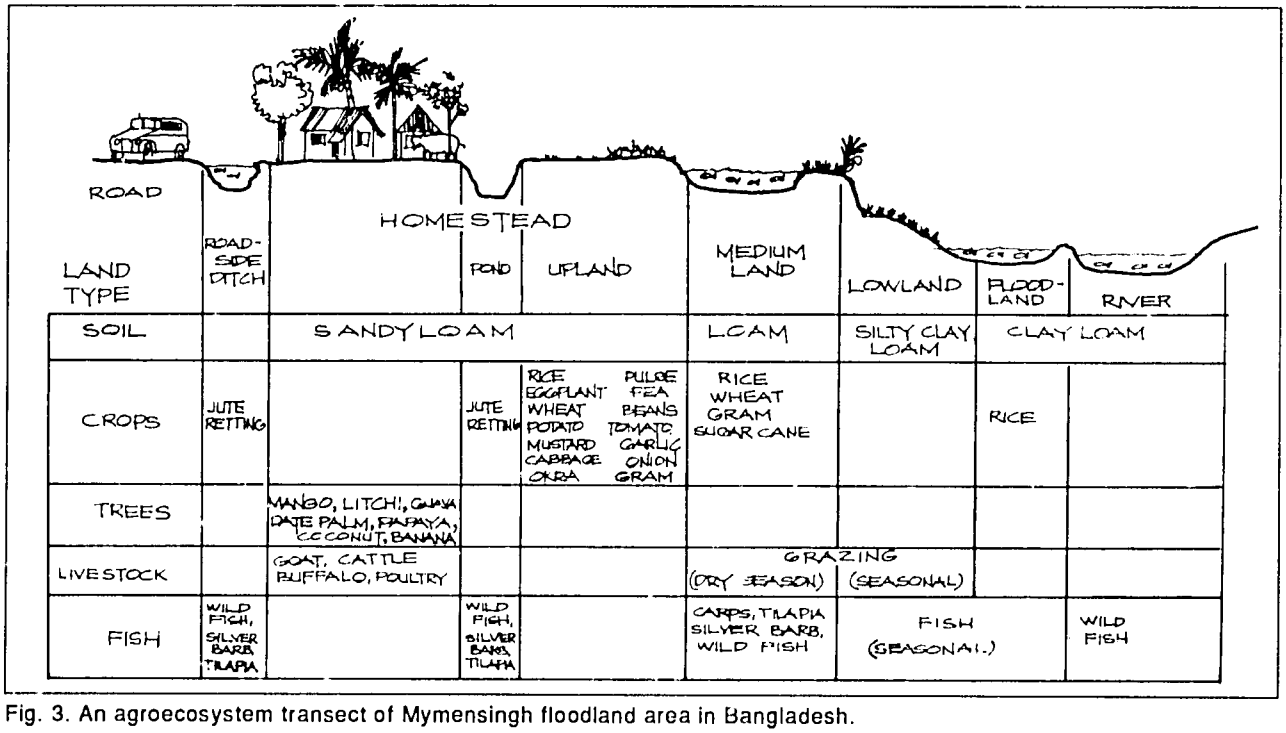


Fig. 3. An agroecosystem transect of Mymensingh floodland area in Bangladesh.

ditches/canals and homestead ponds for tilapia culture. The ditches are formed either due to borrowing of soil for house or road construction, while the ponds are dug for household uses like bathing, washing or irrigation purposes.

The land type of the homestead area is sandy loam where trees like mango, litchi, guava, date palm, papaya, coconut and banana are planted around the house. Cattle, buffalo, goat and poultry are raised also in the homestead. On the homestead upland area, crops such as rice, wheat and potato, and vegetables like beans, peas, okra, cabbage, eggplant, spinach and tomato are grown.

A typical material flows diagram between enterprises in the different resource systems is shown in Fig. 4. It shows the material flows of on-farm agricultural wastes and by-products of the seasonal roadside ditches and homestead ponds. Cattle, goat and poultry manure, wastes from the kitchen and vegetable garden, and rice bran are used as material inputs for tilapia culture. Outflows from these ditches and ponds are the fish produced which are consumed by the household and the ditch/pond water which is used for irrigating and fertilizing the vegetable garden.

Tilapia Culture Technology

POND PREPARATION

Branches of trees on pond embankment should be cut or trimmed (Fig. 5A). Ponds should be cleared of submerged and floating weeds (Fig. 5B). Weeds utilize pond nutrients and obstruct penetration of sunlight into the water, resulting in low production of fish food organisms (plankton).

For lowering of acidity, better utilization of fertilizer and for disinfection, lime should be applied to the pond before stocking fingerlings at the rate of 250 kg·ha^{-1} or 0.025 kg·m^{-2}. Lime

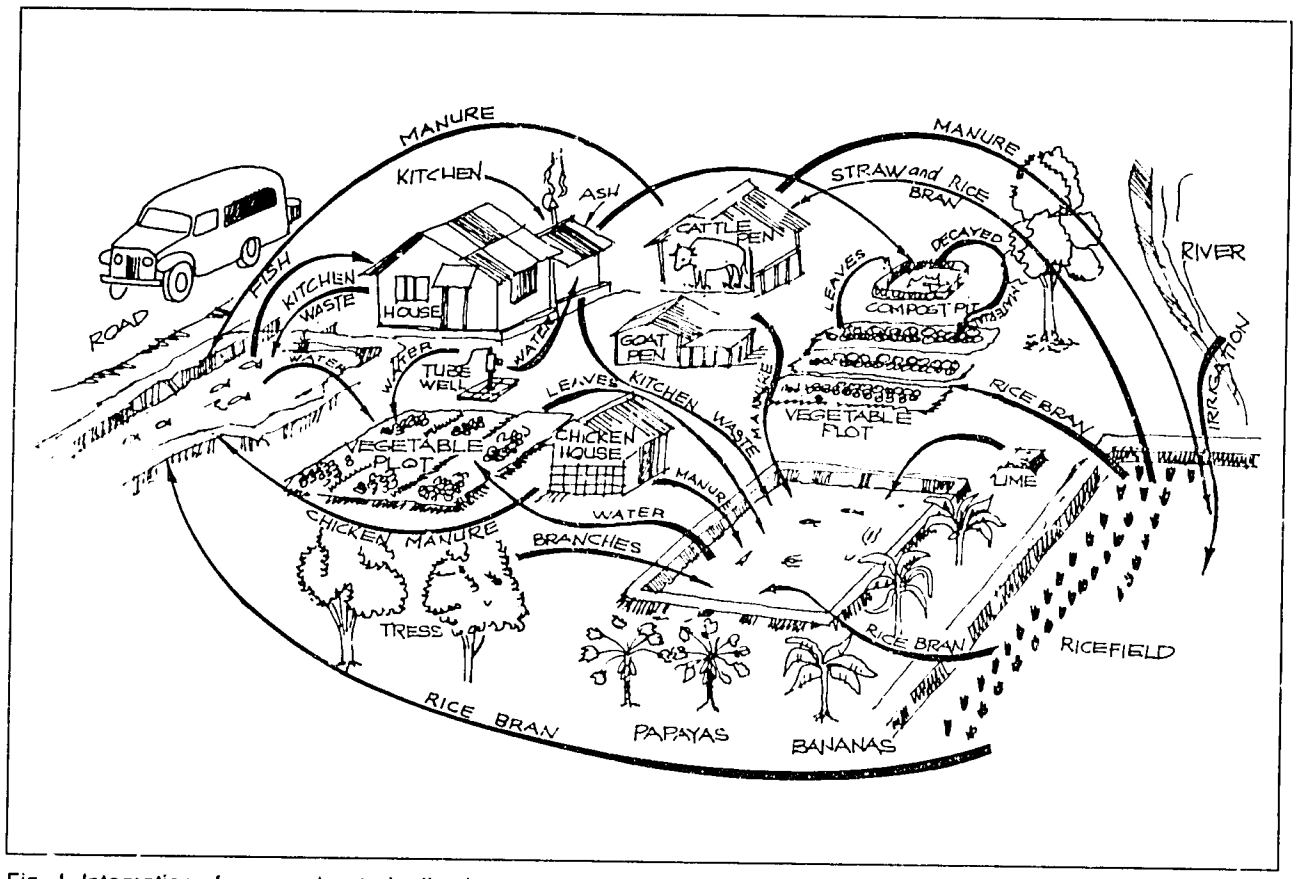


Fig. 4. Integration of seasonal waterbodies into existing farming systems in Bangladesh.

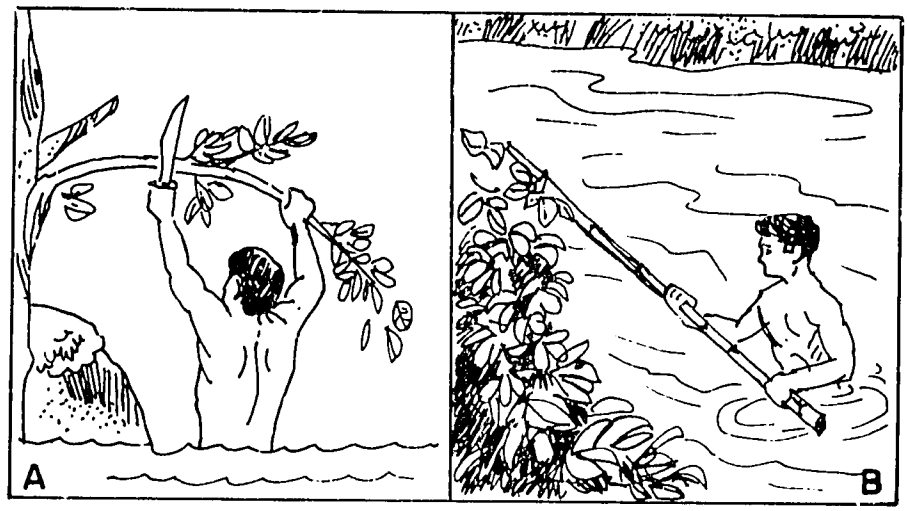
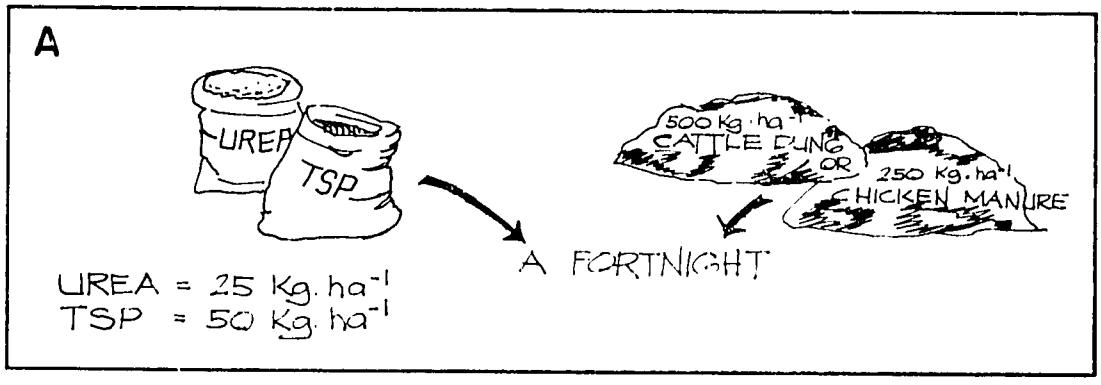


Fig. 5. A. Trimming branches to accommodate sunlight. B. Clearing away weeds.

should be spread on the pond if the pond bottom is dry or mixed with water and sprayed if the pond is not empty.

FERTILIZATION

The pond needs to be fertilized because fish growth depends on the plankton in the pond. Organic manure or chemical fetilizers could be used for the purpose. Organic manure can be heaped in the corner of the pond (Fig. 6B), while chemical fertilizers need to be dissolved in water and spread in the pond.



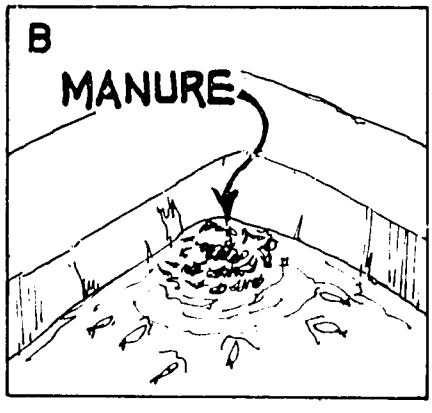


Fig. 6. A. Recommended levels of fertilization. B. Suggested method of applying organic fertilizer.

Fertilizers should be applied fortnightly, organic alternating with inorganic fertilizers. The recommended rates for pond fertilization for organic fertilizer are 500 kg·ha^{-1} for cattle dung and 250 kg·ha^{-1} for chicken manure. The recommended rates for inorganic fertilizers are: urea 25 kg·ha^{-1} and triple superphosphate (TSP) 50 kg·ha^{-1}.

STOCKING

Healthy fingerlings should be procured from a reliable hatchery or supplier. It is recommended to stock tilapia fingerlings at a density of 20,000·ha^{-1} or 2·m^{-2}. It is best to stock 3-5-g fingerlings as they would reach table size early, especially in cases where ponds retain water for only three to four months. The fingerlings should be released gently and gradually to avoid stress and to allow fingerlings to acclimatize to the temperature of the pond water from that of the container (Fig. 7).

Fig. 7. Fingerlings should be released gently and gradually to avoid stress.

FEEDING

For good fish production, supplementary feeds should be given in the pond. Kitchen waste, duck weeds, *Azolla*, green leaves of *Ipomoea aquatica*, sweet potato and tender terrestrial grasses can be given. Rice bran or wheat bran will increase fish growth and production.

Feeding should be done once or twice a day. The quantity of feed to be given increases with fish size. Daily feeding with rice bran at the rate of 3% of the fish biomass is recommended. A recommended schedule for feeding rice bran in a 500-m² pond is shown in Fig. 8. However, if kitchen waste or weeds are given, the quantity of rice bran can be reduced.

POND MANAGEMENT

Green pond water indicates good plankton production (Fig. 9). An indication of lack of plankton is when visibility is up to one's elbow. In such cases, fertilization should be increased. On the other hand, deep green pond water indicates excessive plankton production, which can deplete oxygen in the pond water especially during night time and cloudy days. This can result in fish mortality. When this happens, feeding and fertilization should be stopped until the water color becomes lighter.

Tilapia breeds in ponds leading to overpopulation. This results in poor fish growth due to competition for food. Hence, tilapia fry which swim in schools along the banks of the pond can be removed using a scoop net. They can be either sold for growout or crushed and given as feed in the ponds.

HARVESTING

Harvesting of fish can be started as soon as fish reach table size or when the water level of the pond goes below 40 cm (Fig. 10). Fish can be intermittently harvested for family consumption or at one time for marketing. Around 75-100 kg of fish could be harvested from a 500-m² pond in five to six months.

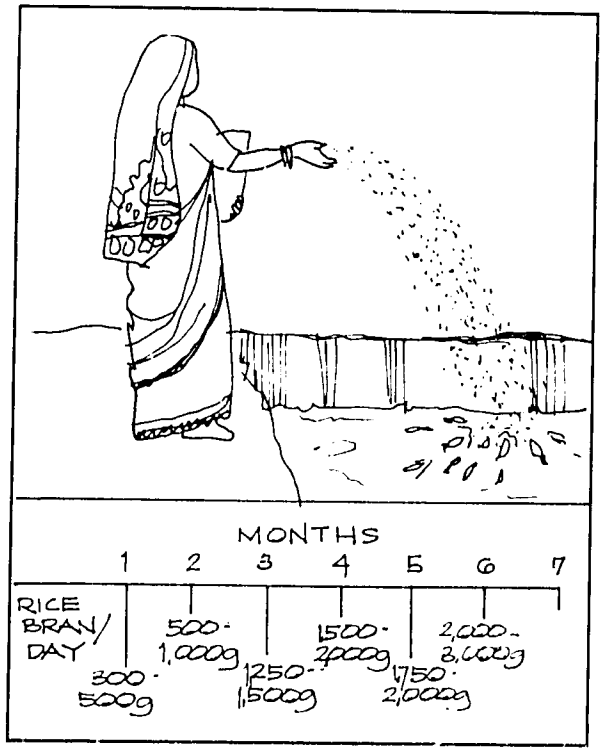


Fig. 8. Suggested application rates of rice bran per month for a 500-m² pond.

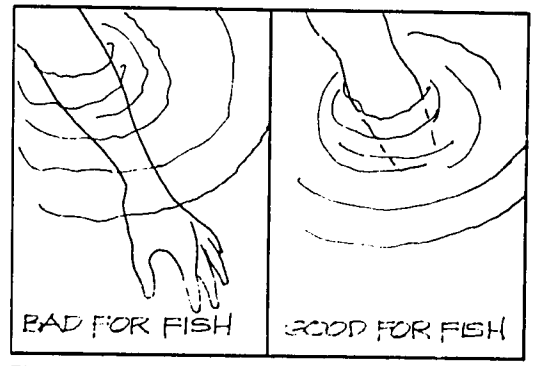


Fig. 9. A simple test to gauge pond water fertility.

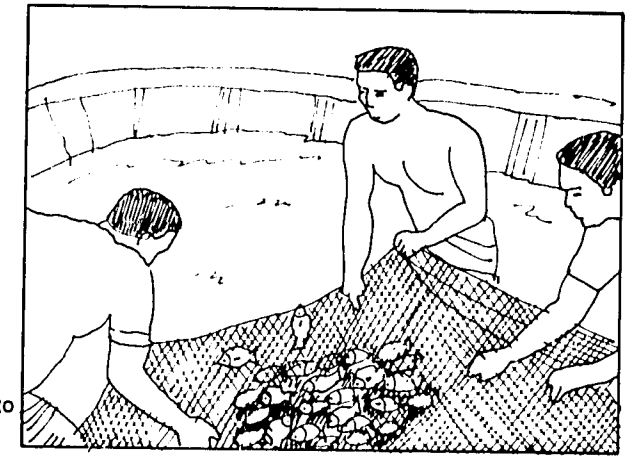


Fig. 10. Tilapia can be harvested in four to six months of culture.

METHODOLOGY

A questionnaire (Annex 1) was developed which covered tenure status, gender, physical condition of ponds/ditches, culture practices, inputs used and costs, production, product utilization and farmers' assessment of the technology. For assessing farmers' attitudes to the technology, ten farmers were interviewed at length and asked to list any difficulties encountered and benefits obtained from implementation of the technology. The difficulties and benefits reported by these farmers were consolidated and incorporated into the questionnaire and the answers of the rest of the farmers were checked against this list. The questionnaire was field tested and necessary modifications were made before a full-scale survey was undertaken.

Of 309 farmers who implemented the technology, 222 farmers were from Trishal, Fulbaria and Mymensingh sadar upazilas of Mymensingh district. Of these 222 farmers, a total of 114 farmers were surveyed - 75 from Trishal, 22 from Fulbaria and 17 from Mymensingh sadar upazilas (Annexes 2 and 3). However, one farmer in Trishal who practised jute retting which affected his production was excluded from this study.

There was an attempt to measure labor involved in tilapia culture. However, the farmers were not able to give the number of hours involved in tilapia culture activities because they said it occupied only a very small percentage of the household members' time. For example, feeding the fish with rice bran and applying fertilizers took only a few minutes. Moreover, these were done as side activities when attending to other chores which are usually done by women and children. Since the waterbodies are seasonal ponds and ditches, there is no significant labor required for pond construction and maintenance. Farmers also added that the little effort involved in tilapia culture was idle household labor. As such, the opportunity cost of family labor was zero. There was also no hired labor involved.

On-farm resources (cattle dung and rice bran) used as production inputs were valued at prevailing market prices. In the same way, monetary values of fish consumed on-farm and given away have been calculated at prevailing farm gate prices.

Farmers' interviews were conducted by Mr. Masud Rana of BRAC and Messrs. Niazuddin and Anil Kumar Saha of FRI.

SURVEY RESULTS

Respondents' Profile

OWNERSHIP

Eighty-nine per cent of the ponds in the three upazilas were under single ownership, while 8% were under multiple ownership (Table 1). Since the ponds used for tilapia culture are very small (less than 200 m^2) and in the homestead area, they are not normally leased.

GENDER

A significant proportion (29%) of pond operators were found to be women, their number being more in Trishal (36%), followed by Mymensingh sadar upazila (24%) (Table 1).

Table 1. Tenure status and gender of the respondents engaged in tilapia culture in Trishal, Fulbaria and Mymensingh upazilas, Bangladesh, 1989-90.

	Trishal n=74	%	Fulbaria n=22	%	Mymensingh n=17	%	All n=113	%
Sample	177		28		38		222	
Ownership								
single	66	(89)	19	(86)	16	(94)	101	(89)
multiple	7	(10)	2	(9)	0		9	(8)
leased	1	(1)	1	(5)	1	(6)	3	(3)
Gender								
male	47	(64)	20	(91)	13	(76)	80	(71)
female	27	(36)	2	(9)	4	(24)	33	(29)

Numbers in parentheses are percentages of n.

Technology Profile

POND CHARACTERISTICS

The size of ponds used for tilapia culture ranged from 40 to 640 m². On average, ponds in Fulbaria were the smallest (107 m²). Ponds in Mymensingh were the largest (191 m²) and the most heterogeneous in size (Table 2).

The maximum water depth in the ponds was 1.8 m and the minimum, 0.4 m (Table 2). On the average, there was water in the ponds for about 10.5 months. Water was more abundant in Fulbaria and Mymensingh upazilas, which is near to having water all year-round (11 months) compared to Trishal where the waterbody is dry for two months in a year. In some cases, the ponds were dry for five months in a year in all upazilas. Although some water is retained in ponds over a long period as indicated above, the

Table 2. Physical and chemical characteristics of the tilapia farms surveyed in Trishal, Fulbaria and Mymensingh upazilas, Bangladesh, 1989-90.

	Trishal n=74	s.e.	Fulbaria n=22	s.e.	Mymensingh n=17	s.e.	All n=113	s.e.
Area (m²)								
ave. area	182	(9.97)	107	(16.60)	191	(37.40)	169	(9.51)
range	60-400		40-280		40-640		40-640	
Depth (m)								
ave. min. depth	0.3	(0.13)	0.6	(0.23)	0.6	(0.34)	0.4	(0.11)
ave. max. depth	1.7	(0.13)	2.0	(0.32)	2.0	(0.28)	1.8	(0.12)
Water retention (months·year)	10.0	(0.21)	11.5	(0.31)	11.4	(0.34)	10.5	(0.17)
Water quality								
turbid	34		5		4		43	
green/brown	40		17		13		70	

Numbers in parentheses are standard errors which are significant at $P<0.05$.

depth is often not enough to culture fish. For example, in Trishal, water retention is for about 10 months, but in most cases, fish had to be harvested after about five months due to insufficient depth of water.

The majority of the tilapia farmers reported that the color of water in their ponds was green/brown (62%) (Table 2). Green or brown water is taken as an indication of its fertility.

Ponds in Fulbaria and Mymensingh were relatively new compared to Trishal where 39% of the ponds were 30-50 years old. More than half the ponds were 10 or less years old (Table 3).

Table 3. Age, purpose and uses of waterbodies of tilapia farms surveyed in Trishal, Fulbaria and Mymensingh upazilas, Bangladesh, 1989-90.

	Trishal n=74	%	Fulbaria n=22	%	Mymensingh n=17	%	All n=113	%
Year/age (years)								
1930-59; 50	5	(7)	0		0		5	(5)
1960-69; 30	24	(32)	0		1	(6)	25	(22)
1970-79; 20	12	(16)	7	(32)	5	(29)	24	(21)
1980-89; 10	33	(45)	15	(68)	11	(65)	59	(52)
Purpose								
house building	57	(77)	15	(68)	5	(29)	77	(68)
road construction	9	(12)	1	(5)	1	(6)	11	(10)
fish culture	8	(11)	6	(27)	11	(65)	25	(22)
Uses other than fish culture								
washing	71	(96)	12	(54)	14	(82)	97	(86)
jute retting	0		1	(5)	0		1	(1)
no response	3	(4)	9	(41)	3	(18)	15	(13)

PURPOSE AND USES OF PONDS

Most of the tilapia farmers reported that their pond was dug for taking soil for house building (68%), 22% for fish culture and 10% for road construction (Table 3). Across upazilas, in Mymensingh and Fulbaria, more ponds were built for fish culture (65% and 27%, respectively), than in Trishal (11%). This implies that the newer ponds in Fulbaria and Mymensingh were probably built for fish culture.

The main use of the pond water was for washing as reported by 86% of the farmers (Table 3). The other 13% used their ponds solely for culturing fish. Across upazilas, a greater proportion (41%) of the tilapia farmers in Fulbaria used their pond exclusively for fish culture in contrast to Trishal (4%) and Mymensingh (18%) where the ponds had multiple uses.

MANAGEMENT PRACTICES

A great majority of farmers (100% in Fulbaria and Mymensingh, 93% in Trishal) used lime during pond preparation (Table 4). More farmers applied fertilizers during pond preparation in Trishal and Fulbaria (90% and 68%, respectively) than in Mymensingh (47%).

During the culture period, more farmers used organic fertilizer (cattle dung) (100% in Fulbaria and Mymensingh, 95% in Trishal) than inorganic fertilizers (urea and TSP),

Table 4. Management practices of tilapia farmers in Trishal, Fulbaria and Mymensingh upazilas, Bangladesh, 1989-90.

	Trishal n=74	%	Fulbaria n=22	%	Mymensingh n=17	%	All n=113	%
Pond preparation								
liming	69	(93)	22	(100)	17	(100)	108	(96)
fertilization	67	(90)	15	(68)	8	(47)	90	(80)
Input use during growing period								
lime	68	(92)	22	(100)	17	(100)	107	(95)
inorganic fertilizer	47	(63)	6	(27)	0		53	(46)
organic fertilizer	71	(95)	22	(100)	17	(100)	110	(97)
rice bran	73	(98)	22	(100)	17	(100)	112	(99)
oil cake	1	(1)	0		0		1	(1)
Source of inputs								
organic fertilizer (cattle dung)								
own	65	(88)	NR		1			
purchased	2	(3)	NR		NR			
own and purchased	4	(5)	NR		NR			
nonuser	3	(4)	NR		NR			
feeds (rice bran)								
own	34	(46)	NR		NR			
purchased	0		NR		NR			
own and purchased	39	(53)	NR		NR			
nonuser	1	(1)	NR		NR			

NR = Nonreporting.

which were used only by 63% of tilapia farmers in Trishal, and a much lower rate in Fulbaria (27%) and none in Mymensingh. Fertilizer application during the entire culture period amounted to: 2,869 kg·ha^{-1} cattle dung; 18 kg·ha^{-1} urea; and 40 kg·ha^{-1} TSP (Table 5). As evident, levels of pond fertilization varied with the suggested levels of application

Table 5. Average input use per season of tilapia farms in Trishal, Fulbaria and Mymensingh upazilas, Bangladesh, 1989-90.

	Trishal n=74	s.e.	Fulbaria n=22	s.e.	Mymensingh n=17	s.e.	All n=113	s.e.
Fingerlings (no.)								
per farm	309.37	(23.74)	236.19	(34.76)	328.44	(45.84)	297.97	(18.46)
per ha	16,998		22,073		17,196		17,631	
Lime (kg)								
per farm	2.04	(0.17)	1.74	(0.17)	2.59	(0.29)	2.06	(0.12)
per ha	112		163		136		122	
Urea (kg)								
per farm	0.42	(0.09)	0.10	(0.03)	0		0.30	(0.06)
per ha	23		9		-		18	
TSP (kg)								
per farm	1.02	(0.14)	0.05	(0.02)	0		0.68	(0.10)
per ha	56		5		-		40	
Cattle dung (kg)								
per farm	53.76	(4.2)	25.28	(2.74)	55.56	(9.5)	48.49	(3.3)
per ha	2,954		2,363		2,908		2,869	
Rice bran (kg)								
per farm	81.41	(5.0)	32.10	(4.08)	49.31	(6.9)	67.06	(4.0)
per ha	4,473		3,000		2,582		3,968	

Numbers in parentheses are standard errors which are significant at $P<0.05$.

(see page 6).

All tilapia farmers (excluding one in Trishal) used rice bran as supplementary feed. In Trishal, 46% of the farmers used rice bran from their on-farm resources, while 53% from on-farm and off-farm resources (Table 4). Only one tilapia farmer (in Trishal) used oil cake as a pond input. Data for other upazilas could not be collected. Use of supplementary feeds by farmers was much less than the recommended level for the technology (see page 7).

MONTHS OF STOCKING AND HARVESTING

As can be seen from Table 6, April, June and July were the peak months for stocking while harvesting was done during December-February. There are distinct stocking and harvesting months across upazilas. The tilapia were grown for an average of 160, 316 and 218 days in Trishal, Fulbaria and Mymensingh, respectively. Multiple harvesting was practised in Fulbaria and Mymensingh due to longer culture periods.

Table 6. Months of stocking and harvesting in tilapia farms surveyed in Trishal, Fulbaria and Mymensingh upazilas, Bangladesh, 1989-90.

	Trishal n=74	%	Fulbaria n=22	%	Mymensingh n=17	%	All n=113	%
Month of stocking								
March 89	0		3	(14)	0		3	(2)
April 89	2	(3)	16	(72)	17	(100)	35	(31)
May 89	7	(9)	0		0		7	(6)
June 89	24	(32)	3	(14)	0		27	(24)
July 89	29	(39)	0		0		29	(26)
August 89	10	(14)	0		0		10	(9)
September 89	2	(3)	0		0		2	(2)
Month of harvesting								
October 89	5	(7)	0		0		5	(5)
November 89	1	(1)	1	(4.5)	5	(29.5)	7	(6)
December 89	25	(34)	2	(9)	5	(29.5)	32	(28)
January 90	19	(26)	1	(4.5)	6	(35)	26	(23)
February 90	22	(30)	1	(4.5)	0		23	(20)
March 90	1	(1)	5	(23)	1	(6)	7	(6)
April 90	0		11	(50)	0		11	(10)
May 90	0		0		0		0	
June 90	0		0		0		0	
July 90	1	(1)	0		0		1	(1)
August 90	0		1	(4.5)	0		1	(1)

Multiple harvesting was practised in Fulbaria and Mymensingh upazilas.

FISH PRODUCTION AND UTILIZATION

Details of fish production and disposal are presented in Table 7. Average production per farm was 23.57 kg or 1,395 kg·ha^{-1}. While average farm size (190.59 m^2) and water retention (11.4 months) were the highest in Mymensingh upazila, gross production was lowest (19.26 kg per farm or 1,008 kg·ha^{-1}).

Table 7. Average production of fish and fry/fingerlings per farm of tilapia farmers in Trishal, Fulbaria and Mymensingh upazilas, Bangladesh, 1989-90.

	Trishal		Fulbaria		Mymensingh		All	
Fish	n=74	%	n=22	%	n=17	%	n=113	%
Average production (kg)	25.27		21.17		19.26		23.57	
Sold	4.59	(18)	7.25	(34)	6.88	(36)	5.45	(23)
Consumed on-farm	18.30	(72)	13.92	(66)	12.38	(64)	16.56	(70)
Given away	2.38	(10)	0		0		1.56	(7)
Fry/fingerlings*	n=9		n=5		n=3		n=17	
Average production (pieces)	960		2,265		767		1,310	

*All fry/fingerlings were sold.

Most fish produced (70%) were consumed by the households, considered as noncash receipt. Across upazilas, consumption of fish produced by households was more or less the same, being 72% in Trishal, 66% in Fulbaria and 64% in Mymensingh. This is an encouraging feature, as tilapia culture has resulted in increased availability of animal protein to the poor farming families, who normally cannot afford to buy from the market. Some 34-36% of total fish produced were sold by farmers in Fulbaria and Mymensingh, while 18% was sold and 10% given away to neighbors in Trishal. Fish sales provided cash returns to farmers.

On the average, 15% of the farmers harvested fingerlings; across upazilas, 23% in Fulbaria, 18% in Mymensingh and 12% in Trishal. Production of fry/fingerlings was higher in Fulbaria and Mymensingh, where the culture periods were longer. All the harvested fingerlings were sold.

The average size of fish at harvest (Table 8) was highest in Fulbaria (110.2 g and 18.3 cm) and lowest in Trishal (97.3 g and 15.3 cm). This difference in size is probably due to the shorter culture period in Trishal. Size of fish was positively correlated with culture period. However, one should note that multiple harvesting was practised in Fulbaria and Mymensingh.

Table 8. Average size of fish harvested in tilapia farms in Trishal, Fulbaria and Mymensingh upazilas, Bangladesh, 1989-90.

	Trishal		Fulbaria		Mymensingh		All	
	n=74	s.e.	n=22	s.e.	n=17	s.e.	n=113	s.e.
Average weight of harvested fish (g)	97.3	(0.92)	110.2	(5.77)	101.2	(6.50)	100.4	(3.22)
Average length of harvested fish (cm)	15.3	(0.21)	18.3	(0.33)	17.6	(0.40)	16.3	(0.40)
Culture period (days)	159.5	(4.61)	315.7	(14.29)	217.9	(16.05)	198.7	(14.58)

Numbers in parentheses are standard errors which are significant at $P<0.05$.

COSTS AND RETURNS

Production Costs

Total production costs per farm averaged Tk.153 (Tk.36 = US$1.00 in 1989) (Table 9). Tilapia farmers in Trishal and Mymensingh incurred higher expenditures (Tk.162 and Tk.167, respectively) than farmers in Fulbaria (Tk.113). However, on a unit area basis, tilapia farmers in Mymensingh had the lowest production costs (Tk.8,735·ha^{-1}) and those in Fulbaria the highest (Tk.10,536·ha^{-1}).

The major costs incurred were rice bran (48%) and fingerlings (33%) (Table 9). Cattle dung and lime accounted for 8% each. Tilapia farmers used lower doses of inorganic fertilizers, as these are off-farm inputs involving cash purchases.

Table 9. Average production costs and net income in Taka per farm per season and percentage of total costs and income of tilapia farming in Trishal, Fulbaria and Mymensingh upazilas, Bangladesh, 1989-90. (Tk.36 = US$1.00 in 1989).

	Trishal n=71	%	Fulbaria n=21	%	Mymensingh n=16	%	All n=108[a]	%
Input costs[b]								
Fingerlings	47.73	(29)	47.71	(42)	62.94	(38)	49.98	(33)
Lime	11.56	(7)	10.33	(9)	15.56	(9)	11.91	(8)
Inorganic fertilizer								
urea	2.14	(1)	0.55	(<1)	0		1.51	(1)
TSP	5.09	(3)	0.28	(<1)	0		3.40	(2)
Organic fertilizer								
cattle dung	14.28	(9)	6.32	(6)	14.36	(9)	12.75	(8)
Rice bran	81.41	(51)	47.55	(42)	73.97	(44)	73.72	(48)
Total production costs								
per farm	162.21		112.74		166.83		153.27	
s.e.	13.02		9.24		13.21		12.23	
per ha	8,913		10,536		8,735		9,069	
Gross returns								
cash	153.51		328.67		180.13		191.50	
fish sold	130.49	(19)	189.85	(27)	172.63	(34)	148.27	(22)
fingerlings sold	23.02	(3)	138.82	(20)	7.50	(2)	43.23	(6)
noncash	558.62		368.87		327.22		487.44	
fish consumed	493.71	(69)	368.87	(53)	327.22	(64)	444.77	(66)
fish given away	64.91	(9)	0		0		42.67	(6)
Total gross income								
per farm	712.13		697.54		507.35		678.94	
s.e.	41.08		129.90		65.43		38.40	
per ha	39,128		65,191		26,563		40,174	
Net farm income								
per farm	549.92		584.80		340.52		525.67	
s.e.	39.13		128.80		54.52		37.10	
per ha	30,215		54,654		17,828		31,105	

[a]Five samples were excluded from the economic analysis due to insufficient information.
[b]On-farm inputs (cattle dung and rice bran) were valued at market prices. Fish consumed and given away were valued at farm gate prices.
All standard errors are significant at $P<0.05$.

Gross Returns

Gross returns or gross income per farm averaged Tk.679 (Table 9). It was highest in Trishal (Tk.712) and lowest in Mymensingh (Tk.507). On a unit area basis, gross returns was highest in Fulbaria (Tk.65,191·ha^{-1}) and lowest in Mymensingh (Tk.26,563·ha^{-1}). The

low gross income in Mymensingh sadar upazila is related to low fish production (Table 7), due to low input use (Table 5). The income from fingerlings, which accounted for 20% of total gross returns, was responsible for the higher profits of tilapia farmers in Fulbaria. The higher fingerling production in Fulbaria was due to the longer culture period there.

Noncash returns accounted for 72% of gross income (Table 9), 91% of which was imputed value of fish consumed on-farm, while the rest was for fish given away. Cash returns accounted for 28% of gross income; fish sold accounted for 77% of cash returns and the rest was from sale of fingerlings.

Net Farm Income

Net farm income from tilapia culture per farm averaged Tk.526 in all upazilas (Table 9). The highest profit per farm from tilapia culture was observed in Fulbaria (Tk.585) and lowest in Mymensingh (Tk.341). On a unit area basis, the most profitable tilapia farms were in Fulbaria, where profit averaged Tk.54,654·ha^{-1} and the least in Mymensingh with a profit of Tk.17,828·ha^{-1}. Low profit in Mymensingh sadar upazila was due to low fish production, which again was resultant of low input use.

FARMERS' ASSESSMENT AND ATTITUDES TO TILAPIA CULTURE

Ninety per cent of farmers expressed satisfaction with the new technology, of which 80% expressed a desire to expand operations (Table 10); 10% of farmers were in favor of continuing at the present scale, while 10% wanted to discontinue. Assessment of technology by farmers in different upazilas was different. While only 7% and 5% of farmers from Trishal and Fulbaria, respectively, wanted to discontinue, 29% of farmers from Mymensingh upazila were in favor of discontinuing, probably due to low net income these farmers received.

Table 10. Fish farmers' attitudes with regard to future involvement in tilapia culture using the new technology in Trishal, Fulbaria and Mymensingh upazilas, Bangladesh, 1989-90.

	Trishal n=74	%	Fulbaria n=22	%	Mymensingh n=17	%	All n=113	%
Expand	69	(93)	13	(59)	9	(53)	91	(80)
Continue	0		8	(36)	3	(18)	11	(10)
Discontinue	5	(7)	1	(5)	5	(29)	11	(10)

Difficulties Faced by Tilapia Farmers

The two most common difficulties reported were the inadequate supply of fingerlings and the small size of ponds (Table 11). Availability of credit was considered a problem mainly by tilapia farmers in Mymensingh, and was reflected by their lower levels of input use, low production costs and low production. Overpopulation due to breeding was seen as a problem mainly by tilapia farmers in Trishal. This implies that farmers in Trishal are

interested in management to minimize breeding and to increase the average size of fish at harvest.

Table 11. Difficulties faced by fish farmers in tilapia culture in Trishal, Fulbaria and Mymensingh upazilas, Bangladesh, 1989-90.

	Trishal n=74	%	Fulbaria n=22	%	Mymensingh n=17	%	All n=113	%
Supply of fingerlings	71	(96)	20	(91)	16	(94)	107	(95)
Small pond size	63	(85)	15	(68)	15	(88)	93	(82)
Credit	16	(22)	11	(50)	15	(88)	42	(37)
Overpopulation due to breeding	33	(44)	3	(14)	5	(29)	41	(36)
Harvesting	23	(31)	5	(23)	6	(35)	34	(30)
Water supply	7	(9)	5	(23)	2	(12)	14	(12)
Feed other than rice bran	4	(5)	4	(18)	5	(29)	13	(12)
Depth of pond	-		1	(4)	-		1	(1)

Encouragement Factors for Tilapia Culture

The factors that influenced 90% of farmers to continue the culture of tilapia were grouped into economic, technological and social. The farmers gave more importance to economic benefits (53%), followed by technological factors (26%) and social benefits (21%) (Table 12).

Among the economic factors, tilapia as source of food for the family and source of cash were perceived as the most important. High profits, low input costs, quick return on investment and source of emergency fund were also important for farmers in Fulbaria and Mymensingh. Benefits from integration of resources (source of inputs for tilapia culture from other farm enterprises) and use of untapped resources (use of fallow ponds) were considered important in Trishal and Fulbaria. Proceeds from tilapia culture were also useful to pay back loans, as reported by farmers in Trishal and Fulbaria.

The rapid growth of tilapia and its ability to produce fingerlings (nondependence on hatcheries and easy availability within villages) were reported as the most important technological factors that positively influenced farmers to continue tilapia culture. Farmers in Fulbaria and Mymensingh also said that tilapia technology is simple and it is a better alternative enterprise than others available.

Among the social benefits derived from tilapia culture, farmers ranked leisure (hobby) highest. The second most important social benefit reported was that the income derived from tilapia enabled the farmers to support their children's education. Some farmers in Trishal and Mymensingh also mentioned that they gave tilapia to neighbors as gifts and this fostered better social relationships.

Dropout Factors for Tilapia Culture

Only 25 responses from all upazilas were received when the 10% of the farmers who decided to discontinue were asked about the factors that influenced their decision (Table 13). This is very much opposite to the 619 responses received when farmers were asked the reason why they want to continue tilapia culture. As can be seen from Table 10, the

Table 12. Encouragement factors for tilapia culture in selected upazilas in Bangladesh, 1989-90.

	Trishal n=74	%	Fulbaria n=22	%	Mymensingh n=17	%	All n=113	%
Economic								
source of cash	72	(97)	19	(86)	11	(65)	102	(90)
high profits	-		8	(36)	4	(24)	12	(11)
low input cost	-		4	(18)	4	(24)	8	(7)
quick return on investment	-		4	(18)	9	(53)	13	(12)
source of food for the family	73	(99)	22	(100)	13	(76)	108	(96)
source of inputs for other enterprises	23	(31)	4	(18)	-		27	(24)
save cash budgeted for fish purchase	-		1	(4)	-		1	(1)
source of emergency fund	-		7	(32)	3	(18)	10	(8)
utilization of unused resources	3	(4)	4	(18)	1	(6)	8	(7)
source of loan repayment	44	(59)	3	(14)	-		47	(42)
Technological								
rapid growth	31	(42)	15	(68)	11	(65)	57	(50)
availability of fingerlings	52	(70)	16	(73)	10	(59)	78	(69)
simple technology	-		4	(18)	2	(12)	6	(5)
better alternative enterprise	-		10	(45)	7	(41)	17	(15)
Social								
better social relationships	3	(4)	-		1	(6)	4	(4)
support to children's education	45	(61)	3	(14)	1	(6)	49	(43)
leisure	63	(85)	8	(36)	1	(6)	72	(64)

Table 13. Dropout factors of farmers engaged in tilapia culture in Trishal, Fulbaria and Mymensingh upazilas, Bangladesh, 1989-90.

	Trishal n=74	%	Fulbaria n=22	%	Mymensingh n=17	%	All n=113	%
Economic								
unavailability of capital	-		1	(4)	1	(6)	2	(2)
higher profits from other enterprises	3	(4)	-		1	(6)	4	(4)
Technological								
overpopulation due to breeding	2	(3)	2	(9)	1	(6)	5	(4)
harvesting problems	-		1	(4)	1	(6)	2	(2)
fish losses	-		1	(4)	-		1	(1)
better alternative enterprise	1	(1)	1	(4)	4	(24)	6	(5)
Social								
no interest to culture tilapia	-		1	(6)	1	(1)	2	(2)
Institutional								
unavailability of credit			1	(4)	-		1	(1)
no encouragement to culture tilapia	-		-		2	(12)	2	(2)

maximum proportion of farmers (29%) who wanted to discontinue was from Mymensingh sadar upazila, where, as pointed out earlier, fish production and profits were low due to low-input use. The dropout factors were grouped into economic (representing 24% of all responses), technological (56%) and socioinstitutional (20%) (Table 13 and Fig. 11).

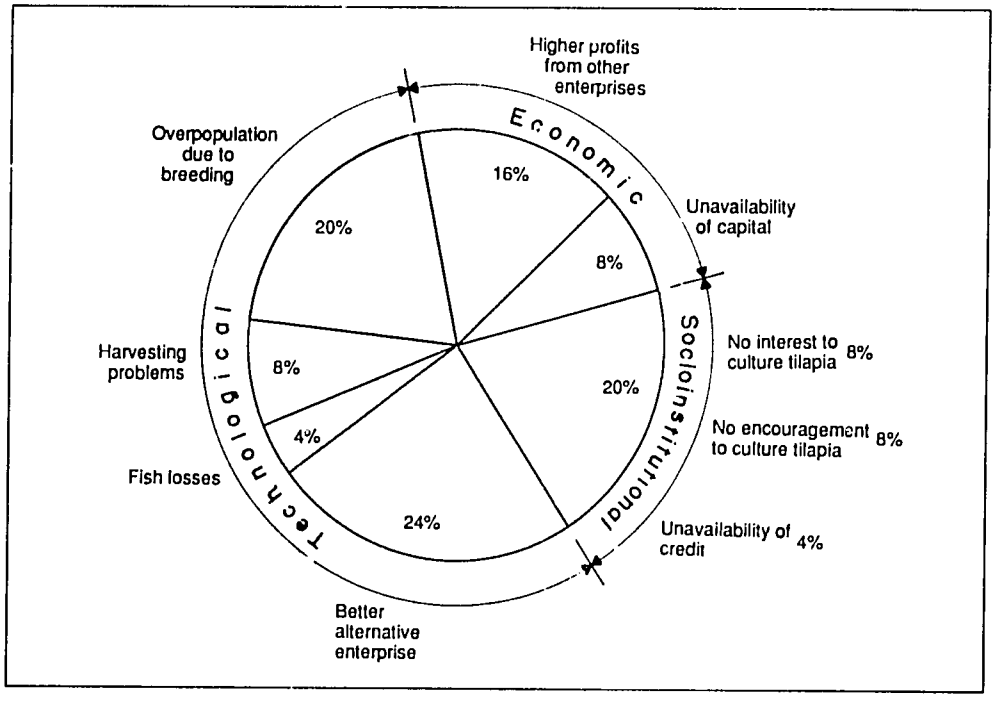


Fig. 11. Dropout factors of farmers engaged in tilapia culture in Trishal, Fulbaria and Mymensingh upazilas, Bangladesh, 1989-90.

The most common technological problem mentioned was that farmers perceive that there is a better alternative enterprise to tilapia culture. Due to higher market value, the farmers showed preference for culture of silver barb (*Puntius gonionotus*), locally known as sharputi, and carps. Equally important is the problem of overpopulation of tilapia due to breeding. Other minor problems were harvesting and fish losses. Lack of capital was also a problem.

The socioinstitutional factors that discouraged farmers to culture tilapia were that they had neither interest nor did they receive encouragement in tilapia culture and credit was not available.

CONCLUSION

Culturing fish in seasonal waterbodies is significant not only because of the impact it has on rural households, but also because it demonstrates that seasonal water resources can be better utilized. Recall that 34% of the country is under water for six months of the year.

Better utilization of these resources has been achieved through a combination of technical and social factors. A rapidly growing fish species was found which could reach acceptable sizes in a short period under a regime of low external inputs. Such a regime

was possible because it was well integrated into the existing farming system. Single ownership of the waterbody avoided the problems of access.

The greatest impact of this work is to reverse the trend in declining fish consumption and nutritional status of rural folk. The fish produced by low-income rural families in seasonal waterbodies has increased their animal protein consumption levels. Moreover, what is not eaten is sold for much needed cash or given as gifts to increase status.

For such benefits to be enjoyed more widely, further research and development are needed. Expansion is likely to be curtailed by access issues in larger waterbodies, availability of fingerlings, and supply of information and credit. Research must develop solutions to the problems of overpopulation in ponds and laborious harvesting techniques. Given strong political will, none of the above is beyond the means and capacity of Bangladeshi institutions.

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ANNEX 1
SURVEY QUESTIONNAIRE

ECONOMIC ASSESSMENT OF TILAPIA FARMING IN MYMENSINGH
INPUT - OUTPUT ANALYSIS

Date of Enumeration:_____ Enumerator_____

Respondent's identity:

1. Name of pond owner/operator:_____

2. Address: village_____ upazila: _____

3. Age (years):_____

I. POND BACKGROUND:

	Pond 1	Pond 2
Area (decimal)		
Water type (pond/ditch)		
Depth of water (m)	Min :_____	Max :_____
Water retention (months)	From :_____	To :_____
When was pond/ditch dug ? :		
Why was it dug ? :		
Other uses of pond/ditch		
Ownership (1=single, 2=multiple, 3=leased)		
Operator status (1=sole owner, 2=co-owner, 3=lessee, 4=share producer)		
Production cycle (days)		

II. SYSTEM INPUTS-OUTPUTS:

A. INPUTS

1. Capital outlay:

a) Pond rent (in case of lease): _____

b) Pond preparation: _____

c) Nets/gear: _____

d) equipment (baskets etc.): _____

e) Others (specify): _____

2. Fingerlings:

a) Date of stocking :_____

b) No. of fingerlings stocked: _____

c) Date of stocking : _____

d) Source of supply: _____

e) Unit price: _____ Total price :_____

3. Fertilizers/feed:

Type of input	Amount (kg)	Source (own/ purchased)	Price Tk/Kg
Fertilizer			
a) Urea			
b) TSP			
c) Cattle dung			
Feed			
a) Rice bran			
b) Others			
Other inputs (specify)			

4. Labour inputs

Activity	Family labour man-days	Hired labour man-days	Hired labour wage rate
Fertlization			
Feeding			
Pond maitenance			
Harvesting			
Marketing			

B. OUT-PUTS

Date of harvesting :_____

Date of complete harvesting of pond/ditch :_____

	Harvest (kg)	On-farm consumption	given away	in-kind payment	amount sold Qty	Price	Av. size cm	gm
Table fish								
Fingerlings								
Wild fish								

FARMER ASSESSMENT AND ATTITUDE TOWARDS TILAPIA CULTURE TECHNOLGY

Farmer name _____

Village _____ Upazila _____

A. Difficulties faced by farmer. Use yes/no in the boxes provided against each

Difficulties	Yes/No
1) Supply of fingerlings	
2) Credit	
3) Feed other than rice bran	
4) Water supply	
5) Small size of pond	
6) Overpopulation due to breeding	
7) Harvesting	

B. Benefits derived by farmer. Use yes/no in the boxes provided against each

Benefits	Yes/No
1) Fish for home consumption	
2) Source of cash income	
3) Improved economic status	
4) Rapid return	
5) Low investment	
6) Fast growth of fish	
7) Simple technology	
8) Better social relationship	
9) Utilization of ditch for other purpose after fish culture	
10) Utilization of untouched resource	

C. Farmer Attitude

1. What is the attitude of fish farmer regarding future involvement in tilapia culture using the new technology:

Continue [ ] Expand [ ] Discontinue [ ] Undecided [ ]

2. Encouragement Factors :

1) _____
2) _____
3) _____
4) _____
5) _____
6) _____
7) _____
8) _____

3. Drop out factors

1) _____
2) _____
3) _____
4) _____
5) _____
6) _____
7) _____
8) _____

ANNEX 2
LIST OF VARIABLES

Variable No.	Variable Name	Code
V1	Identification	As recorded
V2	Gender	1=Male 2=Female
V3	Upazila	1=Trishal 2=Fulbaria 3=Mymensingh
V4	Area of pond (decimal)	As recorded
V5	Water quality	1=Turbid 2=Brown/Green
V6	Minimum water depth (feet)	As recorded
V7	Maximum water depth (feet)	As recorded
V8	Water retention	1=Perennial 2=Jun-Feb 3=Jun-Dec 4=Jun-Mar 5=Apr-Dec 6=Jun-Jan 7=May-Dec 8=Apr-Nov
V9	When was the pond dug (year)	As recorded
V10	Why was the pond dug	1=House building 2=Road construction 3=Fish culture
V11	Other uses of pond/ditch	1=Washing 2=No response 3=Jute retting
V12	Ownership	1=Single 2=Multiple 3=Leased
V13	Operator status	1=Sole owner 2=Co-owner 3=Lessee 4=Share producer
V14	Production cycle (days)	As recorded
V15	Pond rent (tk/production cycle)	As recorded
V16	Pond preparation, liming	1=Yes 2=No
V17	Pond preparation, fertilizing	1=Yes 2=No
V18	Nets and gears, Thela Jali	1=Yes 2=No
V19	Nets and gears, Jaki Jali	1=Yes 2=No
V20	Nets and gears, unspecified Jali	1=Yes 2=No

Variable No.	Variable Name	Code
V21	Equipment, Shib Jal	1=Yes 2=No
V22	Equipment, Chabo Jal	1=Yes 2=No
V23	Equipment, Koya Jal	1=Yes 2=No
V24	Equipment, Bana	1=Yes 2=No
V25	Equipment, Borshi	1=Yes 2=No
V26	Equipment, Kaloi	1=Yes 2=No
V27	Equipment, Bair	1=Yes 2=No
V28	Equipment, others	1=Yes 2=No
V29	No. of fingerlings stocked (pieces)	As recorded
V30	Source of supply	1=FRI through BRAC
V31	Fingerling price (tk/piece)	As recorded
V32	Total fingerling cost (tk)	As recorded
V33	Lime applied (kg)	As recorded
V34	Source of lime	1=Purchased 2=Own 3=Purchased/Own 4=Not applicable
V35	Lime price (tk/kg)	As recorded
V36	Urea applied (kg)	As recorded
V37	Source of urea	1=Purchased 2=Own 3=Purchased/Own 4=Not applicable
V38	Urea price (tk/kg)	As recorded
V39	TSP applied (kg)	As recorded
V40	Source of TSP	1=Purchased 2=Own 3=Purchased/Own 4=Not applicable
V41	TSP price (tk/kg)	As recorded
V42	Cattle dung used (kg)	As recorded
V43	Source of cattle dung	1=Purchased 2=Own 3=Purchased/Own 4=Not applicable
V44	Cattle dung price (tk/kg)	As recorded
V45	Oil cake applied (kg)	As recorded
V46	Source of oil cake	1=Purchased 2=Own 3=Purchased/Own 4=Not applicable
V47	Oil cake price (tk/kg)	As recorded
V48	Rice bran used (kg)	As recorded
V49	Source of rice bran	1=Purchased 2=Own 3=Purchased/Own 4=Not applicable

Variable No.	Variable Name	Code
V50	Rice bran price (tk/kg)	As recorded
V51	Other feeds used (kg)	As recorded
V52	Source of other feeds	1=Purchased 2=Own 3=Purchased/Own 4=Not applicable
V53	Price of other feeds (tk/kg)	As recorded
Difficulties faced by farmers		
V54	Supply of fingerlings	1=Yes 2=No
V55	Credit	1=Yes 2=No
V56	Feed other than rice bran	1=Yes 2=No
V57	Water supply	1=Yes 2=No
V58	Small pond size	1=Yes 2=No
V59	Over population due to breeding	1=Yes 2=No
V60	Harvesting	1=Yes 2=No
Benefits derived by farmers		
V61	Fish for home consumption	1=Yes 2=No
V62	Source of cash income	1=Yes 2=No
V63	Improved economic status	1=Yes 2=No
V64	Rapid return	1=Yes 2=No
V65	Low investment	1=Yes 2=No
V66	Fast fish growth	1=Yes 2=No
V67	Simple technology	1=Yes 2=No
V68	Better social relationship	1=Yes 2=No
V69	Utilization of ditch for other purpose after fish use	1=Yes 2=No
V70	Utilization of untouched resources	1=Yes 2=No
Attitude of fish farmer regarding future culture of tilapia using new technology		
V71	Attitude	1=Expand 2=Continue 3=Undecided
Encouragement factors		
V72	Sold	1=Yes 2=No
V73	Eat	1=Yes 2=No
V74	Entertainment	1=Yes 2=No
V75	Available fingerling	1=Yes 2=No
V76	Loan paid	1=Yes 2=No
V77	Education of child	1=Yes 2=No
V78	Improve economic status	1=Yes 2=No
V79	Rapid growth	1=Yes 2=No
V80	Fertilizer buying for paddy field	1=Yes 2=No

Variable No.	Variable Name	Code
V81	More benefit than rice cultivation	1=Yes 2=No
V82	Release many eggs	1=Yes 2=No
V83	Low investment and high profits	1=Yes 2=No
V84	Money is obtained when needed	1=Yes 2=No
V85	Utilization of ditch other than for fish cultivation	1=Yes 2=No
V86	Utilization of unused resources	1=Yes 2=No
V87	Application of simple technology	1=Yes 2=No
V88	Better than carp	1=Yes 2=No
V89	Fish available anytime	1=Yes 2=No
V90	Total fish production (kg)	As recorded
V91	Harvested fish on-farm consumption (kg)	As recorded
V92	Harvested fish given away (kg)	As recorded
V93	Harvested fish sold (kg)	As recorded
V94	Average size of harvested fish (cm)	As recorded
V95	Average weight of harvested fish (g)	As recorded
V96	Water retention (no. of months)	As recorded
V97	Age of pond (years)	As recorded
V98	Month of stocking (month)	As recorded
V99	Price of tilapia harvested (tk/kg)	As recorded
V100	Price of harvested fingerlings (tk/piece)	As recorded
V101	Harvested fingerling/fry (piece)	As recorded 4=0

ANNEX 3
INPUT-OUTPUT ANALYSIS DATA

Data

V1	V2	V3	V4	V5	V6	V7	V8	V9	V10	V11
1	2	1	3	1	1.5	5.0	1	1983	1	1
2	2	1	7	1	1.0	5.0	1	1984	1	1
3	1	1	8	2	0.0	5.0	2	1965	2	1
4	1	1	4	2	0.0	5.0	3	1960	2	1
5	2	1	2	1	2.0	6.0	1	1987	1	1
6	1	1	4	1	0.0	3.0	6	1950	1	1
7	2	1	2	2	3.0	6.0	1	1988	1	1
8	1	1	4	1	0.0	7.0	2	1967	2	1
9	1	1	8	2	0.0	4.0	6	1965	1	1
10	2	1	3	1	1.0	5.0	1	1984	1	1
11	1	1	5	1	0.0	6.0	4	1985	3	1
12	1	1	6	1	3.0	6.0	1	1987	1	1
13	2	1	3	1	1.0	5.0	1	1967	1	1
14	1	1	2	1	0.0	5.0	3	1988	1	1
15	2	1	8	2	0.0	1.5	5	1980	1	1
16	1	1	5	2	0.0	5.0	3	1974	1	1
17	1	1	7	1	1.5	6.0	1	1976	1	1
18	2	1	6	1	2.0	6.0	1	1967	1	1
20	1	1	5	1	2.0	6.0	1	1968	2	1
21	1	1	3	2	0.0	6.0	6	1974	1	1
22	1	1	2	2	1.0	6.0	1	1975	1	1
23	1	1	9	2	0.0	5.0	3	1988	1	1
24	1	1	10	2	0.0	5.0	3	1974	1	1
25	2	1	4	2	0.0	7.0	3	1987	1	1
26	2	1	5	2	1.5	4.0	1	1964	1	1
27	2	1	3	2	0.0	6.0	2	1986	1	1
28	1	1	3	1	0.0	5.0	3	1962	1	1
29	1	1	10	1	3.0	10.0	1	1962	1	1
30	2	1	3	1	0.0	5.0	4	1965	2	1
31	1	1	4	1	1.0	6.0	1	1960	1	1
32	2	1	2	2	0.0	7.0	3	1984	1	1
33	1	1	7	2	1.0	5.0	1	1930	1	2
34	1	1	6	2	0.0	6.0	3	1988	1	1
35	1	1	6	2	0.0	6.0	3	1964	1	1
36	1	1	4	2	3.0	5.6	1	1930	1	1
37	1	1	3	1	2.5	6.0	1	1986	3	1
38	1	1	5	1	2.0	5.0	1	1986	3	2
39	2	1	9	2	2.0	6.0	1	1963	1	1
40	2	1	3	2	0.0	6.0	3	1982	1	1
41	2	1	3	2	0.0	6.0	2	1983	1	1
42	1	1	3	2	0.0	4.0	6	1980	3	1
43	1	1	9	2	0.0	4.0	6	1988	3	1
44	1	1	4	1	3.0	8.0	1	1930	1	1

V1	V2	V3	V4	V5	V6	V7	V8	V9	V10	V11
45	1	1	3.0	1	0.0	7.0	2	1970	1	1
46	1	1	5.0	2	1.5	7.0	1	1974	2	1
47	1	1	5.0	2	0.0	6.0	6	1967	1	1
48	2	1	2.0	1	0.0	5.0	2	1976	1	1
49	2	1	2.0	1	0.0	5.0	2	1974	1	1
50	2	1	5.0	2	0.0	6.0	2	1983	1	1
51	2	1	6.0	2	1.0	6.0	1	1974	1	1
52	1	1	2.0	2	0.0	5.0	6	1964	2	1
53	2	1	4.0	2	2.0	6.0	1	1969	1	1
54	2	1	5.0	2	0.0	5.0	3	1988	2	1
55	1	1	7.0	2	1.0	7.0	1	1980	3	1
56	1	1	4.0	2	3.0	6.0	1	1980	1	1
57	2	1	5.0	2	3.0	5.5	1	1983	3	1
58	1	1	4.0	1	1.0	5.0	3	1951	1	1
59	1	1	3.0	1	0.0	5.0	2	1982	1	1
60	1	1	3.0	1	0.0	6.0	6	1967	1	1
61	1	1	3.0	1	0.0	5.0	3	1965	1	1
62	1	1	3.0	1	0.5	6.0	1	1987	1	1
63	1	1	3.0	2	1.0	6.0	1	1964	1	1
64	1	1	3.0	1	0.0	5.0	2	1961	1	1
65	2	1	4.0	1	0.0	6.0	2	1974	1	1
66	1	1	8.0	1	0.0	6.0	3	1976	2	1
67	1	1	5.0	2	1.0	5.0	1	1967	1	1
68	1	1	5.0	1	4.0	7.0	1	1986	1	1
69	2	1	3.0	1	1.0	5.0	1	1984	3	1
70	1	1	5.0	2	0.0	7.0	3	1984	1	1
71	1	1	3.0	1	0.0	5.0	3	1982	1	1
72	1	1	1.5	2	0.0	5.0	3	1987	1	1
73	2	1	4.0	2	0.0	5.0	3	1984	1	2
74	2	1	6.0	2	2.0	7.0	1	1965	1	1
75	1	1	4.0	2	0.0	5.0	3	1965	1	1
76	1	2	5.0	1	3.0	7.0	1	1975	3	2
77	1	2	3.0	2	2.0	5.0	1	1975	1	1
78	1	2	2.0	2	4.0	8.0	1	1980	3	2
79	2	2	7.0	2	2.0	6.0	1	1979	3	1
80	2	2	3.0	2	2.0	6.0	1	1985	1	2
81	1	2	5.0	1	3.0	5.0	1	1985	3	1
82	1	2	7.0	2	2.0	6.0	1	1976	1	2
83	1	2	3.0	2	2.0	6.0	1	1980	3	1
84	1	2	3.0	2	3.0	9.0	1	1986	3	2
85	1	2	2.0	1	1.0	10.0	1	1970	1	1
86	1	2	2.0	1	3.0	10.0	1	1984	1	1
87	1	2	1.0	2	3.0	6.0	1	1981	1	1
88	1	2	1.0	2	2.0	6.0	2	1983	2	2
89	1	2	2.0	2	1.0	4.0	1	1979	1	3
90	1	2	1.0	2	3.5	7.0	1	1988	1	1
91	1	2	4.0	2	2.0	6.0	1	1985	1	1
92	1	2	1.0	1	0.5	5.0	1	1985	1	2
93	1	2	2.0	2	0.0	6.0	5	1980	1	1
94	1	2	2.0	2	1.0	7.0	1	1981	1	1
95	1	2	1.0	2	2.0	7.0	1	1980	1	2
96	1	2	1.0	2	1.0	6.0	1	1977	1	2

V1	V2	V3	V4	V5	V6	V7	V8	V9	V10	V11
97	1	2	1.0	2	0.0	6.0	7	1981	1	1
98	1	3	2.0	2	3.0	6.0	1	1976	1	1
99	1	3	3.0	2	1.0	6.0	1	1980	1	1
100	1	3	5.0	2	3.0	7.0	1	1983	3	1
101	1	3	1.0	2	0.0	5.0	5	1987	2	1
102	1	3	4.0	2	3.0	6.0	1	1982	3	1
103	1	3	4.0	2	3.0	8.0	1	1984	3	1
104	2	3	3.0	2	1.0	6.0	1	1979	1	1
105	1	3	8.0	2	2.0	7.0	1	1988	3	1
106	1	3	1.0	2	1.0	6.0	1	1975	1	2
107	1	3	8.0	1	3.0	7.0	1	1974	3	1
108	1	3	7.0	1	3.0	9.0	1	1985	3	1
109	2	3	3.0	2	0.0	6.0	8	1987	3	1
110	1	3	16.0	1	5.0	9.0	1	1972	3	1
111	1	3	3.0	2	0.0	6.0	3	1980	3	2
112	1	3	5.0	2	1.0	6.0	1	1987	3	1
113	2	3	7.0	2	3.0	7.0	1	1969	3	1
114	2	3	1.0	1	1.0	5.0	1	1987	1	2

V1	V12	V13	V14	V15	V16	V17	V18	V19	V20	V21
1	1	1	180	0.0	1	1	2	2	1	2
2	1	1	180	0.0	1	1	2	2	1	2
3	1	1	210	0.0	1	1	1	1	2	2
4	1	1	150	0.0	1	1	1	1	2	2
5	1	1	120	0.0	1	1	2	2	1	2
6	1	1	180	0.0	1	1	2	2	2	2
7	1	1	90	0.0	1	1	1	2	2	1
8	1	1	180	0.0	1	1	1	2	2	2
9	2	4	120	0.0	1	1	1	1	2	2
10	3	3	150	83.3	1	1	1	2	2	2
11	1	1	150	0.0	2	2	1	2	2	2
12	1	1	180	0.0	1	1	2	2	1	2
13	1	1	180	0.0	1	1	1	2	2	2
14	1	1	150	0.0	1	1	1	2	2	2
15	2	2	150	0.0	2	1	1	2	2	2
16	1	1	210	0.0	1	1	1	1	2	2
17	1	1	150	0.0	1	1	1	1	2	2
18	1	1	150	0.0	1	1	1	2	2	2
20	2	4	180	0.0	1	2	1	2	2	2
21	1	1	210	0.0	1	1	1	1	2	2
22	1	1	120	0.0	2	2	2	2	2	1
23	1	1	120	0.0	1	1	1	2	2	2
24	1	1	240	0.0	1	1	1	2	2	2
25	1	1	120	0.0	1	1	1	2	2	2
26	1	1	180	0.0	2	1	1	2	2	2
27	1	1	150	0.0	1	1	1	2	2	2
28	1	1	90	0.0	1	1	2	1	2	2
29	1	1	150	0.0	1	1	1	2	2	2

V1	V12	V13	V14	V15	V16	V17	V18	V19	V20	V21
30	2	3	120	26.6	1	1	1	1	2	2
31	1	1	120	0.0	1	1	1	2	2	2
32	1	1	150	0.0	1	1	2	2	2	2
33	1	1	140	0.0	1	1	2	2	2	2
34	1	1	125	0.0	1	1	1	2	2	2
35	1	1	125	0.0	1	1	2	2	1	2
36	1	1	210	0.0	1	1	2	1	1	2
37	2	2	120	0.0	1	1	2	2	2	2
38	1	1	240	0.0	2	1	1	1	2	2
39	1	1	150	0.0	1	1	1	2	[illegible]	2
40	1	1	150	0.0	2	2	1	2	[illegible]	2
41	1	1	150	0.0	2	1	1	2	2	2
42	1	1	150	0.0	1	1	1	2	2	1
43	1	1	150	0.0	1	1	2	2	2	1
44	1	1	90	0.0	1	1	1	2	2	2
45	1	1	150	0.0	1	1	1	2	2	2
46	1	1	180	0.0	1	1	1	1	2	2
47	1	1	150	0.0	1	2	1	2	2	2
48	1	1	150	0.0	1	1	1	2	2	2
49	1	1	180	0.0	1	1	1	2	2	2
50	1	1	150	0.0	1	1	1	2	2	2
51	1	1	120	0.0	1	1	1	2	2	2
52	1	1	150	0.0	1	1	1	2	2	2
53	2	2	210	0.0	1	1	1	2	2	2
54	1	1	180	0.0	1	1	1	2	2	2
55	1	1	180	0.0	1	1	1	1	2	2
56	1	1	180	0.0	1	2	1	2	2	2
57	1	1	90	0.0	1	1	1	2	2	2
58	1	1	120	0.0	1	1	1	1	2	2
59	1	1	120	0.0	1	1	2	2	1	2
60	1	1	120	0.0	1	1	2	1	2	2
61	1	1	150	0.0	1	1	2	1	1	2
62	1	1	240	0.0	1	1	2	1	2	2
63	1	1	240	0.0	1	1	1	2	2	2
64	1	1	240	0.0	1	1	1	2	2	2
65	1	1	180	0.0	2	1	1	2	2	2
66	1	1	210	0.0	1	1	1	2	2	2
67	1	1	240	0.0	1	1	1	2	2	2
68	1	1	110	0.0	1	1	1	2	2	2
69	1	1	170	0.0	1	1	2	2	2	2
70	1	1	180	0.0	1	1	1	2	2	2
71	1	1	210	0.0	1	1	1	2	2	2
72	1	1	95	0.0	1	1	1	2	2	2
73	1	1	180	0.0	1	1	2	2	2	2
74	1	1	180	0.0	1	1	1	2	2	2
75	2	2	120	0.0	1	1	1	2	2	2
76	1	1	360	0.0	1	1	1	1	2	2
77	1	1	150	0.0	1	1	1	2	[illegible]	2
78	3	3	330	70.0	1	2	2	2	2	2
79	1	1	355	0.0	1	1	1	1	2	2
80	1	1	350	0.0	1	1	1	2	2	2

V1	V12	V13	V14	V15	V16	V17	V18	V19	V20	V21
81	1	1	325	0.0	1	2	2	2	2	2
82	1	1	355	0.0	1	1	1	2	2	2
83	1	1	340	0.0	1	1	1	2	2	2
84	1	1	355	0.0	1	1	1	1	2	2
85	1	1	355	0.0	1	1	2	2	2	2
86	1	1	325	0.0	1	1	1	2	2	2
87	1	1	355	0.0	1	2	2	2	2	2
88	2	2	360	0.0	1	2	2	2	2	2
89	1	1	335	0.0	1	1	2	2	2	2
90	2	2	340	0.0	1	1	1	2	2	2
91	1	1	355	0.0	1	1	1	2	2	2
92	1	1	120	0.0	1	2	1	2	2	2
93	1	1	270	0.0	1	2	1	2	2	2
94	1	1	270	0.0	1	1	1	2	2	2
95	1	1	350	0.0	1	1	2	2	2	2
96	1	1	350	0.0	1	1	2	2	2	2
97	1	1	240	0.0	1	1	2	2	2	2
98	1	1	120	0.0	1	2	2	2	2	2
99	1	1	110	0.0	1	2	2	2	2	2
100	1	1	240	0.0	1	1	1	2	2	2
101	1	1	270	0.0	1	1	1	2	2	2
102	1	1	270	0.0	1	1	1	2	2	2
103	1	1	270	0.0	1	2	1	2	2	2
104	1	1	205	0.0	1	2	1	2	2	2
105	1	1	260	0.0	1	1	1	2	2	2
106	1	1	240	0.0	1	2	2	2	2	2
107	3	3	335	140	1	1	1	2	2	2
108	1	1	240	0.0	1	2	1	2	2	2
109	1	1	110	0.0	1	1	2	2	2	2
110	1	1	250	0.0	1	2	1	2	2	2
111	1	1	200	0.0	1	1	1	2	2	2
112	1	1	215	0.0	1	2	1	2	2	2
113	1	1	250	0.0	1	1	1	2	2	2
114	1	1	120	0.0	1	2	1	2	2	2

V1	V22	V23	V24	V25	V26	V27	V28	V29	V30	V31
1	2	2	2	1	1	2	2	250	1	0.20
2	2	2	2	1	1	2	2	650	1	0.20
3	2	2	2	1	1	1	2	500	1	0.18
4	2	2	2	1	1	2	2	300	1	0.10
5	2	2	2	2	2	2	2	400	1	0.12
6	2	2	2	2	1	2	2	350	1	0.18
7	1	1	1	1	1	1	2	300	1	0.10
8	2	2	2	1	1	2	1	300	1	0.10
9	1	2	2	2	1	1	1	240	1	0.10
10	2	2	2	2	1	2	1	200	1	0.10
11	2	2	2	1	1	1	2	200	1	0.10
12	2	2	2	1	1	1	2	400	1	0.20

V1	V22	V23	V24	V25	V26	V27	V28	V29	V30	V31
13	2	2	2	1	1	2	2	150	1	0.18
14	2	2	2	2	1	2	2	100	1	0.10
15	2	2	2	2	1	2	2	150	1	0.20
16	2	2	2	2	1	2	2	200	1	0.18
17	2	2	2	2	1	2	2	800	1	0.20
18	2	2	2	2	1	2	2	340	1	0.18
20	2	2	2	2	1	1	2	500	1	0.20
21	2	2	2	2	1	2	2	100	1	0.18
22	2	2	1	2	1	2	2	100	1	0.10
23	2	2	2	1	1	2	2	200	1	0.20
24	2	2	2	1	1	2	2	500	1	0.10
25	2	2	2	1	2	2	2	200	1	0.10
26	2	2	2	1	1	2	2	200	1	0.18
27	1	2	2	2	1	2	2	300	1	0.16
28	2	1	2	2	1	2	2	300	1	0.10
29	1	1	2	2	1	2	2	500	1	0.10
30	2	2	2	2	1	2	2	200	1	0.10
31	2	2	2	2	1	2	2	320	1	0.10
32	2	2	2	2	1	2	2	300	1	0.20
33	2	2	2	2	1	2	2	500	1	0.20
34	2	2	2	1	1	1	2	200	1	0.58
35	2	2	2	1	1	2	2	100	1	0.10
36	2	2	2	2	1	2	2	1500	1	0.06
37	2	2	2	2	1	2	2	300	1	0.10
38	2	2	2	2	1	2	2	400	1	0.30
39	2	2	2	1	1	1	2	700	1	0.01
40	2	2	2	2	1	2	2	100	1	0.10
41	1	2	2	1	1	2	2	100	1	0.10
42	2	2	1	1	2	2	2	300	1	0.10
43	2	2	2	1	2	2	2	200	1	0.20
44	2	2	2	1	2	2	2	200	1	0.20
45	2	2	2	2	2	2	2	240	1	0.08
46	2	2	2	1	1	2	2	300	1	0.10
47	2	2	2	1	1	2	2	400	1	0.10
48	2	2	2	1	1	1	2	200	1	0.10
49	2	2	2	1	1	2	2	200	1	0.10
50	2	2	2	1	1	1	2	200	1	0.10
51	2	2	2	1	1	1	2	400	1	0.10
52	1	2	2	1	1	2	2	150	1	0.20
53	2	2	2	1	1	2	2	320	1	0.23
54	2	2	2	2	1	1	2	300	1	0.20
55	2	2	2	2	1	2	2	350	1	0.20
56	2	2	2	1	1	2	2	200	1	0.20
57	2	2	2	1	1	2	2	400	1	0.10
58	2	2	2	1	1	2	2	175	1	0.20
59	2	2	2	1	1	1	2	150	1	0.20
60	2	2	2	1	1	2	2	150	1	0.20
61	2	2	2	1	1	2	2	150	1	0.18
62	2	2	2	1	1	1	2	180	1	2.00
63	2	2	2	1	1	2	2	180	1	0.20
64	2	2	2	1	1	2	2	150	1	0.18

V1	V22	V23	V24	V25	V26	V27	V28	V29	V30	V31
65	1	2	2	2	1	2	2	400	1	0.13
66	2	2	2	2	1	1	2	650	1	0.18
67	1	2	2	2	1	2	2	400	1	0.18
68	2	2	2	1	2	2	2	400	1	0.20
69	2	2	2	2	2	2	2	300	1	0.20
70	1	2	1	1	1	1	1	200	1	0.20
71	2	2	2	2	1	1	2	250	1	0.18
72	1	2	1	1	1	1	2	100	1	0.10
73	2	2	2	1	1	2	2	320	1	0.18
74	2	2	2	1	2	2	2	400	1	0.20
75	2	2	2	2	1	2	2	300	1	0.20
76	2	2	2	1	1	2	1	400	1	0.20
77	2	2	2	2	1	1	1	250	1	0.24
78	2	2	2	2	1	2	2	160	1	0.20
79	2	2	2	1	1	2	1	660	1	0.20
80	2	2	2	1	1	2	2	250	1	0.20
81	2	2	2	2	1	2	2	500	1	0.20
82	2	2	2	1	1	2	2	550	1	0.20
83	2	2	2	1	1	2	2	250	1	0.20
84	2	2	2	1	1	2	1	250	1	0.20
85	2	2	2	2	1	2	2	160	1	0.20
86	2	2	2	1	1	2	1	160	1	0.20
87	2	2	2	2	1	2	2	100	1	0.20
88	2	2	2	2	1	2	2	225	1	0.20
89	2	2	2	1	1	2	2	160	1	0.20
90	2	2	2	2	1	2	2	80	1	0.20
91	2	2	2	2	1	2	2	325	1	0.20
92	2	2	2	1	1	2	2	80	1	0.20
93	2	2	2	1	1	2	2	160	1	0.20
94	2	2	2	1	1	2	2	160	1	0.20
95	2	2	2	1	1	2	2	80	1	0.20
96	2	2	2	1	1	2	1	80	1	0.20
97	2	2	2	1	1	2	2	80	1	0.20
98	2	2	2	1	1	2	2	160	1	0.20
99	2	2	2	1	1	2	2	250	1	0.20
100	2	2	2	1	1	2	2	350	1	0.20
101	2	2	2	1	1	2	2	80	1	0.20
102	2	2	2	1	1	2	2	325	1	0.20
103	2	2	2	1	1	2	2	300	1	0.20
104	2	2	2	1	1	2	2	400	1	0.20
105	2	2	2	1	1	2	2	650	1	0.20
106	2	2	2	1	1	2	2	100	1	0.20
107	2	2	2	2	1	2	1	650	1	0.20
108	2	2	2	1	1	1	1	560	1	0.20
109	2	2	2	1	1	2	1	250	1	0.12
110	2	2	2	1	1	2	2	500	1	0.20
111	2	2	2	1	1	1	1	250	1	0.12
112	2	2	2	1	1	1	2	400	1	0.20
113	2	2	2	2	1	2	2	580	1	0.19
114	2	2	2	1	1	2	1	100	1	0.20

V1	V32	V33	V34	V35	V36	V37	V38	V39	V40	V41
1	50	2.00	1	6	0.00	4	0	2.00	1	5
2	130	3.00	1	6	5.00	1	5	6.00	1	5
3	90	6.00	1	6	2.00	1	5	4.00	1	5
4	30	2.00	1	6	1.00	1	5	2.00	1	5
5	50	0.50	1	5	0.00	4	0	0.50	1	5
6	65	2.00	1	6	1.00	4	5	1.00	1	5
7	30	1.00	1	6	1.00	1	5	0.00	4	0
8	30	1.50	1	6	0.00	4	0	0.00	4	0
9	25	3.00	1	5	0.00	4	0	2.00	1	5
10	20	2.50	1	6	0.50	4	5	1.00	1	5
11	20	1.00	1	6	0.00	4	0	1.50	1	5
12	80	3.00	1	6	1.00	4	5	2.00	1	5
13	27	1.00	1	6	0.00	4	0	0.00	4	0
14	10	1.00	1	6	0.00	4	0	1.50	1	5
15	30	0.00	4	0	0.00	4	0	0.00	4	0
16	36	3.00	1	6	0.50	1	5	1.00	1	5
17	160	3.00	1	6	1.00	4	5	2.00	1	5
18	63	3.00	1	6	0.00	4	0	0.00	4	0
20	100	2.00	1	5	0.00	4	0	0.00	4	0
21	18	2.00	1	6	1.25	4	5	0.75	1	5
22	10	0.00	4	0	0.00	4	6	0.00	4	0
23	40	1.00	1	6	0.50	1	6	1.00	1	5
24	50	3.00	4	6	2.00	1	6	3.00	1	5
25	20	5.00	1	6	1.25	4	5	0.00	4	0
26	36	0.00	4	0	2.00	1	6	0.00	4	0
27	50	1.00	1	5	0.00	4	0	2.00	1	5
28	30	2.00	1	6	1.00	1	5	2.00	1	5
29	50	2.00	1	5	0.00	4	0	2.00	1	5
30	20	1.25	1	6	0.00	4	0	3.00	1	5
31	35	1.00	4	6	1.00	1	5	1.00	4	5
32	60	1.50	1	5	0.00	4	0	2.00	1	5
33	100	7.00	1	5	0.00	4	0	0.00	4	0
34	40	1.00	1	5	0.00	4	0	0.00	4	0
35	10	2.50	1	6	0.00	4	0	0.00	4	0
36	90	1.00	1	5	0.00	4	0	0.00	4	0
37	30	1.50	1	6	0.00	4	0	2.00	1	5
38	120	0.00	4	0	1.25	1	5	0.75	1	5
39	70	5.00	1	5	0.00	4	0	3.00	4	5
40	10	0.00	4	0	0.00	4	0	0.00	4	0
41	10	0.00	4	0	0.00	4	0	0.00	4	0
42	30	3.00	1	5	0.00	4	0	0.00	4	0
43	40	2.00	1	5	0.00	4	0	0.00	4	0
44	40	3.00	1	5	1.25	4	5	0.75	1	5
45	20	2.00	1	6	1.00	4	5	0.00	4	0
46	30	2.00	1	6	0.50	4	5	1.50	1	5
47	40	5.0	1	5	0.00	4	0	0.00	4	0
48	20	1.0	1	6	0.00	4	0	0.00	4	0
49	20	1.0	1	6	0.00	4	0	2.00	1	5
50	20	1.5	1	6	1.00	4	5	2.00	1	5
51	40	2.0	1	6	1.00	4	5	3.00	1	5
52	30	1.0	1	6	0.00	4	0	1.50	1	5
53	75	3.0	1	5	0.00	4	5	0.50	1	5

V1	V32	V33	V34	V35	V36	V37	V38	V39	V40	V41
54	60	2.0	1	6	0.50	4	0	1.00	2	5
55	70	1.5	2	6	0.00	4	0	0.00	4	0
56	40	1.0	1	6	0.00	4	0	0.00	4	0
57	40	2.5	2	6	0.00	4	0	1.00	2	5
58	35	2.0	1	6	0.00	4	0	0.00	4	0
59	30	1.0	1	6	0.00	4	0	2.00	1	5
60	30	1.0	1	6	0.00	4	0	0.00	4	0
61	27	1.5	1	6	0.00	4	0	0.00	4	0
62	36	2.0	1	6	0.00	4	0	0.00	4	0
63	36	1.0	1	6	0.00	4	0	1.00	1	5
64	27	3.0	1	6	0.00	4	0	0.00	4	0
65	54	0.0	4	0	2.00	1	5	0.00	4	0
66	117	4.0	1	6	0.00	4	0	0.00	4	0
67	72	2.0	1	6	0.00	4	0	2.00	1	5
68	80	5.0	1	5	0.00	4	0	0.00	4	0
69	60	3.0	1	6	1.00	4	5	1.00	1	5
70	40	2.0	1	6	0.00	4	0	4.00	1	5
71	45	1.5	1	6	0.00	4	0	2.00	1	5
72	10	0.5	1	5	0.00	4	0	0.50	1	5
73	60	3.0	1	6	0.00	4	0	1.50	1	5
74	80	1.5	1	6	0.00	4	0	0.00	4	0
75	60	4.0	1	5	0.00	4	0	0.00	4	0
76	80	2.0	4	6	0.00	4	0	0.00	4	0
77	60	1.5	4	6	0.50	4	6	0.00	4	0
78	32	1.0	4	6	0.00	4	0	0.00	4	0
79	132	2.0	4	6	0.25	4	6	0.25	4	6
80	50	2.0	4	6	0.25	4	6	0.25	4	6
81	100	3.0	4	6	0.00	4	0	0.00	4	0
82	110	4.0	4	6	0.00	4	0	0.00	4	0
83	50	3.0	4	6	0.00	4	0	0.00	4	0
84	50	1.5	4	6	0.25	4	6	0.25	4	6
85	32	1.0	4	6	0.00	4	0	0.00	4	0
86	32	1.5	4	6	0.00	4	0	0.00	4	0
87	20	1.0	4	6	0.25	4	6	0.25	4	6
88	45	1.0	4	6	0.00	4	0	0.00	4	0
89	32	1.0	4	6	0.00	4	0	0.00	4	0
90	16	1.0	4	6	0.00	4	0	0.00	4	0
91	65	2.0	4	6	0.00	4	0	0.00	4	0
92	16	1.0	4	6	0.00	4	0	0.00	4	0
93	32	2.0	4	6	0.00	4	0	0.00	4	0
94	32	2.0	4	5	0.50	4	5	0.00	4	0
95	16	1.5	4	6	0.00	4	0	0.00	4	0
96	16	1.0	4	6	0.00	4	0	0.00	4	0
97	16	1.5	4	6	0.00	4	0	0.00	4	0
98	32	1.5	4	6	0.00	4	0	0.00	4	0
99	50	2.0	4	6	0.00	4	0	0.00	4	0
100	70	2.0	4	6	0.00	4	0	0.00	4	0
101	16	1.0	4	6	0.00	4	0	0.00	4	0
102	65	2.0	4	6	0.00	4	0	0.00	4	0
103	60	2.0	4	6	0.00	4	0	0.00	4	0
104	80	3.0	4	6	0.00	4	0	0.00	4	0

V1	V32	V33	V34	V35	V36	V37	V38	V39	V40	V41
105	130	5.0	4	6	0.00	4	0	0.00	4	0
106	20	1.0	4	6	0.00	4	0	0.00	4	0
107	130	4.0	4	6	1.00	4	5	0.00	4	5
108	112	4.0	4	6	0.00	4	0	0.00	4	0
109	30	3.0	4	6	0.00	4	0	0.00	4	0
110	100	4.0	4	6	0.00	4	0	0.00	4	0
111	30	3.0	4	6	0.00	4	0	0.00	4	0
112	80	3.0	4	6	0.00	4	0	0.00	4	0
113	112	4.0	4	6	0.00	4	0	0.00	4	0
114	20	1.0	4	6	0.00	4	0	0.00	4	0

V1	V42	V43	V44	V45	V46	V47	V48	V49	V50	V51
1	60	2	0.25	0	4	0	80	2	1	4
2	100	2	0.25	0	4	0	160	3	1	4
3	160	2	0.25	0	4	0	160	3	1	4
4	40	2	0.25	0	4	0	50	2	1	4
5	40	2	0.25	0	4	0	80	2	1	4
6	80	2	0.25	0	4	0	100	3	1	4
7	60	3	0.25	1	5	12	100	3	1	4
8	40	2	0.25	0	4	0	60	2	1	4
9	60	3	0.25	0	4	0	90	3	1	4
10	20	2	0.25	0	4	0	30	2	1	4
11	40	2	0.25	0	4	0	35	2	1	4
12	100	2	0.25	0	4	0	190	3	1	4
13	60	2	0.25	0	4	0	40	2	1	4
14	60	2	0.25	0	4	0	95	2	1	4
15	60	2	0.25	0	4	0	60	3	1	4
16	80	2	0.25	0	4	0	80	3	1	4
17	120	2	0.25	0	4	0	200	3	1	4
18	120	2	0.25	0	4	0	90	2	1	4
20	150	3	0.25	0	4	0	100	3	1	4
21	60	2	0.25	0	4	0	30	2	1	4
22	20	2	0.25	0	4	0	45	2	1	4
23	40	2	0.25	0	4	0	35	2	1	4
24	40	2	0.25	0	4	0	80	2	1	4
25	20	2	0.25	0	4	0	30	3	1	4
26	60	3	1.00	0	4	0	100	3	1	4
27	3	2	0.25	0	4	0	75	3	1	4
28	20	2	0.25	0	4	0	60	2	1	4
29	80	2	0.25	0	4	0	110	3	1	4
30	25	2	0.25	0	4	0	30	2	1	4
31	120	2	0.25	0	4	0	60	2	1	4
32	40	2	0.25	0	4	0	50	2	1	4
33	40	2	0.25	0	4	0	102	3	1	4
34	40	2	0.25	0	4	0	65	3	1	4
35	20	2	1.00	0	4	0	40	2	1	4
36	60	2	0.25	0	4	0	80	2	1	4

V1	V42	V43	V44	V45	V46	V47	V48	V49	V50	V51
37	30	2	0.25	0	4	0	70	2	1.0	4
38	40	2	0.25	0	4	0	100	3	1.0	4
39	40	2	0.25	0	4	0	80	2	1.0	4
40	0	4	0.00	0	4	0	40	2	1.0	4
41	20	2	0.25	0	4	0	50	2	1.0	4
42	20	2	0.25	0	4	0	65	2	1.0	4
43	80	2	0.25	0	4	0	70	3	1.0	4
44	40	2	0.25	0	4	0	102	3	1.0	4
45	20	2	0.25	0	4	0	40	3	1.0	4
46	40	2	0.25	0	4	0	70	3	1.0	4
47	0	4	0.00	0	4	0	0	4	0.0	4
48	20	2	0.25	0	4	0	30	2	1.0	4
49	60	2	0.25	0	4	0	60	3	1.0	4
50	20	2	0.25	0	4	0	40	2	1.0	4
51	60	2	0.25	0	4	0	80	2	1.0	4
52	20	2	0.25	0	4	0	51	2	1.0	4
53	12	2	0.25	0	4	0	80	2	1.0	4
54	40	2	0.25	0	4	0	80	3	1.0	4
55	90	2	0.25	0	4	0	65	2	1.0	4
56	0	4	0.00	0	4	0	60	3	1.0	4
57	40	2	0.25	0	4	0	70	3	1.0	4
58	60	2	0.25	0	4	0	60	2	1.0	4
59	40	2	0.25	0	4	0	40	2	1.0	4
60	40	2	0.25	0	4	0	70	3	1.0	4
61	60	2	0.25	0	4	0	90	3	1.0	4
62	80	2	0.25	0	4	0	150	3	1.0	4
63	60	1	0.25	0	4	0	120	3	1.0	4
64	120	2	0.25	0	4	0	90	3	1.0	4
65	40	2	0.25	0	4	0	80	3	1.0	4
66	160	2	0.25	0	4	0	250	3	1.0	4
67	80	1	0.25	0	4	0	150	3	1.0	4
68	50	2	0.25	0	4	0	105	3	1.0	4
69	40	2	0.25	0	4	0	40	2	1.0	4
70	80	2	0.25	0	4	0	100	3	1.0	4
71	60	2	0.25	0	4	0	100	3	1.0	4
72	10	2	0.25	0	4	0	60	2	1.0	4
73	2	2	0.25	0	4	0	95	3	1.0	4
74	50	2	0.25	0	4	0	70	3	1.0	4
75	60	2	0.25	0	4	0	175	3	1.0	4
76	45	4	0.25	0	4	0	64	4	1.5	4
77	20	4	0.25	0	4	0	30	4	1.5	4
78	15	4	0.25	0	4	0	20	4	1.5	4
79	20	4	0.25	0	4	0	25	4	1.5	4
80	30	4	0.25	0	4	0	40	4	1.5	4
81	45	4	0.25	0	4	0	70	4	1.5	4
82	60	4	0.25	0	4	0	80	4	1.5	4
83	30	4	0.25	0	4	0	40	4	1.5	4
84	30	4	0.25	0	4	0	36	4	1.5	4
85	20	4	0.25	0	4	0	25	4	1.5	4
86	20	4	0.25	0	4	0	26	4	1.5	4
87	12	4	0.25	0	4	0	14	4	1.5	4

V1	V42	V43	V44	V45	V46	V47	V48	V49	V50	V51
88	12	4	0.25	0	4	0	14	4	1.5	4
89	25	4	0.25	0	4	0	28	4	1.5	4
90	15	4	0.25	0	4	0	13	4	1.5	4
91	40	4	0.25	0	4	0	50	4	1.5	4
92	15	4	0.25	0	4	0	13	4	1.5	4
93	25	4	0.25	0	4	0	28	4	1.5	4
94	20	4	0.25	0	4	0	25	4	1.0	4
95	12	4	0.25	0	4	0	14	4	1.5	4
96	10	4	0.25	0	4	0	12	4	1.5	4
97	25	4	0.25	0	4	0	27	4	1.5	4
98	35	4	0.25	0	4	0	28	4	1.5	4
99	42	4	0.25	0	4	0	40	4	1.5	4
100	60	4	0.25	0	4	0	64	4	1.5	4
101	15	4	0.25	0	4	0	14	4	1.5	4
102	50	4	0.25	0	4	0	50	4	1.5	4
103	45	4	0.25	0	4	0	50	4	1.5	4
104	30	4	0.25	0	4	0	40	4	1.5	4
105	95	4	0.25	0	4	0	100	4	1.5	4
106	15	4	0.75	0	4	0	14	4	1.5	4
107	85	4	0.25	0	4	0	102	4	1.5	4
108	90	4	0.25	0	4	0	90	4	1.5	4
109	40	4	0.25	0	4	0	42	4	1.5	4
110	70	2	0.25	0	4	0	55	4	1.5	4
111	40	4	0.25	0	4	0	40	4	1.5	4
112	70	4	0.25	0	4	0	58	4	1.5	4
113	80	4	0.25	0	4	0	90	4	1.5	4
114	12	4	0.25	0	4	0	14	4	1.5	4

V1	V52	V53	V54	V55	V56	V57	V58	V59	V60	V61
1	4	4	2	1	1	1	2	1	1	1
2	4	4	2	1	1	1	2	2	1	1
3	4	4	2	1	1	1	2	2	1	1
4	4	4	2	2	1	1	2	1	1	1
5	4	4	2	2	1	1	2	2	1	1
6	4	4	2	1	1	1	2	2	1	1
7	4	4	2	2	1	1	2	2	1	1
8	4	4	2	1	1	1	2	1	2	1
9	4	4	2	1	1	1	2	2	1	1
10	4	4	2	1	1	1	2	1	2	1
11	4	4	2	2	1	1	2	1	2	1
12	4	4	2	1	1	1	2	2	1	1
13	4	4	2	1	1	1	2	1	2	1
14	4	4	2	2	1	1	2	2	1	1
15	4	4	2	1	1	1	2	1	1	1
16	4	4	2	1	1	1	2	2	1	1
17	4	4	2	1	1	1	1	2	1	1
18	4	4	2	1	1	1	2	2	1	1
20	4	4	2	1	1	1	2	2	1	1
21	4	4	2	1	2	1	2	2	2	1

V1	V52	V53	V54	V55	V56	V57	V58	V59	V60	V61
22	4	4	2	1	1	1	2	1	1	1
23	4	4	2	1	1	1	2	2	1	1
24	4	4	2	2	1	1	2	1	1	1
25	4	4	2	2	1	1	2	2	2	1
26	4	4	2	2	1	1	2	1	2	1
27	4	4	2	1	1	1	2	1	2	1
28	4	4	2	1	1	1	2	1	2	1
29	4	4	2	1	1	1	2	2	2	1
30	4	4	2	1	1	1	2	2	2	1
31	4	4	2	1	1	2	2	1	1	1
32	4	4	2	1	1	1	2	2	2	1
33	4	4	2	2	1	1	2	2	1	1
34	4	4	2	1	1	1	2	2	1	1
35	4	4	2	1	1	1	2	2	1	1
36	4	4	2	2	1	2	2	2	1	1
37	4	4	2	1	1	2	2	1	1	1
38	4	4	2	2	2	2	2	1	1	1
39	4	4	2	1	1	1	2	1	1	1
40	4	4	2	1	1	1	2	1	1	1
41	4	4	2	1	1	1	2	1	1	1
42	4	4	2	1	1	1	2	1	1	1
43	4	4	2	2	1	1	2	2	1	1
44	4	4	2	2	1	2	1	1	1	1
45	4	4	2	1	1	1	2	1	1	1
46	4	4	2	1	1	1	1	2	2	1
47	4	4	2	1	1	1	2	1	2	1
48	4	4	2	1	1	1	1	2	1	1
49	4	4	2	1	1	1	2	1	1	1
50	4	4	2	1	1	1	2	1	2	1
51	4	4	2	2	1	1	2	1	2	1
52	4	4	2	1	1	1	2	1	2	1
53	4	4	2	1	1	1	2	1	1	1
54	4	4	2	1	1	1	2	1	1	1
55	4	4	2	1	1	1	2	2	1	1
56	4	4	2	1	1	1	2	1	1	1
57	4	4	2	1	1	1	2	1	1	1
58	4	4	2	1	1	1	1	2	1	1
59	4	4	2	1	2	1	2	1	1	1
60	4	4	2	1	1	1	2	2	1	1
61	4	4	2	1	1	1	2	1	1	1
62	4	4	2	1	1	1	2	2	1	1
63	4	4	2	1	1	1	2	1	2	1
64	4	4	2	1	1	1	2	1	1	1
65	4	4	2	1	1	1	2	1	2	1
66	4	4	2	1	1	1	2	2	1	1
67	4	4	2	1	1	1	2	2	1	1
68	4	4	1	1	1	1	2	1	1	1
69	4	4	2	1	1	1	1	1	1	1
70	4	4	2	1	1	2	1	1	1	1
71	4	4	2	1	1	1	2	1	1	1
72	4	4	2	2	1	1	2	1	1	1

V1	V52	V53	V54	V55	V56	V57	V58	V59	V60	V61
73	4	4	2	2	1	1	2	1	1	1
74	4	4	2	2	1	1	2	1	1	1
75	4	4	2	1	1	1	2	1	2	1
76	4	4	2	1	1	1	2	1	1	1
77	4	4	2	1	1	1	2	1	1	1
78	4	4	2	1	1	1	2	1	1	1
79	4	4	2	1	1	2	2	2	1	1
80	4	4	2	1	1	1	2	1	1	1
81	4	4	2	1	1	1	1	1	1	1
82	4	4	1	2	1	1	1	1	1	1
83	4	4	2	2	1	1	2	2	2	1
84	4	4	2	2	2	1	2	1	1	1
85	4	4	2	1	1	2	2	2	1	1
86	4	4	2	1	1	1	2	1	1	1
87	4	4	2	1	1	2	1	1	1	1
88	4	4	2	1	1	1	1	1	1	1
89	4	4	2	2	2	2	1	1	2	1
90	4	4	2	2	1	2	2	1	1	1
91	4	4	2	2	1	1	2	1	1	1
92	4	4	2	1	1	1	2	1	1	1
93	4	4	2	2	1	1	1	1	1	1
94	4	4	2	2	1	1	2	1	1	1
95	4	4	2	2	1	1	2	1	1	1
96	4	4	2	2	1	1	2	1	1	1
97	4	4	2	2	2	1	2	1	1	1
98	4	4	2	2	1	1	1	1	1	1
99	4	4	2	2	1	1	2	1	1	1
100	4	4	2	2	1	2	2	2	1	1
101	4	4	2	2	2	1	2	1	2	1
102	4	4	2	2	1	1	2	1	1	1
103	4	4	2	2	1	1	2	1	1	1
104	4	4	2	2	1	1	2	1	1	1
105	4	4	2	2	1	1	2	1	1	1
106	4	4	2	2	1	1	2	4	4	1
107	4	4	2	2	2	1	2	1	1	1
108	4	4	2	2	1	1	2	1	1	1
109	4	4	2	2	2	1	2	1	2	1
110	4	4	2	2	2	1	2	1	1	1
111	4	4	2	2	2	1	2	1	2	1
112	4	4	2	2	1	1	2	1	1	1
113	4	4	2	2	2	1	2	2	1	1
114	4	4	2	1	1	1	2	2	2	1

V1	V62	V63	V64	V65	V66	V67	V68	V69	V70	V71
1	1	1	1	1	1	1	1	1	1	1
2	1	1	1	1	1	1	1	1	1	1
3	1	1	1	1	1	1	1	1	1	1
4	1	1	1	1	1	1	1	1	1	1

V1	V62	V63	V64	V65	V66	V67	V68	V69	V70	V71
5	1	1	1	1	1	1	1	1	1	1
6	1	1	1	1	1	1	1	1	1	1
7	1	1	1	1	1	1	1	1	1	1
8	1	1	1	1	1	1	1	1	1	1
9	1	1	1	1	1	1	1	1	1	3
10	1	1	1	1	1	1	1	1	1	1
11	1	1	1	1	1	1	1	1	1	1
12	1	1	1	1	1	1	1	1	1	1
13	1	1	1	1	1	1	1	1	1	1
14	1	1	1	1	1	1	1	1	1	1
15	1	1	1	1	1	1	1	1	1	1
16	1	1	1	1	1	1	1	1	1	1
17	1	1	1	1	1	1	1	1	1	1
18	1	1	1	1	1	1	1	1	1	1
20	1	1	1	1	1	1	1	1	1	1
21	1	1	1	1	1	1	1	1	1	1
22	1	1	1	1	1	1	1	1	1	1
23	1	1	1	1	1	1	1	1	1	1
24	1	1	1	1	1	1	1	1	1	1
25	1	1	1	1	1	1	1	1	1	1
26	1	1	1	1	1	1	1	1	1	1
27	1	1	1	1	1	1	1	1	1	1
28	1	1	1	1	1	1	1	1	1	3
29	1	1	1	1	1	1	1	1	1	3
30	1	1	1	1	1	1	1	1	1	1
31	1	1	1	1	1	1	1	1	1	1
32	1	1	1	1	1	1	1	1	1	1
33	1	1	1	1	1	1	1	1	1	3
34	1	1	1	1	1	1	1	1	1	3
35	1	1	1	1	1	1	1	1	1	1
36	1	1	1	1	1	1	1	1	1	1
37	1	1	1	1	1	1	1	1	1	1
38	1	1	1	1	1	1	1	1	1	1
39	1	1	1	1	1	1	1	1	1	1
40	1	1	1	1	1	1	1	1	1	1
41	1	1	1	1	1	1	1	1	1	1
42	1	1	1	1	1	1	1	1	1	1
43	1	1	1	1	1	1	1	1	1	1
44	1	1	1	1	1	1	1	1	1	1
45	1	1	1	1	1	1	1	1	1	1
46	1	1	1	1	1	1	1	1	1	1
47	1	1	1	1	1	1	1	1	1	1
48	1	1	1	1	1	1	1	1	1	1
49	1	1	1	1	1	1	1	1	1	1
50	1	1	1	1	1	1	1	1	1	1
51	1	1	1	1	1	1	1	1	1	1
52	1	1	1	1	1	1	1	1	1	1
53	1	1	1	1	1	1	1	1	1	1
54	1	1	1	1	1	1	1	1	1	1
55	1	1	1	1	1	1	1	1	1	1
56	1	1	1	1	1	1	1	1	1	1

V1	V62	V63	V64	V65	V66	V67	V68	V69	V70	V71
57	1	1	1	1	1	1	1	1	1	1
58	1	1	1	1	1	1	1	1	1	1
59	1	1	1	1	1	1	1	1	1	1
60	1	1	1	1	1	1	1	1	1	1
61	1	1	1	1	1	1	1	1	1	1
62	1	1	1	1	1	1	1	1	1	1
63	1	1	1	1	1	1	1	1	1	1
64	1	1	1	1	1	1	1	1	1	1
65	1	1	1	1	1	1	1	1	1	1
66	1	1	1	1	1	1	1	1	1	1
67	1	1	1	1	1	1	1	1	1	1
68	1	1	1	1	1	1	1	1	1	1
69	1	1	1	1	1	1	1	1	1	1
70	1	1	1	1	1	1	1	1	1	1
71	1	1	1	1	1	1	1	1	1	1
72	1	1	1	1	1	1	1	1	1	1
73	1	1	1	1	1	1	1	1	1	1
74	1	1	1	1	1	1	1	1	1	1
75	1	1	1	1	1	1	1	1	1	1
76	1	1	1	1	1	1	1	2	1	1
77	1	1	1	1	1	1	1	1	1	1
78	1	1	1	1	1	1	1	2	1	1
79	1	1	1	1	1	1	1	1	1	1
80	1	1	1	1	1	1	1	1	1	1
81	1	1	1	1	1	1	1	2	1	1
82	1	1	1	1	1	1	1	1	1	1
83	1	1	1	1	1	1	1	2	1	2
84	1	1	1	1	1	1	1	1	1	1
85	2	1	2	1	1	1	1	1	1	2
86	1	1	1	1	1	1	1	1	1	3
87	1	1	1	1	1	1	1	1	1	2
88	1	1	1	1	1	1	2	1	1	1
89	1	1	1	1	1	1	1	2	1	1
90	1	1	1	1	1	1	1	2	1	1
91	1	1	1	1	1	1	1	2	1	1
92	1	1	1	1	1	1	1	2	1	2
93	1	1	1	1	1	1	1	1	1	1
94	1	1	1	1	2	1	1	2	1	2
95	1	1	1	1	1	1	1	2	1	2
96	1	1	1	1	1	1	1	2	1	2
97	1	1	1	1	1	1	1	2	1	2
98	2	2	1	1	1	2	2	2	1	3
99	1	1	1	1	1	1	1	2	1	2
100	2	2	1	1	1	1	1	2	1	3
101	1	1	1	1	1	1	1	2	1	1
102	1	1	1	1	1	1	1	2	1	1
103	1	1	1	1	1	1	1	2	1	3
104	1	1	1	1	1	1	1	2	1	2
105	1	1	1	1	1	1	1	2	1	2
106	2	2	2	1	2	2	2	2	2	3
107	1	1	1	1	1	1	1	2	1	1

V1	V62	V63	V64	V65	V66	V67	V68	V69	V70	V71
108	1	1	1	1	1	2	1	2	1	1
109	1	1	1	1	1	1	1	2	1	1
110	1	1	1	1	1	1	1	2	1	1
111	1	1	1	1	1	1	1	1	1	3
112	1	1	1	1	1	1	1	2	1	1
113	1	1	1	1	1	1	1	2	1	1
114	1	1	1	1	1	1	1	2	1	1

V1	V72	V73	V74	V75	V76	V77	V78	V79	V80	V81
1	1	1	1	1	2	1	1	2	2	2
2	1	1	1	1	1	1	1	1	2	2
3	1	1	1	1	1	1	2	2	2	2
4	1	1	1	2	1	1	1	2	2	2
5	1	1	2	1	1	1	1	1	2	2
6	1	1	1	1	2	1	2	1	1	2
7	1	1	1	2	1	1	1	2	1	2
8	1	1	1	2	1	1	1	2	2	2
9	1	1	1	2	2	1	2	2	1	2
10	1	1	1	1	2	1	2	2	2	2
11	1	1	2	2	1	2	1	2	1	2
12	1	1	1	1	2	2	2	1	2	2
13	1	1	1	1	1	2	2	1	2	2
14	1	1	1	1	1	2	2	2	2	2
15	1	1	1	1	2	1	2	1	2	2
16	1	1	1	1	1	1	2	2	1	2
17	1	1	1	1	2	1	2	1	2	2
18	1	1	1	1	1	1	2	2	2	2
20	1	1	1	1	2	1	1	2	2	2
21	1	1	1	1	2	2	2	1	2	2
22	1	1	1	1	2	1	1	2	1	2
23	1	1	1	1	1	2	2	2	2	2
24	1	1	1	1	2	2	2	1	2	2
25	1	1	1	1	1	2	2	1	2	2
26	1	1	1	1	1	2	2	1	2	2
27	1	1	1	1	1	1	2	2	2	2
28	1	1	1	2	2	2	2	2	2	2
29	1	1	1	2	1	1	2	2	2	2
30	1	1	1	1	1	2	1	2	2	2
31	1	1	1	2	1	2	1	2	1	2
32	1	1	1	2	1	1	1	2	1	2
33	1	1	1	2	1	2	1	2	1	2
34	1	1	1	2	2	1	2	2	2	2
35	1	1	1	1	1	2	2	1	2	2
36	1	1	1	2	2	1	2	2	1	2
37	1	1	2	2	1	1	1	2	1	2
38	1	1	2	1	2	1	2	1	1	2
39	1	1	1	2	1	1	1	2	2	2
40	1	1	1	1	1	2	1	2	2	2

V1	V72	V73	V74	V75	V76	V77	V78	V79	V80	V81
41	1	1	1	1	1	1	2	2	1	2
42	1	1	2	2	1	1	1	2	1	2
43	1	1	1	1	2	2	1	1	1	2
44	1	1	2	1	1	2	1	1	1	2
45	1	1	2	1	1	1	2	2	2	2
46	1	1	1	1	2	1	1	1	2	2
47	2	1	1	1	2	2	1	1	2	2
48	1	1	1	1	2	1	2	1	2	2
49	1	1	1	1	2	2	1	1	2	2
50	1	1	1	1	2	2	2	1	2	2
51	1	1	1	1	1	1	2	2	2	2
52	1	1	1	1	2	2	1	1	2	2
53	1	1	1	1	1	2	2	2	2	2
54	1	1	1	1	2	1	1	2	2	2
55	2	1	1	2	1	2	1	2	2	2
56	1	1	1	1	1	2	2	2	2	2
57	1	1	1	2	1	1	1	2	1	2
58	1	1	1	1	1	2	2	1	2	2
59	1	1	1	1	1	2	2	1	2	2
60	1	1	1	1	1	2	2	1	2	2
61	1	1	1	1	2	1	1	2	2	2
62	1	1	1	1	2	1	2	2	1	2
63	1	1	1	1	1	2	2	1	2	2
64	1	1	1	1	2	1	2	1	2	2
65	1	1	1	1	1	1	2	1	2	2
66	1	1	1	1	1	1	2	2	2	2
67	1	1	1	1	2	1	2	2	1	2
68	1	1	1	2	1	1	1	2	1	2
69	1	1	2	2	1	1	1	2	1	2
70	1	2	1	1	2	1	2	2	2	2
71	1	1	1	1	2	2	1	1	2	2
72	1	1	2	1	2	2	1	1	2	2
73	1	1	1	1	2	1	2	2	2	2
74	1	1	1	2	1	1	1	2	1	2
75	1	1	1	2	2	1	1	2	2	2
76	1	1	2	2	2	2	2	1	2	1
77	1	1	1	2	1	1	2	2	1	2
78	1	1	2	2	2	2	2	1	2	1
79	1	1	2	1	2	1	2	1	2	1
80	1	1	2	1	2	2	1	1	2	2
81	1	1	2	1	2	1	2	1	2	2
82	2	1	2	1	1	2	2	1	1	1
83	1	1	2	1	2	2	2	1	2	1
84	1	1	1	1	2	2	2	1	2	1
85	2	1	2	2	2	2	2	1	2	2
86	1	1	1	2	2	2	2	1	2	1
87	2	1	2	1	2	2	2	1	2	2
88	1	1	1	1	2	2	2	1	2	2
89	1	1	1	1	2	2	1	1	2	1
90	1	1	2	1	1	2	1	1	2	1
91	2	1	1	1	2	2	1	1	2	2

V1	V72	V73	V74	V75	V76	V77	V78	V79	V80	V81
92	1	1	2	1	2	2	2	1	1	2
93	1	1	2	1	2	2	2	1	2	1
94	1	1	2	1	2	2	2	2	2	1
95	1	1	1	2	2	2	2	2	1	2
96	1	1	2	2	2	2	1	2	2	1
97	1	1	2	1	2	2	1	2	2	1
98	2	2	2	2	2	2	2	2	2	2
99	1	1	2	1	2	2	1	1	2	1
100	2	1	2	2	2	2	2	1	2	2
101	2	1	2	2	2	2	2	2	2	1
102	2	1	2	2	2	2	2	1	2	2
103	1	1	2	2	2	2	2	1	2	2
104	1	1	2	1	2	2	2	2	2	1
105	2	2	2	2	2	2	2	2	2	2
106	2	1	2	2	2	2	2	2	2	2
107	1	1	1	1	2	1	2	1	2	2
108	1	1	2	2	2	2	2	1	2	2
109	1	1	2	1	2	2	2	1	2	1
110	2	1	2	1	2	2	1	1	2	2
111	1	1	2	1	2	2	1	2	2	1
112	1	1	2	1	2	2	2	1	2	1
113	2	2	2	1	2	2	1	1	2	1
114	2	1	2	1	2	2	1	1	2	1

V1	V82	V83	V84	V85	V86	V87	V88	V89	V90	V91
1	2	2	2	2	2	2	2	2	23.32	15.90
2	2	2	2	2	2	2	2	2	34.00	22.30
3	2	2	2	2	2	2	2	2	22.14	7.84
4	2	2	2	2	2	2	2	2	36.42	28.05
5	2	2	2	2	2	2	2	2	32.17	24.75
6	2	2	2	2	2	2	2	2	25.35	3.03
7	2	2	2	2	2	2	2	2	26.40	22.95
8	2	2	2	2	2	2	2	2	32.48	30.26
9	2	2	2	2	2	2	2	2	32.52	26.05
10	2	2	2	2	2	2	2	2	24.67	17.79
11	2	2	2	2	2	2	2	2	24.30	22.50
12	2	2	2	2	2	2	2	2	41.85	35.97
13	2	2	2	2	2	2	2	2	17.80	16.66
14	2	2	2	2	2	2	2	2	10.00	8.10
15	2	2	2	2	2	2	2	2	22.60	21.00
16	2	2	2	2	2	2	2	2	18.76	11.13
17	2	2	2	2	2	2	2	2	46.63	37.10
18	2	2	2	2	2	2	2	2	27.20	11.00
20	2	2	2	2	2	2	2	2	36.16	23.52
21	2	2	2	2	2	2	2	2	9.60	1.34
22	2	2	2	2	2	2	2	2	7.91	6.89
23	2	2	2	2	2	2	2	2	41.85	34.30
24	2	2	2	2	2	2	2	2	33.80	32.90
25	2	2	2	2	2	2	2	2	10.35	0.00

V1	V82	V83	V84	V85	V86	V87	V88	V89	V90	V91
26	2	2	2	2	2	2	2	2	21.89	6.34
27	2	2	2	2	2	2	2	2	14.12	10.49
28	2	2	2	2	2	2	2	2	28.65	18.60
29	2	2	2	2	2	2	2	2	23.40	6.40
30	2	2	2	2	2	2	2	2	15.00	13.00
31	2	2	2	2	2	2	2	2	26.40	24.40
32	2	2	2	2	2	2	2	2	16.65	11.40
33	2	2	2	2	2	2	2	2	38.90	25.23
34	2	2	2	2	2	2	2	2	31.36	21.76
35	2	2	2	2	2	2	2	2	8.16	7.36
36	2	2	2	2	2	2	2	2	18.22	11.34
37	2	2	2	2	2	2	2	2	20.24	16.56
38	2	2	2	2	2	2	2	2	26.14	8.20
39	2	2	2	2	2	2	2	2	38.20	25.70
40	2	2	2	2	2	2	2	2	7.94	6.48
41	2	2	2	2	2	2	2	2	11.61	10.32
42	2	2	2	2	2	2	2	2	23.40	21.80
43	2	2	2	2	2	2	2	2	38.00	25.72
44	2	2	2	2	2	2	2	2	15.12	12.32
45	2	2	2	2	2	2	2	2	22.88	11.23
46	2	2	2	2	2	2	2	2	38.16	35.19
47	2	2	2	2	2	2	2	2	6.44	5.46
48	2	2	2	2	2	2	2	2	20.09	16.95
49	2	2	2	2	2	2	2	2	25.97	24.01
50	2	2	2	2	2	2	2	2	23.47	20.50
51	2	2	2	2	2	2	2	2	47.43	45.90
52	2	2	2	2	2	2	2	2	12.40	10.40
53	2	2	2	2	2	2	2	2	37.08	22.66
54	2	2	2	2	2	2	2	2	42.80	23.00
55	2	2	2	2	2	2	2	2	40.29	27.54
56	2	2	2	2	2	2	2	2	25.77	23.81
57	2	2	2	2	2	2	2	2	24.52	23.52
58	2	2	2	2	2	2	2	2	17.76	16.51
59	2	2	2	2	2	2	2	2	15.09	5.29
60	2	2	2	2	2	2	2	2	16.83	9.18
61	2	2	2	2	2	2	2	2	22.73	17.68
62	2	2	2	2	2	2	2	2	23.23	15.79
63	2	2	2	2	2	2	2	2	25.65	23.18
64	2	2	2	2	2	2	2	2	11.96	10.78
65	2	2	2	2	2	2	2	2	29.68	22.95
66	2	2	2	2	2	2	2	2	46.96	17.70
67	2	2	2	2	2	2	2	2	33.39	16.96
68	2	2	2	2	2	2	2	2	34.39	32.49
69	2	2	2	2	2	2	2	2	14.50	5.86
70	2	2	2	2	2	2	2	2	37.24	25.28
71	2	2	2	2	2	2	2	2	29.35	21.63
72	2	2	2	2	2	2	2	2	27.17	24.70
73	2	2	2	2	2	2	2	2	23.52	21.56
74	2	2	2	2	2	2	2	2	39.78	18.87
75	2	2	2	2	2	2	2	2	27.47	13.13
76	2	2	2	2	2	2	2	2	27.50	14.00
77	2	2	2	2	2	2	2	2	19.00	9.00

V1	V82	V83	V84	V85	V86	V87	V88	V89	V90	V91
78	2	2	2	2	2	2	2	2	11.00	5.00
79	1	1	1	2	2	2	2	2	64.00	45.00
80	2	2	2	1	1	2	2	2	22.50	15.00
81	2	2	2	2	2	2	2	2	29.50	20.00
82	2	2	1	2	2	1	2	2	23.50	15.00
83	2	2	1	2	2	1	2	2	27.25	21.25
84	2	1	1	2	2	2	2	2	33.00	24.00
85	2	2	2	2	2	2	2	2	12.00	8.00
86	2	2	2	2	2	2	2	2	19.75	14.00
87	2	2	2	2	1	2	2	2	16.25	12.00
88	2	2	2	2	2	1	2	2	15.00	11.00
89	2	1	1	2	2	2	2	2	31.50	23.50
90	2	2	1	2	2	2	2	2	15.00	12.00
91	2	2	2	2	2	2	1	2	10.25	8.25
92	2	2	2	2	2	2	2	2	9.50	6.00
93	2	1	1	2	2	1	2	1	16.50	4.50
94	2	1	2	2	2	1	2	1	11.00	6.00
95	2	2	2	2	2	2	2	2	24.75	15.75
96	2	2	2	2	1	2	2	2	17.50	10.00
97	2	2	2	2	2	1	2	2	9.00	7.00
98	2	2	2	2	2	2	2	2	10.00	6.00
99	2	2	2	2	2	1	2	2	20.00	20.00
100	2	2	2	2	2	2	2	2	24.00	18.00
101	2	2	2	2	2	1	1	2	10.50	7.50
102	2	2	2	2	2	2	2	2	12.00	10.00
103	2	1	2	2	2	2	2	2	12.00	8.00
104	2	2	2	2	2	2	2	2	19.00	12.00
105	2	2	2	2	2	2	2	2	32.00	21.00
106	2	2	2	2	2	2	2	2	7.00	6.00
107	2	2	1	2	2	2	2	2	28.00	15.00
108	2	1	1	2	2	2	1	2	25.00	15.00
109	2	1	2	2	2	2	2	2	22.00	10.00
110	2	2	1	2	2	2	2	2	38.00	20.00
111	2	2	2	2	1	2	2	2	12.00	10.00
112	2	2	1	2	2	2	2	2	22.00	18.00
113	1	2	1	2	2	2	1	2	28.00	11.00
114	2	2	2	2	2	2	2	2	6.00	3.00

V1	V92	V93	V94	V95	V96	V97	V98	V99	V100	V101
1	2.12	5.30	18.0	106.00	12	7	8	17.15	0.00	4
2	5.30	6.40	18.0	106.00	12	6	8	13.24	0.12	400
3	1.56	12.74	15.0	98.00	8	25	6	31.40	0.00	4
4	1.23	7.14	16.5	102.00	9	30	6	21.01	0.00	4
5	3.46	3.96	16.0	99.00	12	3	8	21.46	0.00	4
6	1.21	21.11	15.5	101.00	8	40	8	29.70	0.00	4
7	2.65	0.80	16.5	102.00	12	2	9	25.00	0.20	200
8	2.22	0.00	14.0	89.00	8	23	6	26.97	0.00	4
9	6.47	0.00	12.0	80.90	8	25	7	26.97	0.00	4

V1	V92	V93	V94	V95	V96	V97	V98	V99	V100	V101
10	0.98	5.90	16.0	98.30	12	6	4	26.97	0.00	4
11	1.80	0.00	14.0	90.00	8	5	7	26.97	0.00	4
12	2.94	2.94	15.0	98.00	12	3	8	23.81	0.00	4
13	1.18	0.00	15.0	98.00	12	23	7	22.96	0.00	4
14	1.90	0.00	14.5	95.00	9	2	7	26.97	0.00	4
15	1.60	0.00	12.0	80.76	7	10	6	26.97	0.00	4
16	1.27	6.36	18.0	106.00	9	16	5	31.44	0.00	4
17	2.33	7.20	18.0	106.00	12	14	7	26.97	0.00	4
18	1.20	1.50	16.0	100.00	12	23	7	23.33	0.00	4
20	1.76	10.88	15.0	98.00	12	22	5	20.22	0.20	500
21	0.58	7.68	14.5	96.00	8	16	7	23.44	0.00	4
22	1.02	0.00	12.5	85.00	12	15	7	26.97	0.00	4
23	4.41	3.14	15.0	98.00	9	2	6	23.04	0.12	370
24	0.90	0.00	14.5	96.19	9	16	7	26.97	0.00	4
25	0.00	1.35	13.0	90.00	9	3	8	22.22	0.00	4
26	1.15	14.40	14.5	96.00	12	26	7	25.00	0.00	4
27	1.61	2.02	12.0	80.70	8	4	6	26.97	0.00	4
28	3.35	6.70	13.5	93.00	9	28	7	21.49	0.00	4
29	2.00	1.50	16.0	100.00	12	28	7	20.00	0.21	570
30	2.00	0.00	16.0	100.00	8	25	9	26.97	0.00	4
31	2.00	0.00	16.0	100.00	12	30	7	26.97	0.00	4
32	2.40	2.85	14.5	95.00	9	6	6	42.10	0.00	4
33	5.72	7.95	18.0	106.00	12	60	6	25.16	0.00	4
34	2.20	7.40	16.0	98.90	9	2	6	26.97	0.00	4
35	0.80	0.00	12.0	80.00	9	26	7	26.97	0.00	4
36	1.62	5.26	12.0	81.00	12	60	5	38.04	0.20	1600
37	1.84	1.84	13.5	92.00	12	4	7	26.97	0.00	4
38	2.56	15.38	16.5	102.50	12	4	5	26.97	0.20	4200
39	2.50	10.00	16.0	100.00	12	27	6	26.97	0.00	4
40	1.46	0.00	12.0	81.00	9	8	7	26.97	0.00	4
41	1.29	0.00	12.5	86.00	8	7	7	26.97	0.00	4
42	1.60	0.00	16.0	100.00	8	10	7	38.09	0.00	4
43	1.78	10.50	18.0	105.00	8	2	6	26.97	0.20	600
44	0.78	2.02	18.5	112.00	12	60	6	22.32	0.00	4
45	4.68	6.97	17.0	104.00	8	20	6	35.87	0.00	4
46	2.97	0.00	18.0	106.00	12	16	6	26.97	0.00	4
47	0.98	0.00	9.0	65.00	8	23	6	26.97	0.00	4
48	3.14	0.00	15.0	98.00	8	14	8	26.97	0.00	4
49	1.96	0.00	15.0	98.00	8	16	6	26.97	0.00	4
50	2.97	0.00	16.5	102.50	8	7	7	26.97	0.00	4
51	1.53	0.00	16.5	102.00	12	16	8	26.97	0.00	4
52	2.00	0.00	16.0	100.00	8	26	6	26.97	0.00	4
53	2.58	11.84	16.5	103.00	12	21	6	33.78	0.00	4
54	8.00	11.80	16.0	100.00	9	2	5	38.14	0.00	4
55	8.16	4.59	16.5	102.00	12	10	6	27.23	0.00	4
56	1.96	0.00	15.0	98.00	12	10	6	26.97	0.20	200
57	1.00	0.00	14.5	96.00	12	7	8	26.97	0.00	4
58	1.25	0.00	14.5	96.00	9	39	7	26.97	0.00	4
59	0.00	9.80	15.0	98.00	8	8	7	20.41	0.00	4
60	1.02	6.63	16.5	102.00	8	23	7	27.51	0.00	4
61	1.01	4.04	16.0	101.00	9	25	7	29.70	0.00	4
62	2.16	5.88	15.0	98.00	12	3	7	30.61	0.00	4

V1	V92	V93	V94	V95	V96	V97	V98	V99	V100	V101
63	2.47	0.00	16.5	103.00	12	26	7	26.97	0.00	4
64	1.18	0.00	15.0	98.00	8	29	7	26.97	0.00	4
65	2.55	4.18	16.5	102.00	8	16	5	29.90	0.00	4
66	2.76	26.50	18.0	106.00	9	14	7	26.72	0.00	4
67	3.71	12.72	18.0	106.00	12	23	7	31.47	0.00	4
68	1.90	0.00	14.5	95.00	12	4	9	26.97	0.00	4
69	1.44	7.20	14.5	96.00	12	6	6	34.48	0.00	4
70	2.16	9.80	15.0	98.00	9	6	6	40.82	0.00	4
71	1.54	6.18	16.5	103.00	9	8	7	17.15	0.00	4
72	2.47	0.00	14.5	95.00	9	3	8	26.97	0.00	4
73	1.96	0.00	15.0	98.00	9	6	5	26.97	0.00	4
74	12.75	8.16	16.5	102.00	12	25	6	19.61	0.00	4
75	3.03	11.31	16.0	101.00	9	25	6	35.37	0.00	4
76	0.00	13.50	21.4	167.60	12	15	4	25.00	0.00	4
77	0.00	10.00	18.0	97.90	12	15	4	25.00	0.00	4
78	0,00	6.00	18.5	113.00	12	10	6	24.93	0.00	4
79	0.00	19.00	15.8	74.80	12	11	9	24.45	0.25	625
80	0.00	7.50	18.7	111.90	12	5	4	35.53	0.00	4
81	0.00	9.50	16.0	77.80	12	5	4	25.00	0.00	4
82	0.00	8.50	18.0	98.00	12	14	4	24.45	0.00	4
83	0.00	6.00	17.7	94.90	12	10	4	25.00	0.25	700
84	0.00	9.00	18.3	106.27	12	4	4	25.00	0.25	8000
85	0.00	4.00	18.9	112.00	12	20	4	24.87	0.00	4
86	0.00	5.75	19.7	133.00	12	6	4	25.00	0.00	4
87	0.00	3.75	18.4	107.10	12	9	4	25.00	0.00	4
88	0.00	4.00	18.0	98.60	8	8	3	25.00	0.00	4
89	0.00	8.00	18.2	100.30	12	11	3	25.00	0.25	800
90	0.00	3.00	18.9	123.90	12	2	4	25.00	0.00	4
91	0.00	2.00	18.5	114.00	12	5	4	30.00	0.00	4
92	0.00	3.50	16.1	78.50	12	5	4	25.00	0.00	4
93	0.00	12.00	18.7	114.50	7	10	3	30.00	0.32	1200
94	0.00	5.00	16.4	82.60	12	9	6	27.50	0.00	4
95	0.00	10.00	17.5	95.00	12	10	4	25.00	0.00	4
96	0.00	7.50	22.0	184.00	12	13	4	25.00	0.00	4
97	0.00	2.00	19.9	138.00	9	9	4	26.78	0.00	4
98	0.00	4.00	18.5	115.10	12	14	4	30.00	0.00	4
99	0.00	0.00	21.5	182.20	12	10	4	25.00	0.00	4
100	0.00	6.00	17.5	98.10	12	7	4	30.00	0.00	4
101	0.00	3.00	18.6	114.00	7	3	4	30.00	0.00	4
102	0.00	2.00	19.0	112.30	12	8	4	25.00	0.00	4
103	0.00	4.00	18.2	111.50	12	6	4	25.00	0.00	4
104	0.00	7.00	16.1	75.80	12	11	4	25.00	0.00	4
105	0.00	11.00	15.0	72.10	12	2	4	30.00	0.00	4
106	0.00	1.00	18.2	99.40	12	15	4	25.00	0.00	4
107	0.00	13.00	15.0	72.70	12	16	9	26.78	0.18	1700
108	0.00	10.00	18.2	100.30	12	5	4	25.00	0.00	4
109	0.00	12.00	16.0	77.80	10	3	4	25.00	0.00	4
110	0.00	18.00	18.5	110.00	12	18	4	26.78	0.00	4
111	0.00	2.00	16.0	77.70	9	10	4	30.00	0.00	4
112	0.00	4.00	18.8	123.00	12	3	4	25.00	0.20	300
113	0.00	17.00	17.7	94.90	12	21	4	25.00	0.20	300
114	0.00	3.00	16.5	82.90	12	3	4	25.00	0.00	4